SYLLABUS

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Course Code: 1012

2015-2016 onwards

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M – SCHEME (DRAFT)

DIRECTORATE OF TECHNICAL EDUCATION

GOVERNMENT OF TAMILNADU

DEPARTMENT OF TECHNICAL EDUCATION, TAMIL NADU

Syllabus Revision Committee

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

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DIPLOMA COURSES IN ENGINEERING/TECHNOLOGY

(SEMESTER SYSTEM)

(Implemented from 2015- 2016)

M – SCHEME

R E G U L A T I O N S*

* *Applicable to the Diploma Courses other than Diploma in Hotel Management & Catering Technology and the Diploma Courses offered through MGR Film Institute, Chennai.*

1. Description of the Course:

a. Full Time (3 years)

The Course for the full Time Diploma in Engineering shall extend over a period of three academic years, consisting of 6 semesters* and the First Year is common to all Engineering Branches.

b. Sandwich (3½ years)

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The Course for the Diploma in Engineering (sandwich) shall extend over a period of three and half academic years, consisting of 7 semesters* and the First Year is common to all Engineering Branches. The subjects of three years full time diploma course being regrouped for academic convenience.

During 4th and/or during 7th semester the students undergo industrial training for six months/ one year. Industrial training examination will be conducted after completion of every 6 months of industrial training

c. Part Time (4 years)

The course for the diploma in Engineering shall extend over a period of 4 academic years containing of 8 semesters*, the subjects of 3 year full time diploma courses being regrouped for academic convenience.

* Each Semester will have 15 weeks duration of study with 35 hrs. /Week for Regular Diploma Programme and 18hrs/ week (21 hrs. / Week I year) for Part-Time Diploma Programmes.

The Curriculum for all the 6 Semesters of Diploma courses (Engineering & Special Diploma Courses viz. Textile Technology, Leather Technology, Printing Technology, Chemical Technology etc.) have been revised and revised curriculum is applicable for the candidates admitted from 2015 – 2016 academic year onwards.

2. Condition for Admission:

Condition for admission to the diploma courses shall be required to have passed in

The S.S.L.C Examination of the Board of Secondary Education, TamilNadu.

(Or)

The Anglo Indian High School Examination with eligibility for Higher Secondary Course in TamilNadu.

(Or)

The Matriculation Examination of Tamil Nadu.

(Or)

Any other Examination recognized as equivalent to the above by the Board of Secondary Education, TamilNadu.

Note: In addition, at the time of admission the candidate will have to satisfy certain minimum requirements, which may be prescribed from time to time.

3. Admission to Second year (Lateral Entry):

A pass in HSC (Academic) or (Vocational) courses mentioned in the Higher Secondary Schools in TamilNadu affiliated to the TamilNadu Higher Secondary Board with eligibility for university Courses of study or equivalent examination, & Should have studied the following subjects.

Sl. No	Courses	H.Sc Academic	H.Sc Vocational	
		Subjects Studied	Subjects Studied	
			Related subjects	Vocational subjects
1.	All the Regular and Sandwich Diploma Courses	Maths, Physics & Chemistry	Maths / Physics / Chemistry	Related Vocational Subjects Theory & Practical
2.	Diploma course in Modern Office Practice	English & Accountancy English & Elements of Economics English & Elements of Commerce	English & Accountancy, English & Elements of Economics, English & Management Principles & Techniques, English & Typewriting	Accountancy & Auditing, Banking, Business Management, Co-operative Management, International Trade, Marketing & Salesmanship, Insurance & Material Management, Office Secretaryship.

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- For the diploma Courses related with Engineering/Technology, the related / equivalent subjects prescribed along with Practical may also be taken for arriving the eligibility.

- Branch will be allotted according to merit through counseling by the respective Principal as per communal reservation.

- For admission to the Textile Technology, Leather Technology, Printing Technology, Chemical Technology and Modern Office Practice Diploma courses the candidates studied the related subjects will be given first preference.

- *Candidates who have studied Commerce Subjects are not eligible for Engineering Diploma Courses.*

4. Age Limit: No Age limit.

5. Medium of Instruction: English

6. Eligibility for the Award of Diploma:

No candidate shall be eligible for the Diploma unless he/she has undergone the prescribed course of study for a period of not less than 3 academic years in any institution affiliated to the State Board of Technical Education and Training, TamilNadu, when joined in First Year and two years if joined under Lateral Entry scheme in the second year and passed the prescribed examination.

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The minimum and maximum period for completion of Diploma Courses are as given below:

Diploma Course	Minimum Period	Maximum Period
Full Time	3 Years	6 Years
Full Time(Lateral Entry)	2 Years	5 Years
Sandwich	3½ Years	6½ Years
Part Time	4 Years	7 Years

7. Subjects of Study and Curriculum outline:

The subjects of study shall be in accordance with the syllabus prescribed from time to time, both in theory and practical. The curriculum outline is given in Annexure **- I**

8. Examinations:

Board Examinations in all subjects of all the semesters under the scheme of examinations will be conducted at the end of each semester.

The Internal assessment marks for all the subjects will be awarded on the basis of continuous internal assessment earned during the semester concerned. For each subject 25 marks are allotted for internal assessment and 75 marks are allotted for Board Examination.

9. Continuous Internal Assessment:

A . For Theory Subjects:

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i. Subject Attendance **5 Marks**

(Award of marks for subject attendance to each subject theory/practical will as per the range given below)

80% - 83%	)	1 Mark
84% - 87%		2 Marks
88% - 91%		3 Marks
92% - 95%		4 Marks
96% - 100%		5 Marks

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ii) Test # **10 Marks**

2 Tests each of 2 hours duration for a total of 50 marks are to be conducted. Out of which the best one will be taken and the marks to be reduced to: 05 marks

The Test – III is to be the Model test covering all the five units and the marks so obtained will be reduced to : 05 marks

Total **10 marks**

TEST	UNITS	WHEN TO CONDUCT	MARKS	DURATION
Test I	Unit – I & II	End of 6th week	50	2 Hrs
Test II	Unit – III & IV	End of 12th week	50	2 Hrs
Test III	**Model Examination** - **Compulsory** Covering all the 5 Units. (Board Examination-question paper-pattern).	End of 15th week	75	3 Hrs

 # - From the Academic year 2015-2016 onwards.

Question Paper Pattern for the Periodical Test :(Test - I & Test- II)

With no choice:

PART A type questions:	4 Questions X 2 mark	… … 8 marks
PART B type questions:	4 Questions X 3 marks	… … 12 marks
PART C type questions:	3 Questions X 10 marks	… … 30 marks

	Total	50 marks
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iii) Assignment **10 Marks**

For each subject Three Assignments are to be given each for 20 marks and the average marks scored should be reduced for 10 marks

All Test Papers and assignment notebooks after getting the signature with date from the students must be kept in the safe custody in the Department for verification and audit. It should be preserved for 2 Semesters and produced to the flying squad and the inspection team at the time of inspection/verification.

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B. For Practical Subjects:

The internal assessment mark for a total of 25 marks which are to be distributed as follows:-

a)	Attendance (Award of marks as same as Theory subjects)	:	**5 Marks**
b)	Procedure/ observation and tabulation/ Other Practical related Work	:	**10 Marks**
c)	Record writing	:	**10 Marks**

	TOTAL	:	**25 Marks**

- *All the Experiments/exercises indicated in the syllabus should be completed and the same to be given for final board examinations.*
- The Record for every completed exercise should be submitted in the subsequent Practical classes and marks should be awarded for 20 for each exercise as per the above allocation.
- At the end of the Semester, the average marks of all the exercises should be calculated for 20 marks and the marks awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks)

- The students have to submit the duly signed bonafide record note book/file during the Practical Board Examinations.
- *All the marks awarded for assignment, Test and attendance should be entered in the Personal Log Book of the staff, who is handling the subject. This is applicable to both Theory and Practical subjects.*

10. Life and Employability Skill Practical:

The Life and Employability Skill Practical with more emphasis is being introduced in IV Semester for Circuit Branches and in V Semester for other branches of Engineering.
Much Stress is given to increase the employability of the students:

Internal assessment Mark **….. 25 Marks**

11. Project Work:

The students of all the Diploma Programmes **(except Diploma in Modern Office Practice)** have to do a Project Work as part of the Curriculum and in partial fulfillment for the award of Diploma by the State Board of Technical Education and Training, Tamilnadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e. institution wise, region wise and state wise. **The Project work must be reviewed twice in the same semester.**

a) Internal assessment mark for Project Work & Viva Voce:

Project Review I	…	**10 marks**
Project Review II	…	**10 marks**
Attendance	…	**05 marks** (award of marks same as theory subjects pattern)
Total	…	**25 marks**

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Proper record to be maintained for the two Project Reviews, and It should be preserved for 2 Semesters and produced to the flying squad and the inspection team at the time of inspection/verification.

b) Allocation of Mark for Project Work & Viva Voce in Board Examination:

Viva Voce	…	**30 marks**
Marks for Report Preparation, Demo	…	**35 marks**
Total		**65 marks**

c) Written Test Mark (from 2 topics for 30 minutes duration): $

i) Environment Management	2 questions X 2 ½ marks	= **5 marks**
iI) Disaster Management	2 questions X 2 ½ marks	= **5 marks**
		10marks

$ - Selection of Questions should be from Question Bank, by the External Examiner.

No choice need be given to the candidates.

Project Work & Viva Voce in Board Examination	--	**65 Marks**
Written Test Mark (from 2 topics for 30 minutes duration)	--	**10 Marks**
TOTAL	--	**75 Marks**

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual during the Project Work & Viva Voce Board examination.

12. Scheme of Examinations:

The Scheme of examinations for subjects is given in **Annexure - II.**

13. Criteria for Pass:

1. No candidate shall be eligible for the award of Diploma unless he/she has undergone the prescribed course of study successfully in an institution approved by AICTE and affiliated to the State Board of Technical Education & Training, Tamil Nadu and pass all the subjects prescribed in the curriculum.

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2. A candidate shall be declared to have passed the examination in a subject if he/she secures not less than *40% in theory subjects* and *50% in practical subject* out of the total prescribed maximum marks including both the internal assessment and the Board Examination marks put together, subject to the condition that he/she secures at least a minimum of *30 marks out of 75 marks in the Board's Theory examinations and a minimum of 35 marks out of 75 marks in the Board Practical Examinations.*

14. Classification of successful candidates:

Classification of candidates who will pass out the final examinations from April 2018 onwards (Joined in first year in 2015-2016) will be done as specified below.

First Class with Superlative Distinction:

A candidate will be declared to have passed in **First Class with Superlative Distinction** if he/she secures not less than 75% of the marks in all the subjects and passes all the semesters in the first appearance itself and passes all subjects within the stipulated period of study 3/ 3½/ 4 years (Full Time/Sandwich/Part Time) without any break in study.

First Class with Distinction:

A candidate will be declared to have passed in **First Class with Distinction** if he/she secures not less than 75% of the aggregate of marks in all the semesters put together and passes all the semesters except the I and II semesters in the first appearance itself and passes all the subjects within the stipulated period of study 3/ 3½/ 4 years (Full Time/Sandwich/Part Time) without any break in study.

First Class:

A candidate will be declared to have passed in **First Class** if he/she secures not less than 60% of the aggregate marks in all semesters put together and passes all the subjects within the stipulated period of study 3/ 3½ / 4 years (Full Time/Sandwich/Part Time) without any break in study.

Second Class:

All other successful candidates will be declared to have passed in **Second Class.**

The above mentioned classifications are also applicable for the Sandwich / Part-Time students who pass out Final Examination from October 2018 /April 2019 onwards (both joined in First Year in 2015-2016)

15. Duration of a period in the Class Time Table:

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The duration of each period of instruction is 1 hour and the total period of instruction hours excluding interval and Lunch break in a day should be uniformly maintained as 7 hours corresponding to 7 periods of instruction (Theory & Practical).

16. Seminar:

For seminar the total seminar 15 hours(15 weeks x 1hour) should be distributed equally to total theory subject per semester(i.e 15 hours divided by 3/4 subject). A topic from subject or current scenario is given to students. During the seminar hour students have to present the paper and submit seminar material to the respective staff member, who is handling the subject. It should be preserved for 2 Semesters and produced to the flying squad and the inspection team at the time of inspection/verification.

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SYLLABUS REVISION – ARCHITECTURAL ASISTANTSHIP

The syllabus revision committee, nominated by the Chairman, Board of Studies and Examinations, has prepared a new scheme("M" scheme) for the Diploma programme in Architectural Assistantship based on the trends which are prevailing in the Building Industry at the present conditions. A detailed study was made over the subjects who were given in the previous schemes and the subjects that are essential for the students to enhance the career prospects. Hence, the syllabus revision has been studied and done under the following category:

1. Subjects to be retained
2. Subjects to be Modified &
3. Subjects to be introduced.

This revised syllabus is more focused towards Architecture in detail from the past. The major concern is **Architectural Assistantship students are not eligible to admit as lateral entry in B.Arch like other Engineering courses**. The 5 year Architecture degree programme itself having Architecture paper started from the first semester onwards. The intent of this revision may lead to get admission for **Lateral Entry in Architecture** schools because of the subjects framed in that manner which is almost equal to the degree program.

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The students who are studying in B.Arch having following papers in **first and second** semester.

- Art Appreciation
- History of Architecture - I
- Materials and Construction- I
- Computer Studio – I
- Mathematics
- Architectural Drawing – I
- Architectural Design – I
- Mechanics of Structures – I
- Theory of Architecture – I
- History of Architecture – II
- Materials and Construction- II

- Computer Studio – II
- Architectural Drawing – II
- Architectural Design – II

The "M" Scheme syllabus will cover all the above papers in the three years Diploma in Architectural Assistantship programme and it is very useful to get the lateral entry admission for our architectural students after getting approval from the **Council of Architecture (**COA).

The content of subjects which are integrated with technology is modified to incorporate the latest trends and technologies that are prevailing in the construction industry. The details are as follows,

1. SUBJECTS TO BE RETAINED:

The subjects that are perceived as nucleus of the scheme are retained since the concept of Architectural and structural aspects are essential for the students to learn the basics which will not get changed or affected due to the rapid developments in the technology.

All the subjects are retained except **BCD-I, BCD-II & BCD-III** with minimum addition and deletion.

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2. SUBJECTS TO BE MODIFIED:

The subject Building construction and detailing – III in semester VI is deleted and clubbed together with Building construction and detailing – I & Building construction and detailing – II in third and fourth semester respectively, to add a new subject Architectural Model Making in VI semester.

3. SUBJECTS TO BE INTRODUCED.

The architectural model making skill is essential for all architecture students. So the **Architectural Model Making** subject is introduced in the VI semester.

4. CHANGES IN ELECTIVE

The knowledge in elements of interior design important one .So the existing elective paper elements of interior design is considered as a main subject instead of Landscape design and detailing**.** The landscape design and detailing is considered as an elective in VI semester.

Annexure - I
CURRICULUM OUTLINE

THIRD SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
31231	Building Materials	5	-	-	5
31232	Theory of Architecture	4	-	-	4
31233	History of Architecture – I	5	-	-	5
31234	Building Construction and Detailing – I	-	-	5	5
31235	Architectural Drawing – I	-	-	5	5
31236	Basic Design	-	-	6	6
30001	Computer Applications Practical*	-	-	4	4
Seminar		1	-	-	1
TOTAL		**15**	**-**	**20**	**35**

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*Common to all Branches

FOURTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
31241	Mechanics of structures	6	-	-	6
31242	Survey Theory	4	-	-	4
31243	History of Architecture – II	4	-	-	4
31244	Building Services – I	4	-	-	4
31245	Building Construction and Detailing – II	-	-	5	5
31246	Architectural Drawing – II	-	-	5	5
31247	Architectural Design Studio – I	-	-	6	6
Seminar		1	-	-	1
TOTAL		**19**	**-**	**16**	**35**

CURRICULUM OUTLINE

FIFTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
31251	Estimating and costing	5	-	-	5
31252	Environmental Engineering	4	-	-	4
31253	Building Services – II	4	-	-	4
31254	Elements of Interior Design	5	-	-	5
31255	Computer Application in Architecture – I	-	-	6	6
31256	Architectural Design Studio – II	-	-	6	6
30002	Life and Employability Skill Practical*	-	-	4	4
	Seminar	1	-	-	1
TOTAL		**19**	**-**	**16**	**35**

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*Common to all Branches

CURRICULUM OUTLINE

SIXTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
31261	Structural Design	6	-	-	6
31262	Professional Practice and Management	5	-	-	5
31281 31282 31283	**Elective** Landscape Design and Detailing Town Planning Climatology	5	-	-	5
31264	Structural Detailing and Drawing	-	-	4	4
31265	Architectural Model Making	-	-	4	4
31266	Computer Application in Architecture – II	-	-	6	6
31267	Project Work	-	-	4	4
Seminar		1	-	-	1
TOTAL		**17**	**-**	**18**	**35**

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ANNEXURE – II

SCHEME OF THE EXAMINATION

THIRD SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assess-ment Marks	Board Exam. Marks	Total Mark		
31231	Building Materials	25	75	100	40	3
31232	Theory of Architecture	25	75	100	40	3
31233	History of Architecture – I	25	75	100	40	3
31234	Building Construction and Detailing – I	25	75	100	50	3
31235	Architectural Drawing – I	25	75	100	50	3
31236	Basic Design	25	75	100	50	3
30001	Computer Applications Practical*	25	75	100	50	3
TOTAL		**175**	**525**	**700**		

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*Common to all Branches

FOURTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assess-ment Marks	Board Exam Marks	Total Mark		
31241	Mechanics of Structures	25	75	100	40	3
31242	Survey Theory	25	75	100	40	3
31243	History of Architecture – II	25	75	100	40	3
31244	Building Services – I	25	75	100	40	3
31245	Building Construction and Detailing – II	25	75	100	50	3
31246	Architectural Drawing – II	25	75	100	50	3
31247	Architectural Design Studio – I	25	75	100	50	3
TOTAL		**175**	**525**	**700**		

SCHEME OF THE EXAMINATION

FIFTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assess-ment Marks	Board Exam. Marks	Total Mark		
31251	Estimation and costing	25	75	100	40	3
31252	Environmental Engineering	25	75	100	40	3
31253	Building Services – II	25	75	100	40	3
31254	Elements of interior design	25	75	100	40	3
31255	Computer Applications in Architecture – I	25	75	100	50	3
31256	Architectural Design Studio – II	25	75	100	50	3
30002	Life and Employability Skill Practical*	25	75	100	50	3
TOTAL		**175**	**525**	**700**		

*Common to all Branches

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SIXTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment Marks	Board Exam Marks	Total Mark		
31261	Structural Design	25	75	100	40	3
31262	Professional Practice and Management	25	75	100	40	3
31281 31282 31283	**Elective:** Landscape Design and detailing Town Planning Climatology	25	75	100	40	3
31264	Structural Detailing and Drawing	25	75	100	50	3
31265	Architectural Model Making	25	75	100	50	3
31266	Computer Applications in Architecture – II	25	75	100	50	3
31267	Project Work	25	75	100	50	3
TOTAL		**175**	**525**	**700**		

EQUIVALENT PAPER ("L" SCHEME TO THE"M" SCHEME)

SEM	S. No	L- SCHEME	M - SCHEME
III w.e.f oct 16	1.	Building Materials	Building Materials (III Sem)
	2.	Theory of Architecture	Theory of Architecture (III Sem)
	3.	History of Architecture-I	History of Architecture-I (III Sem)
	4.	Building Construction & Detailing-I	**No Equivalent paper**
	5.	Architectural Drawing-I	Architectural Drawing-I (III Sem)
	6.	Basic design	Basic Design (III Sem)
	7.	Computer applications practical	Computer applications practical (III Sem)
IV w.e.f Apr 17	1.	Mechanics of structures	Mechanics of Structures (IV Sem)
	2.	Survey Theory	Survey theory (IVSem)
	3.	History of Architecture-II	History of Architecture-II (IV Sem)
	4.	Building Services-I	Building Services-I (IV Sem)
	5.	Building Construction & Detailing-II	No Equivalent Paper
	6.	Architectural Drawing-II	Architectural Drawing-II (IV Sem)
	7.	Architectural Design Studio-I	Architectural Design Studio-I (IV Sem)
V w.e.f oct 17	1.	Quantity Surveying & Costing	Quantity Surveying & Costing (V Sem)
	2.	Environmental Engineering	Environmental Engineering (V Sem)
	3.	Building Services-II	Building Services-II (V Sem)
	4.	Landscape design and detailing	Landscape design and detailing (VI Sem)
	5.	Computer Applications in Architecture –I	Computer Application in Architecture –I (V Sem)
	6.	Architectural Design Studio-II	Architectural Design Studio-II (V Sem)
	7.	Communication and Life Skill Practical	Life and Employability Skill Practical (V Sem)
VI w.e.f Apr 18	1.	Structural Design	Structural Design (VI Sem)
	2.	Professional Practice and Management	Professional Practice and Management (VI Sem)
	3.	Elective I. Elements of Interior Design II. Town Planning III. Climatology	I. Elements of Interior Design (V Sem) II. Town Planning (VI Sem) III. Climatology (VI Sem)
	4.	Structural Detailing & Drawing	Structural Detailing & Drawing (VI Sem)
	5.	Building Construction & Detailing-III	**No Equivalent Paper**
	6.	Computer Applications in Architecture –II	Computer Applications in Architecture –II (VI Sem)
	7.	Project Work & Viva –Voce	Project Work (VI Sem)

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CURRICULUM AND SCHEME OF EXAMINATIONS (FULL – TIME)

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

(With effect from 2015 – 2016)

HOURS PER WEEK – 35

NO. OF WEEKS PER SEMESTER: 15

SEM	SL.NO	SUBJECT CODE	NAME OF THE SUBJECT	HOURS PER WEEK	SCHEME OF EXAMINATIONS		
					DURATION (HOURS)	MAX MARKS	MIN. FOR PASS
III	1	31231	Building Materials	5	3	25 + 75	A total of 40 marks in Theory and 50 marks in Practical Subjects; with a minimum of 30 marks in Board's Theory and 35 marks in Board's Practical Examinations.
	2	31232	Theory of Architecture	4	3	25 + 75	
	3	31233	History of Architecture – I	5	3	25 + 75	
	4	31234	Building Construction and Detailing – I	5	3	25 + 75	
	5	31235	Architectural Drawing – I	5	3	25 + 75	
	6	31236	Basic Design	6	3	25 + 75	
	7	30001	Computer Applications Practical*	4	3	25 + 75	
IV	1	31241	Mechanics of Structures	6	3	25 + 75	
	2	31242	Survey Theory	4	3	25 + 75	
	3	31243	History of Architecture – II	4	3	25 + 75	
	4	31244	Building Services – I	4	3	25 + 75	
	5	31245	Building Construction and Detailing – II	5	3	25 + 75	
	6	31246	Architectural Drawing – II	5	3	25 + 75	
	7	31247	Architectural Design Studio – I	6	3	25 + 75	
V	1	31251	Estimation and costing	5	3	25 + 75	
	2	31252	Environmental Engineering	4	3	25 + 75	
	3	31253	Building Services – II	4	3	25 + 75	
	4	31254	Elements of interior design	5	3	25 + 75	
	5	31255	Computer Applications in Architecture – I	6	3	25 + 75	
	6	31256	Architectural Design Studio – II	6	3	25 + 75	
	7	30002	Communication and life skill Practical*	4	3	25 + 75	

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VI	1	31261	Structural Design	6	3	25 + 75	
	2	31262	Professional Practice and Management	5	3	25 + 75	
	3	31281 31282 31282	Elective • Landscape design and detailing • Town Planning • Climatology	5	3	25 + 75	
	4	31264	Structural Detailing and Drawing	4	3	25 + 75	
	5	31265	Architectural Model Making	4	3	25 + 75	
	6	31266	Computer Applications in Architecture – II	6	3	25 + 75	
	7	31267	Project work	4	3	25 + 75	

***Common to all Branches**

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Board Examination - Question paper pattern

Question paper pattern common to all theory subjects
Unless it is specified

PART A ***- (1 to 8) 5 Questions are to be answered out of 8 questions for 2 marks each.*****(Question No. 8 will be the compulsory question and *can be asked from any one of the units)(From each unit maximum of two 2 marks questions alone can be asked)***

PART B ***- (9 to 16)5 Questions are to be answered out of 8 questions for 3 marks each.*** **(Question No. 16 will be the compulsory question and *can be asked from any one of the units) (From each unit maximum of two 3 marks questions alone can be asked)***

PART C ***- (17 to 21) Five Questions will be in the Either OR Pattern. Students have to answer these five questions. Each question carries 10 marks. (Based on the discretion of the question setter, he/she can ask two five mark questions (with sub division A & sub division B) instead of one ten marks question if required)***

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III SEMESTER

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

III SEMESTER

2015-2016 onwards

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BUILDING MATERIALS

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP
M-SCHEME
(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31231**

Semester : **III Semester**

Subject Title : **BUILDING MATERIALS**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
BUILDING MATERIALS	5 Hours	75 Hours	25	75	100	3 Hours

TOPICS & ALLOCATION OF HOURS:

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Sl. No	Topics	Time (Hrs)
1.	CLASSICAL BUILDING MATERIALS	13
2.	CEMENT, MORTAR, CONCRETE	13
3.	TIMBER AND GLASS	13
4.	PROTECTIVE AND DECORATIVE FINISHES	13
5.	MISCELLANEOUS MATERIALS	13
6.	TEST / REVISION	10
TOTAL		75

RATIONALE:

Diploma holders in Architectural Assistantship are supposed to prepare working drawings of buildings. Knowledge of building materials and their behavior under varied climatic conditions is very essential from the point of construction for providing detailed specifications in the working drawings. Therefore, the course in building materials includes imparting basic knowledge in the properties and use of the basic materials like: stones, bricks, lime, cement, paints, timber, exterior and interior finish, glass, plastics, building hardware, roofing materials etc. Teachers are expected to demonstrate the samples of different materials, discuss their properties with particular REFERENCES to their use and appearance in particular situations depending upon climate and environmental conditions of the site, where the materials are to be used. Students should be encouraged to collect samples of various materials and efforts should be made to maintain a good building material museum.

NOTE

The students are also expected to go through Architecture Journals like Inside – Outside, Interiors Today, Design and Interiors, Architect and builder, Builders Friend etc. They should make scrapbook of relevant brochures.

OBJECTIVES

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To introduce the students to the world of building materials both traditional and modern so that they could make a proper choice for the various needs

31231- BUILDING MATERIALS

DETAIL SYLLABUS

CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**CLASSICAL BUILDING MATERIALS** **STONE:** Formation & Classification – Characteristics of good stone – Characteristics and Uses of granite, lime stone, sand stone, marble, and kottah. **BRICKS:** Methods of Brick Manufacturing - Characteristics of Good Bricks – Classification of Bricks and their Uses – Different Sizes and Shapes of Bricks and their Uses. **CLAY TILES:** Tile Manufacturing – Various Types of Tiles and their Uses. **LIME:** Source of Lime, Classification of Lime, Various Stage of Lime, Characteristics of Lime, Types and Uses.	**4** **5** **2** **2**
II	**CEMENT, MORTAR, CONCRETE** **CEMENT:** Composition of ordinary Portland cement-functions of cement	**5**

	ingredients – Characteristics - Types of Cement and Uses – Grades of cement (33, 43 and 53) - Setting time of cement - White and Colored Cements – Storage of cement. **MORTAR:** Characteristics of mortar - Types of Mortar using Lime, Cement, Mud, - Composite mortars using fly ash and surkhi - Proportions and Uses. **CONCRETE:** Characteristics of Concrete – Types of concrete using lime and cement - P.C.C, R.C.C. - Proportion of Cement concrete - Composite Concrete - Water Cement ratio and strength of Concrete - Mixing, Laying, Curing and Admixtures. Hollow concrete block and Paver blocks (Interlocking tile)	**3** **5**
III	**TIMBER AND GLASS:** **TIMBER:** Characteristics of Timber - Classification of Timber - Defects of Timber and their Causes - Seasoning, Preservation and Fire-Proofing of Timber - Common Varieties used in construction. Wood based Products and Uses (Veneering, Laminate, Plywood, block board, batten board, particle board).Bamboo – characters and uses in building industry. **GLASS:** Types of Glass and Uses – Glass blocks - Definition of Curtain wall – Purpose of Curtain walls - Structural Glazing .	**8** **5**
IV	**PROTECTIVE AND DECORATIVE FINISHES** Painting: Paints-Base, Vehicle, pigments, Solvent, Drier and Fillers. Preparation of various Paints and their Uses - Ready mix Paints - Cement, White wash, Colour wash, Oil Bound Distempers, Enamel, and Plastic Emulsion Paints- Defects in Painting, Painters Putty (solignum), Plaster Putty, Varnish, Lacquer, Epoxy Resin. Finishes for Granite, Marble, Mosaic, Wooden and Vitreous Tile – Anti skid and Anti stain measures, Anti-Termite and pest control Treatments.	**13**
V	**MISCELLANEOUS MATERIALS:** **THERMAL AND ACOUSTIC MATERIALS** – Thermocole, Cork, Glass Wool, Fiber boards and Patented Insulating Materials- Gypsum board **PLASTICS** – Classification and Uses - PVC, Fiber Reinforced Plastics (FRP), Ultra PVC sections. **METALS** - MS (Powdered Coated and Painted), Stainless Steel, Aluminum (Anodized and Powdered Coated) – Types and Uses Introduction to NANO materials – Vermiculate – Artificial sand – Recycled Aggregates. **WATER PROOFING AND DAMP PROOFING MATERIALS:** Various types of water proofing materials - Properties and functions- Various types of damp proofing materials - Properties and functions.	**4** **3** **3** **3**

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REFERENCES

1. A Text book of Civil Engineering Materials - Aggarwal & Arora
2. Building Materials - S.C. Rangwala
3. Materials of Construction - R.C. Smith
4. Building Materials - N.K.R. Moorthy
5. Materials of Construction - B.N. Das
6. Text book of Engineering Materials - S.L. Chawla

WEBSITES

http://www.baboo-Flooring.com
http:// ag.avizona.edu/SWES
http://www/angelfite.com/in
http://www.idrc.ca/libary/documents/104800/chapz-e.html
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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

III SEMESTER

2015-2016 onwards

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THEORY OF ARCHITECTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP
M -SCHEME
(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31232**

Semester : **III Semester**

Subject Title : **THEORY OF ARCHITECTURE**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
THEORY OF ARCHITECTURE	4 Hours	60 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	INTRODUCTION AND ELEMENTS OF ARCHITECTURE	10
2	ARCHITECTURAL FORMS & SPACE	10
3	COMPONENTS OF DESIGN AND PRINCIPLES OF COMPOSITION	10
4	ORGANIZATION OF FORMS & SPACES	10
5	ARTICULATION AND CIRCULATION	10
6	TEST / REVISION	10
TOTAL		60

RATIONALE

Students of Architectural Assistantship at diploma level are supposed to understand basic principles of theory of architecture while designing some building. All students should know the physical aspects of Architecture like: form, function, balance, light and shadow, shape, plane, volume, line, proportions, rhythm, texture, emphasis, contrast, color and other related elements. Therefore, the subject theory of architecture is very important for students undergoing diploma course in Architectural Assistantship because it is the basis of Architecture. Teachers while imparting instructions are expected to teach various elements used in designing buildings. Teachers may make use of models and audio-visual aids to clarify the concepts. Group discussions and seminars may also be organized to discuss various concepts and principles involved in the design. It is recommended that teachers may organize visits to work sites to clarify the concepts and principles involved.

OBJECTIVES

- To know about the principles of architecture
- To know about the elements of architecture
- To understand the concepts of various buildings.
- To study the organization of forms and spaces
- To gain knowledge about the articulation and circulation of buildings.

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31232- THEORY OF ARCHITECTURE
DETAIL SYLLABUS
CONTENTS: THEORY

UNIT	NAME OF THE TOPIC	HOURS
I	**INTRODUCTION AND ELEMENTS OF ARCHITECTURE** Definition of Architecture - Architectural design –Difference between architecture and civil engineering – Architect – Civil Engineer - An analysis, Integration of aesthetic and function - Elements of Architecture – point, line, plane and volume - various building examples.	**10**
II	**ARCHITECTURAL FORMS & SPACE** Form & space - Unity of opposites, Shapes, visual and emotional effects of geometric forms - The sphere, the cube, the pyramid, the cylinder and cone and their derivatives, Subtractive & additive forms – linear, radial, centralized, clustered, grid - various building examples - Form defining space – horizontal elements, vertical elements - Space defining elements, openings in space-defining elements.	**10**

III	**COMPONENTS OF DESIGN AND PRINCIPLES OF COMPOSITION** **COMPONENTS:** Proportion, scale - Ordering principles - balance, rhythm, symmetry, datum, hierarchy, pattern, and axis with building examples. **PRINCIPLES OF COMPOSITION:** Unity, harmony and specific qualities of design to include dominance, punctuating effect, dramatic effect, fluidity, climax, texture, color and contrast with building examples.	**5** **5**
IV	**ORGANIZATION OF FORMS & SPACES** **SPATIAL RELATIONSHIPS:** i) Space within space ii) Interlocking spaces iii) Adjacent spaces iv) Space linked by a common space. **SPATIAL ORGANIZATION:** influencing factors and their types i) Centralized ii) Linear iii) Radial iv) Clustered v) Grid Works of contemporary architects and their ideologies and philosophies using the forms and space – F.L.Wright, Le Corbusier	**10**
V	**ARTICULATION AND CIRCULATION** **ARTICULATION OF FORM**: Types: i) Edges and corners, ii) Surfaces articulation - Works of contemporary architects and their ideologies and philosophies using the forms and space – Louis Sullivan, Philip Johnson. **CIRCULATION :** Function of building circulation- components of building circulation - The building approach, the building entrance, configuration of the path, path space relationship, form of circulation space with examples - Simple circulation diagram for buildings - Examples - Circulation as a component in the works of modern and post modern architects – Louis Khan, Charles Correa,	**5** **5**

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REFERENCES

1. V.S.Pramar, Design Fundamentals in Architecture, Samaiya Publications Private Ltd., New Delhi.
2. Paul Alan Johnson - The Theory of Architecture - Concepts and themes, Van Nostrand Reinhold Co., New York.
3. Francis D.K.Ching, Architecture-Form, Space and Order, Van Nostrand Reinhold Company, New York, 1979.
4. Helm Marie Evans and Caria David Dunneshil, An initiation to design,Macmillan Publishing Co. Inc., New York
5. Ernest Burden - Elements of Architectural Design - A visual resource, VanNostrand Reinhold, 1994.
6. Sir Bannister Fletcher - A History of Architecture, Butterworths, London, 1987.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

III SEMESTER

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2015-2016 onwards

HISTORY OF ARCHITECTURE - I

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP
M -SCHEME
(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31233**

Semester : **III Semester**

Subject Title : **HISTORY OF ARCHITECTURE - I**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
HISTORY OF ARCHITECTURE – I	5 Hours	75 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	EGYPTIAN & WEST ASIA	13
2	GREECE & ROME	13
3	EARLY CHRISTIAN AND BYZANTINE	13
4	ROMANESQUE & GOTHIC	13
5	RENAISSANCE	13
6	TEST / REVISION	10
TOTAL		75

RATIONALE:

Students of architectural Assistantship at diploma level must be well conversant with the skills of preparing working drawings, vocabulary, broad exposure to communicate and understand the vocabulary and terminology in the field of architecture. The course on History of Architecture develops appreciation regarding past and current trends in the field of architecture. The teacher should try to create interest among the students for this course by organizing site visits to the local old monuments. Use of audio-visual aids, emphasis on materials, construction methods, structural system and design concepts involved and also motivate the students.

OBJECTIVES:

- To understand the new technology and new materials, general trend, effect of society and terminology on Architecture.

31233- HISTORY OF ARCHITECTURE – I
DETAIL SYLLABUS
CONTENTS: THEORY

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Unit	Name of the Topic	Hours
I	**EGYPTIAN & WEST ASIA** **EGYPT:** Architectural Character - Mass to Trabeate construction and general characteristics of Egyptian Architecture - Great Pyramid of Cheops, Gizeh, Great temple of Amman, Karnak. **WEST ASIA:** Babylonian and Persian cultures - architectural character - Ziggurat, Urnammu, - Palace at Persepolis – hanging garden of Babylon	**13**
II	**GREECE & ROME** **GREECE** - Architectural character - Orders - Doric, lonic, Corinthian: Parthenon, Athens: Theatre at Epidaurous **ROME** - Architectural Character - Advances in Engineering - About roman aqueducts - pont du gard, nimes –Pantheon, Rome	**13**
III	**EARLY CHRISTIAN AND BYZANTINE** Evolution of church forms - Pendentives & Dome in Byzantine Architecture - Architectural character - St. Sophia, Constantinople, St. Vitale, Ravenna	**13**
IV	**ROMANESQUE & GOTHIC** **ROMANESQUE** - Architectural character in Italy, France and England – Abbay Aux- Homes **GOTHIC** - Evolution of vaulting and development of structural systems - Architectural character –Notre Dame, Paris	**13**

V	**RENAISSANCE** The idea of rebirth and revival of art - Renaissance, High Renaissance and Baroque Periods - Features of a typical Renaissance Palace - Dome construction - St. Paul's, London. - St. Peter's, Rome.	**13**

REFERENCES

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone Press
2. Pier Liugi Nervi, General Editor - History of World Architecture- Series, Harry N.Abrams, Inc.Pub.,New York
3. S.Lloyd and H.W.Muller, History of World Architecture-Series, Faber and Faber Ltd.,London
4. Spiro Kostof - A History of Architecture - Setting and Rituals, Oxford University Press,London
5. Gosta, E.Sandsform, Man the Builder, Mc.Graw Hill Book Company, New York

WEBSITES

http://library.advanced.org/10098
http://www.encylopedia.com/articles/05371.html
http://www.cup.org/Titles/09/0521094526.html

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

III SEMESTER

2015-2016 onwards

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BUILDING CONSTRUCTION AND DETAILING – I

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP
M-SCHEME
(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31234**

Semester : **III Semester**

Subject Title : **BUILDING CONSTRUCTION AND DETAILING – I**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
BUILDING CONSTRUCTION AND DETAILING – I	5 Hours	75 Hours	25	75	100	3 Hours

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RATIONALE:

Students of architectural Assistantship at diploma level are supposed to prepare structural drawings, working drawings and detailed drawings of various components of buildings. Also students are expected to design small residential buildings. For this purpose, it is essential that students are taught various components of building construction comprising of: foundations, super structure, openings, roofs, staircases, flooring and finishing and other allied building components. Therefore, the subject of building construction is very important for students undergoing diploma course in architectural Assistantship. Teachers while imparting instructions are expected to show various components of buildings under construction, make use of models or other audio-visual media to clarify the concepts. While preparing drawings, teachers should lay considerable stress on proportioning, dimensioning, specification writing and printing and composition of drawing work. Teachers should also emphasis on environmental aspects like lighting, ventilation and orientation of buildings. Students should be asked to maintain a sketch book for recording the observations from site visits. While conducting viva, teachers should point out specific mistakes done by students in the preparation of drawings.

31234- BUILDING CONSTRUCTION AND DETAILING – I
DETAIL SYLLABUS
CONTENTS: PRACTICAL

NOTE: -1. Units I to IV Theory to run concurrently with Unit V Detailing.

2. Designing is not required for Unit V. Construction details to be drawn to the given Specifications only.

Unit	Name of the Topic	Hours
I	**MASONRY – STONE, BRICK & COMPOSITE** **STONE MASONRY**: Definition – Technical terms – Dressing of Stones – Joints in Stone Masonry – Classification of Stone Masonry**.** **BRICK MASONRY**: Technical terms – Bonds in Brick Work (English and Flemish bond up to two brick wall) – Bonds in Pier – Tee junction – Squint junction **MASONRY AND PARTITION WALL** Masonry – load Bearing Wall – Partitions – Retaining Walls and Breast wall – cavity wall construction – reinforced brick work.	**09**
II	**FOUNDATION** Types of Soils – Types of Loads – Bearing Power of Soil – Types of Foundation – Causes of Failure of Foundation and measures to prevent such failures – Dewatering of Foundation Trenches – Pile Foundation – Types of Pile Foundations. **FLOORS & ROOFS** **FLOORS**: – Types of Flooring- Timber, P.C.C, R.C.C., Stone, Tile, Ribbed Flooring **ROOFS & ROOF COVERINGS -** Technical terms - Classification of Roofs – Pitched Roof –– Types of Pitched Roof (excluding Steel Trussed Roof) **–** Flat Roofs – Roof coverings for Pitched Roofs – FRP, PVC,AC sheet, Aluminum Sheets and country & Mangalore tiled roofing	**12**
III	**CEMENT CONCRETE CONSTRUCTION (P.C.C. & R.C.C.)** Definition of P.C.C. & R.C.C. – Water Proofing of Concrete – Reinforcement – Advantages of R.C.C. – Causes of Failure, Rehabilitation of R.C.C. Structures Various Building Components in a Single Storied Building and their functions **DAMP PROOFING**: Source of dampness- Causes of dampness – Methods of Damp Proofing – Materials used for Damp Proofing – Selection of Material for D.P.C. – Damp Proofing Treatment in Buildings (Foundations, Floors, Walls, Roofs, and Parapet Walls & Basement)	**12**

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IV	**TIMBER JOINTS, DOORS & WINDOWS.** TIMBER JOINTS**:** Technical terms – Classification of Joints. DOORS & WINDOWS**:** Technical terms – Location of Doors – Size of Doors – Types of Doors & Windows – Fixtures and Fastenings for Doors and Windows **ARCHES & LINTELS, DAMP PROOFING** ARCHES & LINTELS: Technical terms – Types of Arches – Materials used for Construction – Types of Lintels.	**12**
V	**DETAILING** (Specification to be given for each detail. Design not required)	**30**

LIST OF PLATES:

1. Plan, Elevation and Isometric view of stone masonry**(Sketch only).**
2. Plan, Elevation and Isometric view of alternate courses for English bond**(Sketch only).**
3. Plan, Elevation and Isometric view of alternate courses for Flemish bond**(Sketch only).**
4. Plan, elevation and section of Partition walls using timber, glass to half full size scale detailing. Details shall be prepared to half full size scale.
5. Plan and sectional elevation of Spread Footing (Stone and Brick), Plan and sectional elevation of Isolated Footing, Combined Footing (R.C.C)
6. Cross section of different types of floors and Cross section of different types of Roof coverings.
7. Elevation of all types of Arches and Cross section of Lintels.
8. Damp proofing of Foundations, Basement wall, Floors, Roofs, and Parapet Walls**(Sketch only).**
9. Plan and Cross section of a single storied building showing various building components.
10. Plan, Elevation, Section and Construction details of Wooden Paneled Door and Flush Door. Details shall be prepared to full size scale.
11. Plan, Elevation, Section and Construction details of Partly Paneled and Partly Glazed Door. Details shall be prepared to full size scale.
12. Plan, Elevation, Section and Construction details of Aluminum Glazed door / Window. Details shall be prepared to full size scale.
13. Plan, Elevation, Section and Construction details of Steel door / Steel Glazed Window. Details shall be prepared to full size scale.
14. Plan, Elevation, Section and Construction details of Wooden Paneled window and Glazed window. Details shall be prepared to full size scale.

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ALLOCATION OF MARKS

Part A: Theory question of 8 questions, two questions from each unit carry five marks each with a total mark **of 30**

Part B: Any two of the exercises from the exercises that are done in the studio during the semester carries 2x20 = **40 marks**.

Viva-Voce : 5 marks

Total : 75 Marks

REFERENCES:

1. Building Construction - S.C.Rangwala
2. A text book of building construction – Arrora & Bindrra
3. Building construction – R.C.Mitchell
4. A Text book of Building Construction. - R.S. Deshpande
5. Building Construction - Richard Greenhaigh
6. Building Drawing - Shah & Kale

WEBSITES

http://www.baboo-Flooring.com
http:// ag.avizona.edu/SWES
http://www/angelfite.com/in
http://www.idrc.ca/libary/documents/104800/chapz-e.html
http://www/angelfite.com/inz/granite
http://www.ibex-ibex-intl.com
http://www.inika.com/chitra
http://www.routbdge.com
http://www.ventura india.com

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DETAILS OF INSTRUMENTS

Drafting Table with stool = Each 1 per student

Pinner board - 1No

III SEMESTER

31234 - BUILDING CONSTRUCTION AND DETAILING – I

MODEL QUESTION PAPER

Duration: 3HRS **Max.marks:75**

NB: 1. Answer any 6 question from part A; each questions carries 5 mark
2. Answer the questions in part B; by choosing it by lot which Carry 2x20=40marks.
3. Viva-Voce 5 marks

PART-A

1. Define the following
   a) Header
   b) stretcher
2. What are the uses of stone masonry?
3. What are the different types of foundation? Explain any one in detail.
4. Define bearing capacity of soil.
5. What are the different types of concrete? Explain any one in detail
6. Write a short note on Various Building Components in a Single Storied Building and their functions
7. What are the different types used in timber construction? Explain any one in detail.
8. What are principles to be followed in locating doors and windows in a building?

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PART-B

9. Draw the Plan, Elevation and Isometric view of alternate courses of two brick wall in English bond. (Question is chosen by lot)

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

III SEMESTER

2015-2016 onwards

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ARCHITECTURAL DRAWING – I

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP
M-SCHEME
(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31235**

Semester : **III Semester**

Subject Title : **ARCHITECTURAL DRAWING - I**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	Duration
ARCHITECTURAL DRAWING - I	5 Hours	75 Hours	25	75	100	3 Hours

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RATIONALE:

The students of diploma in Architectural Assistantship should have sufficient skills to draw isometric drawings, besides this they should also be introduced to pencil sketching and measured drawing of simple objects. They should be given sufficient exercises in rendering of isometric drawings, pencil sketching and measured drawing. So that they are able to perform well in the field/industry.

31235 - ARCHITECTURAL DRAWING - I
DETAIL SYLLABUS
CONTENTS: PRACTICAL

Unit – I

PENCIL SKETCHING - 22 Hours

Exercise with Straight line, curvilinear line, Planes, Volume and Texture to understand various forms in Nature and Manmade forms Freehand Sketching Exercise to understand the Characteristic of Elements in Nature and Manmade forms - Sketching from memory- Basic Knowledge of Scale, Proportion, Light and Shade - Enlarging and Reducing of drawing - Sketching of various Compositions with Natural and Geometrical Form - Rendering and sketching exercises with Pencil .(Minimum of 6 exercises)

Unit – II

ARCHITECTURAL ISOMETRIC DRAWINGS - 23 Hours

Architectural details like pergolas, some alphabetical shapes – addition of solids and voids that will create more 3 dimensional expression - Sunshades, Steps, Stools, Table and Chair.(Minimum of 6 exercises)

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Unit – III

MEASURED DRAWING -30 Hours

Principle of basic architectural drafting - line value, lettering basic and sections - presentation formats. Measured drawing of simple objects like furniture, entrance gates, etc. and building components like columns, cornice, door, window, etc.(Minimum of 3 exercises)

DOCUMENTATION OF A BUILDING

Detailed measured drawing of a building. (Minimum of 1 exercise)

ALLOCATION OF MARKS

Part-A	**:** Any one question from unit – I which carries **15 marks**. (By lot) (PENCIL SKETCHING)
Part-B	**:** Any one question from unit – II which carries 30 **marks**. (By lot) (ARCHITECTURAL ISOMETRIC DRAWINGS)
Part-C	**:** Any one question from unit – III which carries **25 marks**. (By lot) **(M**easured Drawing)
Viva-voce	**: 5 marks**

REFERENCES:

1. IH.Morris,Geometrical Drawing for Art Students - Orient Longman,Madras,1982.
2. George K.Stegman,Harry J.Stegman, Architectural Drafting Printed in USA by American Technical Society,1966.
3. Francis Ching, Architectural Graphics, Van Nostrand Rein Hold Company, New York, 1964.
4. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York,1 964.
5. Clande Batley, Indian Architecture, D.B,Taraporevale Sons and Co.,Ltd.,Bombay.
6. William Kirby Lockard, Drawing as a Means to Architecture, Van Nostrand,Reinhold Company, New York.
7. George A.Dinsmore, Analytical Graphics - D.Van Nostrand, Company Inc., Canada.
8. Grammer of drawing for artist's designer - Colin Hayes

WEBSITES

Http://www infinit.net - elements of design
http://www.Okino.com - design, visualization, rendering system
http://www.interface - signage.com
http://www.design community.com - arch rendering, 3D design
http://www.cs.brown.edu
http://www.dtcc.edu/-document,project info - Arch.dwg.

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DETAILS OF INSTRUMENTS

Drafting Table with stool = 40 nos

Pinner board - 1

III SEMESTER

31235 - ARCHITECTURAL DRAWING – I
MODEL QUESTION PAPER

Duration: 3hrs **Max.marks:75**

PART- A (15 Marks) **Allotted time: 30 minutes**

PENCIL SKETCHING

I. Sketch the given object and render with light and shade. (sketching chart A3 size / student)

(The objects can be of anything with different texture, color, size, and material. The objects have to composed and keep it on a table where light source is plenty. Minimum of 5 objects and maximum of 7 objects should be composed. The students can pick lot and select any one composition. Examples: objects like perfume bottles, vegetables, fruits, etc…)

PART- B (15 X 2= 30 Marks) **allotted time: 50 minutes**

II. Draw isometric drawing for the following (Reproduce the plan, elevation and side elevation) A2 sheet – 01 / student

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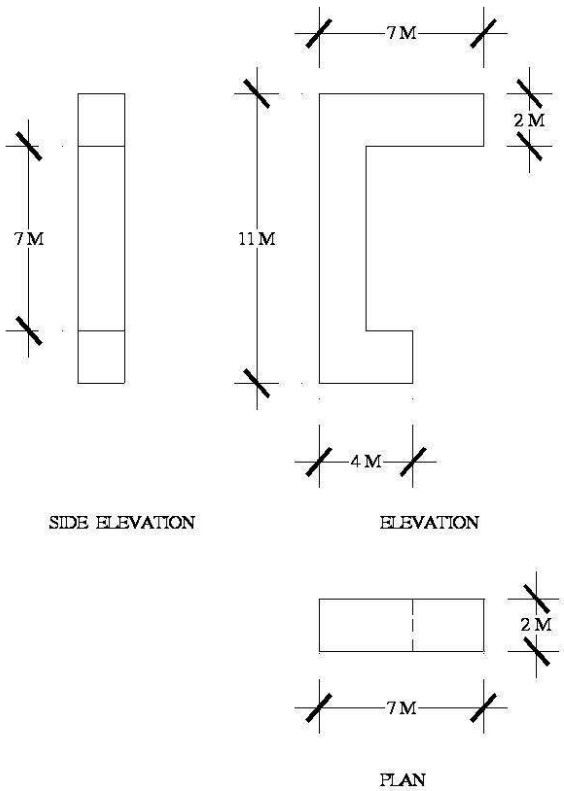
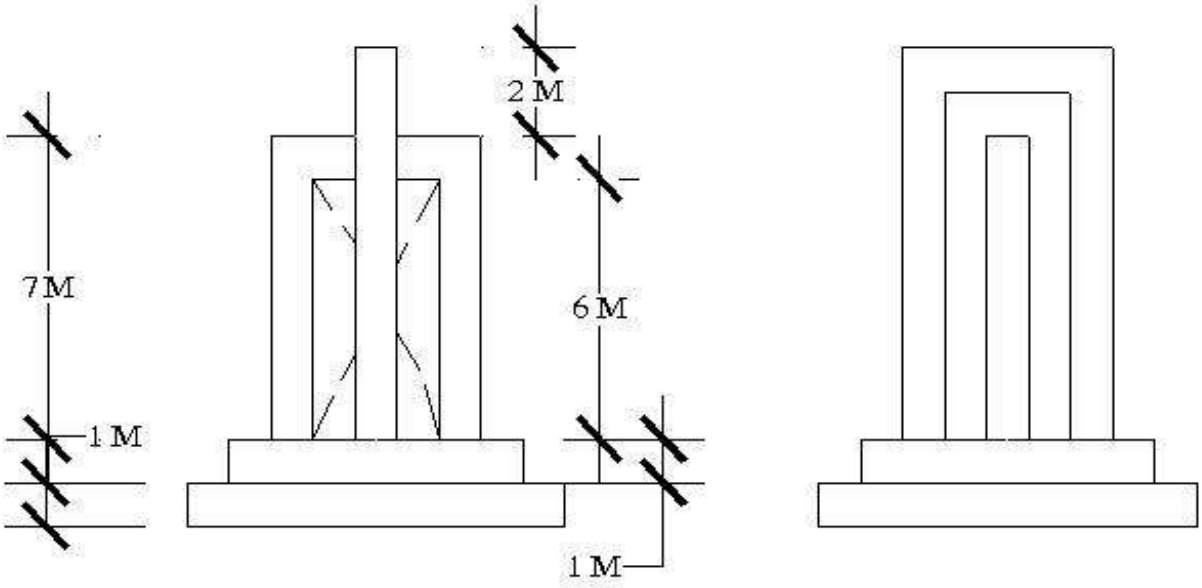
1)



2)



ELEVATION SIDE ELEVATION

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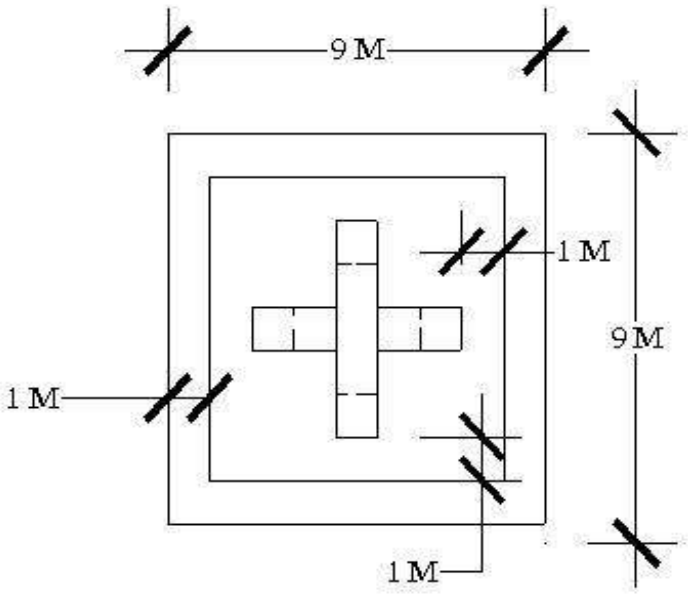

PLAN

PART- C (25 Marks) MEASURED DRAWING allotted time: 1 hour and 40 min

III. Document and detail the drawings of given chair / door / window / table / wall / class room. Measure the objects and detail out the plan, section, elevations. (A2 sheets – 2 / student)

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

III SEMESTER

2015-2016 onwards

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BASIC DESIGN

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP
M-SCHEME
(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name **: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code **: 31236**

Semester **: III Semester**

Subject Title **: BASIC DESIGN**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
BASIC DESIGN	6 Hours	90 Hours	25	75	100	3 Hours

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RATIONALE

Student of Architectural Assistantship at diploma level are expected to assist in the preparation of architectural models of various kind in their professional career. This skill can also for basic of self employment Architecture model as three dimensional representations are made in different mediums. The student should be acquainted with all of these mediums.

GUIDELINES

1. Course in Basic Design shall be conducted by giving small simple exercises
2. Each exercise shall be aimed at teaching the principles of Aesthetics and Visual Design and its application in Architecture forms and spaces.
3. Goals and Objectives of each exercise shall be made clear to the students before Starting the exercises.
4. Each exercise shall have meaningful sequence with the previous exercises and the next exercise.

DETAIL SYLLABUS

CONTENTS: PRACTICAL

1. ELEMENTS OF VISUAL COMPOSITIONS

Assignment shall be aimed at understanding role of the following basic elements of visual design existing in paintings, compositions, murals, sculptures, building and in a nature – Dots, Lines, Planes, Patterns, Shapes, Forms, Spaces, Colour, Texture, Levels, Light,etc. (Minimum 4 exercises by covering all the components)

2. PRINCIPLES OF VISUAL COMPOSITIONS

The exercises shall be aimed at understanding and using principles like Repetition, Rhythm, Radiation, Focal point, Symmetry, asymmetry, Background, Foreground, Sense of Direction, Harmony, Balance and Proportion.(Minimum 4 exercises by covering all the components)

3. PLANER FORMS

This exercise shall be aimed at creating sculptures out of Mount Board, Box Board/ Metal Foils and any other planer material and also exploring the possibility of adopting the sculptures to Architectural functions. (Minimum 2 exercises by covering all the components)

4. PAPER FORMS

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This exercise shall include explorations of various folded paper forms and its possible use in Architectural Spaces. (Minimum 1 exercise)

5. SOLIDS AND VOIDS

This exercise shall include creation of symbolic sculptural forms and spaces using mount board / any mouldable material. (Minimum 2 exercises)

6. LINEAR FORMS

Students should be asked to create Atrium Sculptures, Space sculptures, Geodesic Domes etc. for outdoor and indoor Architectural spaces using Match sticks / metal Wire (Minimum 1 exercise)

7. APPLICATION OF BASIC DESIGN IN ARCHITECTURE (any one for each)

The exercise shall be aimed at learning to adopt compositions, murals and sculptures for semi- recreational and semi - functional Architectural spaces like Outdoor Dining Area, Entrance Gates of Exhibition, Living room, Bedroom, Kitchen, Atrium or Courtyard with levels. (Minimum 6 exercises by covering all the topics)

ALLOCATION OF MARKS

Part-A: Any one question from units 1 & 2 which carries.	**15 marks**. (By lot)
Part-B: Any one question from units 3 to 6 which carries.	**20 marks**. (By lot)
Part-C : Any one question from unit 7 which carries.	**35 marks**. (By lot)
Viva – voce :	**5** marks

Note: Part – A and Part- B questions will be answered by using Mount Board and Snow white Sheet.

REFERENCES:

1. Francis D.K.Ching - Architecture - Form Space and Order Van Nostrand Reinhold Co., (Canada), 1979.
2. John W.Mills - The Technique of Sculpture,B.T.Batsford Limited, New York - Reinhold Publishing Corporation, London,1966.
3. lda Fezei, Henny Moore, Hamlyn, London, New York, Sydney, Toronto, 1972.
4. C.Lawrence Bunchy - Acrylic for Sculpture and Design, 450,West 33rd Street,New York,N.Y.10001,1972.
5. Orbid Publishing Ltd., Know how the complete course in Dit and Home Improvements NO.22,Bed Fordbury,London,W.C.2,1981.
6. Maitland Graves, The Art of Colour and Design, McGraw Hill Book co., 1951 (2^{nd} edition).
7. V.S. Paramar Design Fundamentals in Architecture, Somalya Publications (P) Ltd., New Delhi, 1973.
8. Robbert S. Oliver, The Complete Sketch, VNR, New Delhi, 1989.
9. Tokyo Musashino Academy of Art – Introduction to Pencil Drawing, Graphic Sha Publishing co., Ltd, Japan, 1991.

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WEBSITES

http://www infinit.net - elements of design
http://www.Okino.com - design, visualization, rendering system
http://www.interface - signage.com
http://www.design community.com - arch rendering, 3D design

DETAILS OF INSTRUMENTS

Drafting Table with stool	=	Each 1 per student
Pinner board	-	1 Nos

III SEMESTER

31236 - BASIC DESIGN
MODEL QUESTION PAPER

Duration: 3HRS **Max.marks : 75**

PART- A (15 Marks)

I. Create a patteren A3 size sheet with lines and curves. The lines should follow a pattern which should be symmetrical and should not touch each other. The pattern should not be an abstract and the output should be a form from nature. Materials: A3 size thick sheets, color pencils, sketch pens

PART- B (20 Marks)

II. Do any one Match stick model for the following conditions
- 3 module x 3 module pyramid OR
- 3 module x 6 module pyramid

PART- C (35 Marks)

III. Design a sculpture for courtyard space of size 10M x 10M. The space is for recreational purpose in an urban apartment. The height of the court yard is open towards 5 floors.

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Materials for the sculpture: ½ kg of clay or plaster of Paris / wire mesh / base board / color agents

Note: Concept sheet has to be submitting in 15 minutes and the sheet to be evaluated for 5 marks. The deviation should not be more in terms of elements and form of the model

Note: The class exercise models should not be used for the exams. The problems should orient towards the exercises but not the same.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

III SEMESTER

2015-2016 onwards

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COMPUTER APPLICATIONS PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU.

M- SCHEME

(Implemented from the academic year 2016-2017 onwards)

Course Name : For All Branches

Subject Code : 30001

Semester : III

Subject title : COMPUTER APPLICATIONS PRACTICAL

TEACHING & SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Course	Instruction		Examination			
			Max.			Duration
	Hours/ week	Hours/ Semester	Internal Assessment	Board Examination	Total	
COMPUTER APPLICATIONS PRACTICAL	4Hrs	60 Hrs	25	75	100	3Hrs

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RATIONALE:

The application of Computer knowledge is essential the students of all disciplines of Engineering in addition to their respective branch of study. The Computer Application Practical course facilitates the necessary knowledge and skills regarding creating, working and maintaining the documents and presentation of documents with audio visual effects ina computer and produces necessary skills in E- Learning and Chatting tools..

OBJECTIVES:

On completion of the following exercises, the students will be able to

- Use the GUI operating systems
- Familiarize and customize the desktop
- Use the different facilities available in the word processor
- Prepare Power Point presentation with different formats
- Expose E-learning tools and chatting tools
- Analyze the datasheet
- Create and manipulate the database
- Create different types of charts
- Prepare PowerPoint presentation
- Understand Internet concepts and usage of e-mail

GUIDELINES:

- All the experiments given in the list of experiments should be completed and all the experiments should include for the end semester practical examination.
- The computer systems should be 1:1ratioforpracticalclasses

SYLLABUS
LAB EXERCISES
SECTION – A

GRAPHICAL OPEARTING SYSTEM

Introduction to GUI OS; Features and various versions of GUI OS & its use; Working with GUI OS; My Computer & Recycle bin ; Desktop, Icons and Explorer; Screen description & working styles of GUI OS; Dialog Boxes & Toolbars; Working with Files & Folders; simple operations like copy, delete, moving of files and folders from one drive to another, Shortcuts &Autostart; Accessories and Windows Settings using Control Panel- setting common devices using control panel, modem, printers, audio, network, fonts, creating users, internet settings, Start button & Program lists; Installing and Uninstalling new Hard ware & Software program on your computer - Copying in CD/DVD settings – Recording Audio files.

Exercises

1. a. Installing screen saver and change the monitor resolution by 1280X960
   b. Setting wall papers
   c. Creating, moving, deleting and renaming a folder
   d. Copy, paste and cut a folder/file
   e. Displaying the properties for a file or folder
2. a. Restoring files and folders from Recycle bin
   b. Creating short cuts for folder/file
   c. Finding a file or folder by name
   d. Selecting and moving two or more files/folders using mouse
   e. Sorting folders/files.

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WORD PROCESSING

Introduction to Word Processing – Examples- Creation of new documents, opening document, insert a document into another document. Page setup, margins, gutters, font properties, Alignment, page breaks, header footer deleting, moving, replace, editing text in document. Saving a document, spell checker.

Printing a document. Creating a table, entering and editing, Text in tables. Changing format of table, height width of row or column. Editing, deleting Rows, columns in table. Borders, shading, Templates, wizards, drawing objects, mail merge.

Exercises

3. Create the following table and perform the operations given below

DAYS	1	2	3	4	5	6	7	8
MON	← TEST →		**A**: JPP			CA	RDBMS	TUT
			B:RDBMS					
TUE	CA	OOP	CN	RDBMS	**A**: RDBMS			
					B: JPP			
WED	CN	RDBMS	OOP	RDBMS	COMMUNICATIO N		CN	CA
THU	OOP	**A**: JPP			CA	RDBMS	CN	OOP
		B: RDBMS						
FRI	COMMUNICATI ON		**A**: RDBMS		OOP	CN	RDBMS	CA
			B: JPP					
SAT	OOPS	RDBMS	CN	CA	---------			

4. Create a standard covering letter and use mail merge to generate the customized letters for applying to a job in various organizations. Also, create a database and generate labels for the applying organizations.
5. Create a news letter of three pages with two columns text. The first page contains some formatting bullets and numbers. Set the document background colour and add 'confidential' as the watermark. Give the document a title which should be displayed in the header. The header/ footer of the first page should be different from other two pages. Also, add author name and date/ time in the header. The footer should have the page number.

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SPREADSHEET

Introduction to Analysis Package – Examples - Concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

Exercises

6. Create a result sheet containing Candidate's Register No., Name, Marks for six subjects. Calculate the total and result. The result must be calculated as below and failed candidates should be turned to red.

   Result is Distinction if Total >= 70 %

   First Class if Total > = 60 % and < 70 %

   Second Class if Total >= 50 % and < 60 %

Pass if Total >= 35 % and < 50 %

Fail otherwise

Create a separate table based on class by using auto filter feature.

7. Create a table of records with columns as Name and Donation Amount. Donation amount should be formatted with two decimal places. There should be at least twenty records in the table. Create a conditional format to highlight the highest donation with blue color and lowest donation with red colour. The table should have a heading.

8. Create line and bar chart to highlight the sales of the company for three different periods for the following data.

SALES BAR CHART

Period	Product1	Product2	Product3	Total
JAN	35	40	50	125
FEB	46	56	40	142
MAR	70	50	40	160

SECTION – B

DATABASE

Introduction – Menus – Tool bar – Create – Edit – Save – Data types – Insert – Delete – Update – View – Sorting and filtering – Queries – Report – Page setup – Print.

Exercises

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9. Create Database to maintain at least 10 addresses of your class mates with the following constraints

- Roll no. should be the primary key.
- Name should be not null

10. create a students table with the following fields: Sr.No, Reg. No, Name, Marks in 5 subjects. Calculate total and percentage of 10 students. Perform the following queries.

- To find the details of distinction student
- To find the details of first class students
- To find the details of second class students

11. Design a report for the above exercise to print the consolidated result sheet and mark card for the student.

PRESENTATION

Introduction - Opening new presentation, Parts of PowerPoint window – Opening -Saving and closing presentations - Features of PowerPoint, Background design, Word art, Clip art, Drawings,3D settings - Animations, Sound, Views, types of views - Inserting and deleting

slides, arranging slides, slides show, rehearsal, setup show, custom show - Creating custom presentations, action setting, auto content wizard, working with auto content wizard

Exercises

12. Make a marketing presentation of any consumer product with at least 10 slides.
    Use different customized animation effects on pictures and clip art on any four of the ten slides.
13. Create a Presentation about our institution or any subject with different slide transition with sound effect.

INTERNET

Introduction – Getting acquainted with Internet Connection - Browsers – Website URL - Open a website – Net Browsing - Email: Creating E-mail id – Sending , receiving and deleting E-mail - Email with Attachments – CC and BCC - Chatting – Creating Group mail - Google docs – Search Engines – Searching topics .

Most Popular Social Networking Sites : History – Features – Services – Usage of Face book , Twitter and Linkdln.

Transferring data through wifi / bluetooth among different devices.

Introduction to cybercrime – Software Piracy – Viruses – Antivirus Software

Exercises

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14. Create an e-mail id and perform the following
    - Write an e-mail inviting your friends to your Birthday Party.
    - Make your own signature and add it to the e-mail message.
    - Add a word attachment of the venue route
    - Send the e-mail to at least 5 of your friends.

15. Create a presentation on Google docs. Ask your friend to review it and comment onit. Use "Discussion" option for your discussions on the presentation.

Hardware and Software Requirements

Hardware Requirements:

- Computers – 36Nos
    - Intel Core i3 Processor
    - 500 GB Hard Disk, 2 MB RAM
    - 14” Monitor
- Projector – 1 Nos
- Laser Printer – 1 No
- Internet Connection – Minimum of 512 KB

Software Requirement

- Any GUI Operating System
- Open Source Software / MS- Office

1. SemesterEndExamination–75 Marks

Content	Max.Marks
Writing Procedure – One Question from Section A	15
Demonstration	15
Results with Printout	5
Writing Procedure – One Question from Section B	15
Demonstration	15
Results with Printout	5
Viva voce	5
Total	**75MARK**

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IV SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

IV SEMESTER

2015-2016 onwards

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MECHANICS OF STRUCTURES

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOM IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31241**

Semester : **IV Semester**

Subject Title : **MECHANICS OF STRUCTURES**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
MECHANICS OF STRUCTURES	6 Hours	90 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	INTRODUCTION, STRESS ,STRAIN & ELASTIC CONSTANTS APPLICATION OF STRESS AND STRAIN IN ENGINEERING FIELDBEHAVIOUR OF DUCTILE AND BRITTLE MATERIAL	16
2	SHEAR FORCE AND BENDING MOMENT	16
3	CENTRE OF GRAVITY & MOMENT OF INERTIA	16
4	AREA MOMENT METHOD & THEOREM OF THREE MOMENTS	16
5	COLUMNS AND STRUTS & PIN JOINTED FRAMES	16
6	TEST / REVISION	10
TOTAL		**90**

RATIONALE:

This is a fundamental subject which covers broad elements of engineering mechanics, strength of materials and theory of structures. Study of this subject enables the student to distinguish between different types of stress and strain in a material, under the action of external forces. The student will learn to analyse simple structural elements for their design which he usually needs in the professional life. Teachers while imparting instruction should stress on concepts and principles and provide considerable practice in problem solving.

OBJECTIVES

- Understand the Stress, strain and elastic constants.
- Understand the Application of stress and strain in engineering field.
- Know about the behavior of ductile and brittle materials.
- Locate the position of centroid of different geometrical section and Built up section
- Determine Ixx, Iyy, Zxx, Zyy of different geometrical section & built up sections.
- Understand stresses in beams due to bending.
- Determine the Slope and Deflection of Determinate beams by area moment method.
- Analyze of Continuous beam, fixed beam and propped cantilever by Theorem of Three moment and draw SFD & BMD.
- Define different types of Columns and to find Critical load of Columns.
- Analyze Pin jointed frames by graphical method.
- Solving problems in the course of study.

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31241- MECHANICS OF STRUCTURES
DETAIL SYLLABUS
CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**1.1 Introduction, Stress and strain & Elastic constants:** Importance of study of Engineering Mechanics/ Strength of Materials, Mechanical properties of materials – Elasticity, Plasticity, Hardness, Toughness, Brittleness, Ductility, Creep & Fatigue. **Stress and strain:** Force-definition-Types of forces acting on a structural member-Definition of tension, compression, shear; Stress-strain-definition-Different types of stresses-tensile, compressive and shear stresses - Different types of strains –Tensile, Compressive and Shear strains; Longitudinal and Lateral strains-Poisson's Ratio- Numerical problems on stress and strain. **Modulus of Elasticity / Elastic constants** Elasticity –Elastic limit- Hooke's law – Young's modulus of Elasticity –Rigidity modulus-Volumetric strain – Bulk modulus – Definition-Relation between three Moduli-(no derivation)-Young's modulus for selected engineering materials- Numerical problems. **1.2 Application of Stress and strain in Engineering field:** Deformation of prismatic bars subjected to uni-axial load – Deformation of stepped bars – deformation of prismatic bars due to self weight – Numerical problems. **Behavior of Ductile and Brittle material** Load extension curve of Ductile and Brittle material – Limit of proportionality, Elastic limit, Yield stress, Ultimate stress, Breaking stress, Factor of safety – Significance of percentage of elongation and reduction in area – Numerical problems.	**16**
II	**2. 1 Shear Force and Bending Moment** Definition of a beam– Support conditions and diagrammatic representation – Types of beams based on support conditions – Diagrammatic representation of beams – Static equilibrium equations – Determinate and indeterminate beams- Loads-Transverse loads-Types (Concentrated, uniformly distributed and varying loads)- Diagrammatic representation of beams with different loads - Shear force and Bending Moment - Definition – Conventional signs used for S.F. and B.M – S.F and B.M of determinate beams – Cantilever beam & Simply supported beams - simple problems only(Concentrated loads and udl only) – Overhanging beams(No Problems) – Point of contra flexure – Economical overhanging.	**16**

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III	**Geometrical Properties** **3.1 Centroid:** Geometrical properties -Definition of centroid and center of gravity – Centroid of regular geometrical figures - Centroid of symmetric, asymmetric, and anti symmetric practical sections-Numerical problems. **3.2. Moment of Inertia (MI):** Definition and notation of Moment of Inertia, Polar moment of inertia, Radius of gyration, Section modulus and Polar modulus, Parallel and perpendicular axis theorems; M.I. of regular geometrical plane sections (rectangular, triangular and circular sections) – M.I. about centroidal axis - MI about base, Radius of gyration- section modulus- Polar moment of inertia – Polar modulus- problems- MI of symmetric, asymmetric and anti symmetric practical sections - Problems.	**16**
IV	**4.1 Slope and Deflection of Beams (Cantilever & simply supported beams):** Deflected shape of beams with different support conditions – Flexural rigidity and stiffness of beams – Definition of slope and deflection-Area moment method – Mohr's theorems for slope and deflection of beams – Derivation of expression for maximum slope and maximum deflection of simple standard cases by area moment method for cantilever and simply supported beams subjected to symmetrical udl and point loads – Numerical problems on slope and deflection at salient points of cantilever and simply supported beam from first principles.. **4.2 Theorem of three moments:** Introduction to continuous beam – Definition of indeterminate structures- Degree of indeterminacy of continuous beams- General methods of analysis of indeterminate structures – Clapeyron's theorem of three moments – Statements – Application of Clapeyron's theorem of three moments and sketching of SFD & BMD for the following cases: problems on two span simply supported ends, one end fixed and the other simply supported, propped cantilever and fixed beams.	**16**
V	**5.1 Columns and Struts:** Definition of columns and struts - Short and long columns – Equivalent length/Effective length- Slenderness ratio- Axially loaded and eccentrically loaded- End conditions – Euler's formula and Rankine's formula for buckling load (no derivation) - application of formula – columns subjected to axial loads – simple problems on simple single section only.	

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	5.2 Pin Joined Frames: Frame / Truss – definition – Determinate and Indeterminate frames – Classification of frames – Perfect and Imperfect frames – Deficient and Redundant frames - Formulation of a perfect frame – Common types of trusses – Methods of analysis – Graphical method only - Space diagram – Bow's notation – Resultant force– Vector diagram – Determination of forces in a cantilever / Simply supported determinate truss with vertical load only.	**16**

REFERENCES:

1. Strength of materials and Theory of structures- Vol I, B.C.Punmia, Lakshmi publications, Delhi
2. Strength of Materials S. Ramamrutham, Dhanpatrai & Sons, Delhi.
3. Engineering Mechanics & Strength of Materials R.K. Bansal, Lakshmi publications, Delhi.
4. Theory of Structures S. Ramamrutham
5. Analysis of Structures V.N. Vazirani & M.M. Ratwani.
6. Elementary Theory of Structures R.L. Jindal.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

IV SEMESTER

2015-2016 onwards

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SURVEY THEORY

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name **: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code **: 31242**

Semester **: IV Semester**

Subject Title **: SURVEY THEORY**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
SURVEY THEORY	4 Hours	60 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

S. No	Topics	Time (Hrs)
1	CHAIN, COMPASS SURVEYING & LEVELLING	10
2	THEODOLITE SURVEYING & TRIGNOMETRICAL LEVELLING	10
3	TACHEOMETRY AND TOTAL STATION	10
4	AREAS AND VOLUMES & CONTOUR SURVEYING	10
5	GPS & GIS	10
6	TEST / REVISION	10
TOTAL		60

RATIONALE:

Students of Architectural Assistantship at diploma level are expected to manage the site which involves taking measurements surveying and inspection one of the main concern which is required to be carried out for the development of township, residential colonies, public buildings etc in the survey work. Therefore thorough basic knowledge and skills of surveying including chain surveying, compass surveying, leveling, theodolite surveying, tachometric surveying and modern surveying is very essential. Teachers while imparting instructions are expected to explain various concepts and principles by showing various equipments and demonstration thereof. Considerable stress should be given on the use of survey equipments.

OBJECTIVES:

- Know basic concepts about surveying.
- Enumerate the instruments used in surveying.
- Understand the principles of chain surveying
- Know principles of compass surveying.
- Understand the principles of leveling for different Architectural Purposes.
- State different types of levels and different methods of leveling.
- Know the principle of Tachometry surveying
- Understand the contours & methods of contouring.
- Understand the modern surveying instruments and methods.

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31242- SURVEY THEORY

DETAIL SYLLABUS

CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**1.1 Chain & Compass Surveying** **Introduction:** Definition – object of surveying – Division of surveying – plane and geodetic survey – classification of survey.	1
	Chain surveying: Instruments used for chaining – chain – Types – Ranging-Types – Direct & Indirect ranging- Terms used in chain surveying - Baseline – Check line – Tie line – offsets – Types of offsets (Description only). – Accessories used in chain surveying.	2
	Compass surveying: Purpose of compass surveying – construction & working of prismatic compass – use of prismatic compass – setting and taking observations – magnetic dip & declination - magnetic & true meridian – magnetic true & Arbitrary bearing – WCB &RB – Fore and back bearing –Local attraction (description only) calculation of included angle – closed frame work - simple problems only.	2
	1.2 Levelling: Levelling –levels –functions – Types of levels – Dumpy level – Modern Tilting Levels – Quick setting levels – Automatic and laser level – Levelling staff – Types – Component parts of a levelling instruments – Temporary adjustment –Back Sight - Fore sight – Inter sight – Change point – Bench mark – Height of instrument – Reduction of levels – Methods – Height of collimation and Rise and fall method – Simple Problems – Curvature and Refraction (No problem) – simple levelling – Fly levelling – Check levelling –Profile and cross sectional levelling.	5
II	**2.1 Theodolite:** Type of Theodolite – Transit and non-Transit theodolite – Vernier and Micrometer Theodolite – Electronic Theodolite principles (Description only) – Component parts of theodolite – Functions – Technical terms used in Theodolite survey – Temporary adjustment – Fundamental lines – Relation between them – Measurement of Horizontal angle-methods-general, repetition and reiteration methods –measurement of vertical angle – Latitude and Departure – Consecutive coordinates – Independent coordinate – Computation of Area of closed traverse problems.	6
	2.2 Trignometrical Levelling: Finding elevation of objects – Base accessible – Base inaccessible – Single plane & Double plane methods – Simple problems.	4

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III	3.1	**Tacheometry:** Instrument used – system of Tacheometry – stadia and tangential systems – principles – Tacheometric Constants –- Fixed hair method – Analatic lens (no Proof) – Advantages and use – Distance and elevation formulae for horizontal and inclined sight- simple problems on determination of distance and elevation of objects(staff held only vertically)- determination of tachometric constants from field observations for horizontal and inclined line of sight –procedure- Simple problems – Electronic tacheometer (Description only) – Tacheometric Traverse – Errors in Tachometric work – Tangential method -Problems.	**6**
	3.2	**Total station:** Introduction - applications of total station – components parts – accessories used – instrument preparation & setting and measurement – creating a new job – measuring magnetic bearing of a line – field procedure for co- ordinates measurements – field procedure to run a traverse survey-linking data files	**4**
IV	4.1	**Areas & Volumes** Computation of areas of irregular figure –General Methods of determining areas- Mid Ordinate rule-Average ordinate rule- Trapezoidal rule - Simpson's rule- Problems –Computation of Volume –computation of earth work from cross section - one Level Cross Section only–simple problems on embankment and cutting by trapezoidal and prismoidal formulae.	**5**
	4.2	**Contour Surveying:** Definition – Contour – Contouring – Characteristics of Contours – Methods of Contouring – Direct and Indirect methods – Interpolation of contour – Contour Gradient – Uses of Contour plan and Map – Calculation of capacity of reservoirs – Simple problems.	**5**
V	5.1	**Global Position System (GPS):** Introduction – Fundamentals – Applications in Civil Engineering – GPS receiver- hand held GPS – Field procedure – Measurement of latitude, longitude & Altitude –— Differential GPS - Various satellites used by GPS.	**5**
	5.2	**Geographical Information System(GIS):** MAP – Types of Maps – Development of GIS – Components of GIS – Ordinary mapping to GIS – Comparison of GIS with CAD and other system– Cadastral surveys and Records – Application of GIS -Land Information System.	**5**

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REFERENCES:

1. “Surveying and levelling part I & II ”, Kanetkar.T.P. & S.V.Kulkarni Puna vidyarthi girha, Prakashan,
2. ”Surveying Volume-1 & Volume-2”, “,Laxmi Publications(p)Ltd., Punmia.B.C.,
3. ”A Text Book of Surveying Levelling ”, Khanna publishers Agor
4. ”Surveying volume I & II ”,Tata Mc Graw hill newdelhi Duggal .S.K
5. ”Surveying & Levelling”,Charotar Publishing House, Rangwala.S.C
6. Advanced Surveying,(Total Station & Remote sensing),Sathesh Gopi, R.Sathikumar & N.Madhu Pearson Education, Chennai, 2007.
7. Principles of GIS for Land Resources Assessment, Oxford Publication, 2000. Burrough P A,
8. Fundamentals of Geographical Information Systems, Michael N Demers, Second Edition, John Wiley Publications, 2002.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

IV SEMESTER

2015-2016 onwards

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HISTORY OF ARCHITECTURE-II

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOM IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31243**

Semester : **IV Semester**

Subject Title : **HISTORY OF ARCHITECTURE - II**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
HISTORY OF ARCHITECTURE - II	4 Hours	60 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	ANCIENT INDIA & BUDDHIST ARCHITECTURE	10
2	HINDU ARCHITECTURE	10
3	DRAVIDIAN ARCHITECTURE	10
4	INDO - ARYAN STYLE	10
5	WORLD ISLAMIC AND INDO – ISLAMIC ARCHITECTURE	10
6	TEST / REVISION	10
TOTAL		60

RATIONALE

The teaching of Historical Architecture can have its emphasis upon Chronology, Building materials and Technology, Architectural styles and Architectural details. It is not essential to address the associated elements (the influences) and the context of particular styles. The various styles can be explained with selected examples, which can be expounded through schematic drawings of only Plans, concepts, Structural Principles and Architectural Styles. The Historical, Socio-Cultural, Geographical influences of various Architecture should be emphasized to the students.

OBJECTIVES

- To understand ancient india Buddhist,hindu,Dravidian,indo-aryan style, world Islamic and indo –Islamic Architecture styles.

31243- HISTORY OF ARCHITECTURE - II

DETAIL SYLLABUS

CONTENTS: THEORY

NOTE: The teaching of Historical Architecture can have its emphasis upon Chronology, Building materials and Technology, Architectural styles and Architectural details. It is not essential to address the associated elements (the influences) and the context of particular styles. The various styles can be explained with selected examples, which can be expounded through schematic drawings of only Plans, concepts, Structural Principles and Architectural Styles. The Historical, Socio-Cultural, Geographical influences of various Architecture should be emphasized to the students.

***For better understanding Dravidian architecture visits are required during the course time in this semester.*

Unit	Name of the Topic	Hours
I	**ANCIENT INDIA & BUDDHIST ARCHITECTURE** ANCIENT INDIA - Indus Valley Civilization - Culture and pattern of settlement. - Vedic village and the rudimentary forms of bamboo and wood, wooden construction under the Mauryan rule. BUDDHIST ARCHITECTURE - Architectural Production during Ashoka's rule - Ashokan Pillar, Sarnath, Sanchi Stupa. Salient features of a Chaitya hall and Vihara, Rock cut architecture in the western and Eastern ghats - Karli, Takti Bhai, Gandhara.	**10**
II	**HINDU ARCHITECTURE** Evolution of Hindu Temple - Early shrines of the Gupta and Chalukyan periods - Durga Temple, Aihole and Virupaksha Temples,Pattadakal.	**10**
III	**DRAVIDIAN ARCHITECTURE** Dravidian architecture characters - Rock cut productions under Pallavas - Shore Temple, Mahaballipuram - Dravidian Order -Brihadeeswara Temple,	**10**

	Tanjore - Evolution and form of Gopuram - Complexity in temple plan due to complexity in Ritual - Meenakshi Temple, Madurai	
IV	**INDO - ARYAN STYLE** Salient features of an Indo Aryan architecture - Lingaraja Temple, Bhuvaneswar and Sun Temple, Konark	**10**
V	**WORLD ISLAMIC AND INDO – ISLAMIC ARCHITECTURE** Introduction to world Islamic architecture – Middle East, south East Asia, Pakistan and Bangladesh – general architecture features. Introduction to indo –Islamic architecture - Change from trabeate to vaulted and dome construction - Mix of Islamic and Indian elements and early provincial indo – Islamic architecture Typical characters of mosque, fort, gateway and tomb (Masjid, Quila, Darwazza, Mausoleum) - Red fort, Delhi - Taj Mahal, Agra - Jami Masjid, Ahmedabad	**10**

REFERENCES :

1. Percy Brown, Indian Architecture (Buddhist and Hindu Period), Taraporevala and Sons, Bombay
2. Satish Grover,The Architecture of India (Buddhist and Hindu Period),Vikas Publishing Housing Pvt.Ltd.,New Delhi
3. A.Volwahsen, Living Architecture - India (Buddhist and Hindu), Oxford and IBM, London
4. Christoper Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj,Longman Group,U.K.Ltd.,London
5. Carmen Kagal,Vistara: The Architecture of India, Published by Festival of India
6. Electa Moniteur, Architecture in India,M/s.Electa France,Milan
7. George Mitchell, the Hindu Temple, BI Pub., Bombay

www.bnils.com

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http://indianculture.tqn.com/msub19.htm
http://web1.arch.hawaii.edu/courses/courses/300/arch371/09_04/9-4htm
http://www.hindunet.org/alt_hindu/1995_Apt_1/msg00069.html
http://bishop.calpoly.edu/libarts/jwetzel/study Hindu Art Of later Dynasties.htm

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

IV SEMESTER

2015-2016 onwards

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BUILDING SERVICES-I

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31244**

Semester : **IV Semester**

Subject Title : **BUILDING SERVICES - I**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
BUILDING SERVICES-I	4 Hours	60 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	ELECTRICAL SERVICES	10
2	LIGHTING	10
3	RENEWABLE ENERGY SOURCES	10
4	SANITATION & STORM WATER DRAIN	10
5	BUILDING SAFETY AND SECURITY SYSTEMS	10
6	TEST / REVISION	10
TOTAL		60

RATIONALE:

Building services engineering, technical building services, architectural engineering, or building engineering is the engineering of the internal environment and environmental impact of a building. It essentially brings buildings and structures to life. This include design, installation, and operation & monitoring of the mechanical, electrical and public health systems required for the safe, comfortable and environmentally friendly, acoustically treated of modern buildings. Building services engineers work closely with other construction professionals; architects, structural engineers and quantity surveyors. They influence the architecture of a building and play a significant role on the sustainability and energy demand of a building. Within building services engineering, new roles are emerging, for example in the areas of renewable energy, sustainability, low carbon technologies and energy management. A typical building services engineer has a wide-ranging career path include design, Construction, electrical, lighting, water supply, security systems, drainage and Environmental technology.

OBJECTIVES:

At the end of the study of IV Semester the student will be able to

- Understand the electrical terms, units and symbols involved in the building industries both commercial and residential
- To prepare electrical layout for residential buildings
- To gain knowledge about lighting systems, units of lighting and types
- To understand the importance of sources of water and supply methods
- To understand different types of fixtures and plumbing methods involved in residence
- To gain knowledge about the building sanitation and disposal methods
- To prepare drainage layout for residential buildings
- To gain knowledge about modern buildings safety and security systems

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31244- BUILDING SERVICES - I
DETAIL SYLLABUS
CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**ELECTRICAL SERVICES** **1.1 ELECTRICAL SUPPLY** Generation, Transportation and Distribution of Power – Conventional Architectural Symbols for Electrical installations - Substation Transformer, bus bar, supply to building. Main, Sub- Mains - Types of Fuses - Distribution Panel	**3**
	1.2 WIRING SYSTEM Types of Wiring - Wiring Material - Standard Wire Gauge – Types of Switches – Controls – Plugs –Two Pin & Three Pin Plugs – Junction Boxes – Exhaust Fan –Electrical Terms & Units – Supply and Distribution in Multi	**3**

	Storied Buildings – Electrical load – Meter room – Use of generators, invertors, emergency lamps **1.3 LAYOUT** preparation of electrical layout for apartments and residence	**4**
II	**LIGHTING** **2.1 TYPES OF LIGHTING** Units of measurement – Lux, candela, Luminous flux - Types of lighting - Natural and Artificial Lighting – Requirements of good lighting -– Day light factors – Day light Penetration – Aims of good lighting –Principles of openings to afford good lighting. **2.2 LAMPS** Types of Lamps and their Characteristics- Level of Illumination for different functions (general)- Light fittings –Fluorescent bulbs, Mercury Vapor lamps, Energy Efficient lighting (CFL,LED)	**5** **5**
III	**RENEWABLE ENERGY SOURCES** **3.1** Introduction – Merits of renewable energies – Sources – Hydro power, wind power, solar power, geothermal power, biomass power – Solar power – Solar cell, solar panels, solar water heater, solar lighting, solar pumps and fountains, solar pool heater – Portable and flexible solar panels – Wind power – Wind machines (turbines) – components – Use of (wind energy) renewable energy in institutional buildings – Geo thermal power – Geo thermal heat pumps – Parts – Ground heat exchanger (system of pipes buried under ground), heat pump unit, air delivery system – Bio mass energy – Advantage over fossil fuels – Wood heating.	**10**
IV	**SANITATION & STORM WATER DRAIN** **4.1 SANITATION** Sanitation in buildings - Primary and secondary treatment Activated sludge - Intermittent and trickling sand filters - Connection of house sewers to municipal sewers, ventilation of sewers – Sewage disposal scheme for resident and apartments - Garbage disposal, incinerator, and dry disposal - Garbage disposal in multi –storied buildings, dry and wet treatment. **4.2 STORM WATER DRAIN** - Site planning from drainage point of view - Storm water drains, details of construction, water entrances, gullies, open drains, gradients, ventilation of drains, rainfall maintenance - Materials and construction details of sewers and connections – preparation of drainage layout for residential unit	**5** **5**
V	**BUILDING SAFETY AND SECURITY SYSTEMS** **5.1 SECURITY SYSTEMS** Introduction – need for safety and security systems – security systems – access control and perimeter protection – CCTV cameras - intruder alarms – Types - Dome cameras - Wall cameras - Hidden cameras - components of CCTV cameras –uses in residential buildings. **5.2 AUTOMATION** Introduction to building automation - Functions of Building Management Systems – system includes - Benefits of BMS.	**5** **5**

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REFERENCES :

1. G.M.Fair,J.C.Geyer and D.Okun,Water and Waste Water Engineering,Vol.II,John Wiley & Sons,Inc.,NewYork,
2. Manual of Water supply and Treatment, Second Editions,CPHEEO,Ministry of Works and Housing, NewDelhi,
3. Manual on Sewerage and Sewage Treatment,CPHEEO,Ministry of Works and Housing, New Delhi,.
4. S.C.Rangwala,Water Supply and Sanitary Engineering, Charotar Publishing House, Anand 388 601,

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

IV SEMESTER

2015-2016 onwards

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BUILDING CONSTRUCTION AND DETAILING –II

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31245**

Semester : **IV Semester**

Subject Title : **BUILDING CONSTRUCTION AND DETAILING –II**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			
	Hours/ Week	Hours / Semester	Internal Assessment	Board Examination	Total	Duration
BUILDING CONSTRUCTION AND DETAILING –II	5 Hours	75 Hours	25	75	100	3 Hours

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RATIONALE:

In Diploma level Architectural Assistantship Technical education development of auto motor skills plays a vital role. The auto motor skill development can be achieved by on hand experience in handling various instruments, apparatus and equipment for preparation of detail to the various building components. This is accomplished by doing drawings related to construction details of different components of the building in studios

31245 - BUILDING CONSTRUCTION AND DETAILING –II

DETAIL SYLLABUS

CONTENTS: PRACTICAL

NOTE: - 1) Units I to IV Theory to run concurrently with Unit V Detailing.
2) Designing is not required for Unit V. Construction details to be drawn to the Given Specifications only.

UNIT	NAME OF THE TOPIC	HOURS
I	**FINISHES** Finishes – Plastering – Pointing – Cladding	9
II	**R.C.C AND STEEL STRUCTURES** Pre – cast concrete construction – pre – stressed concrete construction – joints in concrete work. **STEEL WORKS:** Mild steel sections for grills and gates – Knowledge of various types of roof trusses and their selection for commercial and industrial buildings – rolling shutters – collapsible gate – metal doors and windows.	6 6
III	**TEMPORARY STRUCTURES** Scaffolding – Types of Scaffolding – Shoring – Types of Shoring – Underpinning- Methods of Underpinning – Form work – Requirements of Form work – Materials for Form work – Construction of Form work for Columns, Beams and Floor Slabs – Centering for Arches. **STAIRS** Location of Stairs – Technical terms – Requirements of a good Stairs – Classification of Stairs – Stairs of different Materials.	6 6
IV	**MISCELLANCE STRUCTURES** FLAT SLAB CONSTRUCTION: types of shell roof structures – domes – ruled surface – folded plates (description of the structures only) –cost effective construction Techniques - Rat trap bond, Filler slab, Funicular shell – Use of Pre - cast Technology in construction.. **APPROVAL DRAWING** The basic criteria required for an approval drawing are to studied – The students have to prepare an approval drawing by showing all necessary details required for getting approval from the local authority concerned.	6 6
V	**DETAILING** **(**Specifications to be given. Design not required)	30

LIST OF PLATES:

1. Details of Different plastering, pointing and cladding with different materials on Exterior surfaces(sketch only).
2. Details different types of joints in concrete work.
3. Details of Grill Gate, Rolling Shutter and Collapsible Gate.
4. Details of King Post Truss and steel Trusses for industrial buildings and go down. .

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5. Details of Single and double scaffolding.
6. Details of formwork for shoring, underpinning, Beams and Floor Slabs, Arches.
7. Plan and sectional elevation of Dog-legged staircase and Open well staircase
8. Plan and sectional elevation of Spiral staircase and Bifurcated staircase
9. Details of Shell roof and folded plate roof, sectional plan of and cross section of Filler slab.
10. Plan , elevation , section and Isometric view of Rat Trap Bond
11. Details of Shell roof for a petrol filling station with plan, Elevation and Section
12. Preparation of an approval drawing for a single storied Residential building with all details.(Not for examination)
    Pinner board 1 No

ALLOCATION OF MARKS

Part A **:** Theory question of 8 questions, two questions from each unit carry Five marks each with a total mark **of 30**

Part B **:** Any two of the exercises from the exercises that are done in the Studio during the semester carries **2x20**= **40 marks**.

Viva-Voce **: 5 marks**

Total **: 75 Marks**

REFERENCES :

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1. Building Construction - S.C.Rangwala
2. A text book of building construction – Arrora & Bindrra
3. Building construction – R.C.Mitchell
4. A Text book of Building Construction. - R.S. Deshpande
5. Building Construction - Richard Greenhaigh
6. Building Drawing - Shah & Kale

WEBSITES

http://www.baboo-Flooring.com
http:// ag.avizona.edu/SWES
http://www/angelfite.com/in
http://www.idrc.ca/libary/documents/104800/chapz-e.html
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http://www.inika.com/chitra
http://www.routbdge.com
http://www.ventura india.com

DETAILS OF INSTRUMENTS

Drafting Table with stool = Each 1 per student

Pinner board - 1 Nos

IV SEMESTER

31245- BUILDING CONSTRUCTION AND DETAILING – II
MODEL QUESTION PAPER

Duration: 3HRS Max.marks:75

NB : 1. Answer any 6 question from part A; each questions carries 5 mark
2. Answer the questions in part B; by choosing it by lot which carry 2x20=40 marks.
3. Viva-Voce 5 marks

PART-A

1. Explain different types mortar used in plastering
2. What are different types of pointing
3. Explain with neat sketch 'Lean to Roof'.
4. What are advantages of steel roof truss over timber sloping roofs?
5. What are requirements of a form work?
6. What are requirement of a good staircase?
7. What are assumptions to be made while detailing folded plate structured?
8. Write the bye-laws to be followed for the construction single storey residential building.

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PART-B

1. Draw the details of formwork for Columns and Beams (Question is chosen by lot)

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DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

IV SEMESTER

2015-2016 onwards

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ARCHITECTURAL DRAWING – II

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31246**

Semester : **IV Semester**

Subject Title : **ARCHITECTURAL DRAWING – II**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duratio
	Hours / Week	Hours / Semester	Internal Assessmen	Board Examination	Total	
ARCHITECTURAL DRAWING – II	5 Hours	75 Hours	25	75	100	3 Hours

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RATIONALE

Graphic presentation and Art is considered to be the language of Engineers and Architects which is a means of communication among the designers, engineers, technicians, architects & draftsmen engaged in the field of construction of buildings. The translation of ideas into practice with the use of this graphic language is beyond imagination. Thus, for effective and efficient communication among all those involved in the system, it becomes necessary that the personal working in different capacities acquire appropriate skills in the use of this graphic language.

31246- ARCHITECTURAL DRAWING – II
DETAIL SYLLABUS
CONTENTS: PRACTICAL

I - BASICS OF RENDERING **27Hrs**

Rendering of finishing materials – Stones, Bricks, Plaster finishes Shading, Representation of Curves, Slopes Basics of Color Rendering – working with presentation drawings Rendering the above perspectives with different mode like color pencils or poster color or pen and ink – rendering of trees, cars and human figures – improvising presentation drawings. (**Minimum of 2 exercises)**

II – COLOR RENDERING **20 Hrs**

Theory of color - Color and light - Color wheel -Classification of Color - Primary, Secondary & Tertiary color - Hue, Chrome & Values, Shades , Tones & Tints,- Color Schemes - Application of Color in Design Color rendering with objects – coloring of various compositions with natural and geometric form – objects – imaginary drawings **.(Minimum of 5 exercises)**

III - PERSPECTIVE & SCIOGRAPHY **28Hrs**

Basic theory of Horizon line – Normal eye, Bird's eye and Worm's eye View -
Basic theory of Perspective View - Vanishing Point, Single Point and Two Point Perspective View

Principles of Perspective – Two point & One point - Principles of sciography – study of Light and Shade. .(Minimum of 2 exercises one each in 2D and 3D)
Application of shades and shadows of Architectural Elements like Sunshade, Steps Porch, Fins, Projections, Columns, Beams, Curved objects .(Minimum of 2 exercises)
Two points perspective for exteriors – residence. (Minimum of 2 exercises)
One point perspective for simple interiors – living room, kitchen, bed room, Dining. (**Minimum of 4 exercises)**

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ALLOCATION OF MARKS

Part-A: One Point perspective with color rendering for interior spaces - **30 marks**.
Part-B: two Point perspectives with pencil rendering for exterior spaces - **40 marks**.
Viva – voce **- 5 marks**

REFERENCES :

1. Background of perspective - William Coombers and Adama Charles black
2. Principles of perspective drawing - N. G. shah and khala
3. Step by step perspective drawing - Cland
4 The art of perspective drawing - Grunbacher
5. John M.Holmes, Applied Perspective, Sir Isaac,Piotman and Sons Ltd.,London 1954.
6. Robert W.Gill, Basic Perspective, Thames and Hudson,London,1974.
7. Interiors: Perspective in Architectural Design Graphic - SMA Publishing Co.Ltd.,Japan, 1967.

8. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York,1964.
9. Francis Ching, Architectural Graphics, Van Nostrand and Reinhold Company, New York,1975.
10. Emest Norling, Perspective drawing,Walter Fostor Art Books,California, 1986.
11. Bernard Alkins - 147,Architectural Rendering, Walter Foster Art Books,1986.

DETAILS OF INSTRUMENTS

Drafting Table with stool = Each 1 per student

Pinner board - 1 No

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IV SEMESTER

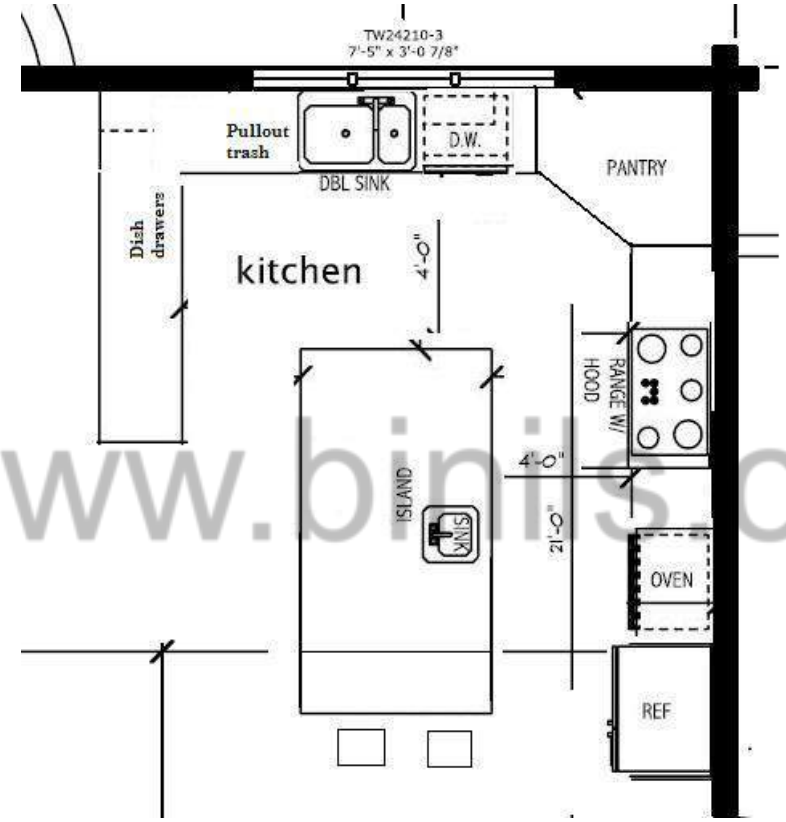
31246 - ARCHITECTURAL DRAWING – II
MODEL QUESTION PAPER

Duration: 3HRS **Max.marks:75**

PART- A (30 Marks) **Allotted time: 1 hour and 30minutes**

PERSPECTIVE DRAWING

I. Draw one point perspective for the given kitchen and render the drawing with color pens.



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PART- B (40 Marks) **Allotted time: 1 hour and 30 minutes**

II. Draw a two point perspective for own plan and render the drawing with pens.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

M - SCHEME

IV SEMESTER

2015-2016 onwards

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ARCHITECTURAL DESIGN STUDIO-I

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31247**

Semester : **IV Semester**

Subject Title : **ARCHITECTURAL DESIGN STUDIO – I**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
ARCHITECTURAL DESIGN STUDIO - I	6 Hours	90 Hours	25	75	100	3 Hours

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RATIONALE

Large percentage of diploma holders in Architectural Assistantship find employment with private architects and also majority of them go for self-employment. Therefore, diploma holders are required to design small residential buildings. This course aims at providing practical exercises in designing so as to develop appropriate knowledge and skills in building design. Teachers are expected to show various types of designs of small to medium residential buildings to develop an appreciation of different designs.

31247- ARCHITECTURAL DESIGN STUDIO - I
DETAIL SYLLABUS
CONTENTS: PRACTICAL

NOTE: The problems involve simple space organisation starting with single space single use - small span Horizontal movement - single bay-passive energy type spaces.

The study of space standards and anthropometrics related to each problem is stressed upon. Anthropometries as related to physically handicapped and elderly persons are required to be studied. Examples of exercises include

DESIGN PROBLEM – 1

Bedroom with attached toilet, Kitchen, Hostel Room and Toilet for a physically challenged Person. (4 exercises – study & Design)

DESIGN PROBLEM – 2

Design problem shall deal with planning for small groups of people and minor activities for residence and shall include data collection, Literature study, Case study, Conceptual design scheme, Detailed Design and presentation drawings which includes Plan, Elevation, Section, Perspective Views etc.,

DESIGN PROBLEM –3

Design problem shall deal with planning for small groups of people and minor activities for neighborhood market(or)bus stand (or)village and shall include data collection, Literature study, Case study, Conceptual design scheme, Detailed Design and presentation drawings which includes Plan, Elevation, Section, Perspective Views etc.,

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ALLOCATION OF MARKS

Part-A: One question from Design Problem - I - **30 marks.** (By lot)
Part-B: Any one of the question from Design Problem – II&III - **40 marks**. (By lot)
Viva – voce - 5 marks

REFERENCES :

1. E and O.E.Planning, Life Books Ltd., London, 1973.
2. De.Chiara and Calendar, Time-saver Standards for Building Types, McGraw Hill Co., New York, 1973.
3. Sid Del Mar Leach, Techniques of Interior Design Rendering and presentation, McGraw Hill Co., New York, 1973

WEBSITES

www.design basic.com/-(on house type - Americans)
http://www.geosytems.gatech.edu/-(on detail design method)
http://www.c.s.berkely.edu/- (on bubble diagram builder interaction
http://www.plannet.com/resources.htme - (on resource info)

DETAILS OF INSTRUMENTS

Drafting Table with stool	=	Each 1 per student
Pinner board	-	1 No

IV SEMESTER

31247 – ARCHITECTURAL DESIGN STUDIO - I
MODEL QUESTION PAPER – 1

Duration:3 Hrs **Max. Marks: 75**
PART- A **Marks 5 x 1 = 5**
Note: Answer any 5 Questions. – All Questions carry equal marks.

Part-A: One question from Design Problem - I - **30 marks.** (By lot)
Part-B: Any one of the question from Design Problem – II&III - **40 marks**. (By lot)
Viva – voce - 5 marks

1. Design a bedroom with attached Toilet by considering space standards.
   Design Requirements:
   Plan - 1:50 - 20 Marks
   Sectional Elevation - 1:50 - 10 Marks

OR

1 Design a kitchen by considering space standards.
Design Requirements:
Plan - 1:50 - 20 Marks
Sectional Elevation - 1:50 - 10 Marks

OR

2 Design a Hostel room by considering space standards.
Design Requirements:
Plan - 1:50 - 20 Marks
Sectional Elevation - 1:50 - 10 Marks

OR

3 Design a Toilet for a physically challenged person by considering space standards.
Design Requirements:
Plan - 1:50 - 20 Marks
Sectional Elevation - 1:50 - 10 Marks

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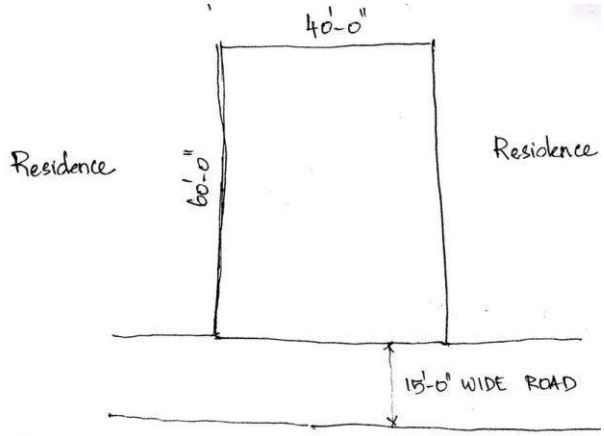
Part – B

1. **(a) Residence at Thanjavur:**

Design a residence of area 1200 sq ft in the given site. With your own requirements. By applying the rules and regulations of local authority.



SITE PLAN

Drawing Requirements:

Site plan	-	1:100	-	10 Marks
Plan	-	1:50	-	20 Marks
Elevation	-	1:50	-	5 Marks
Section	-	1:100	-	5 Marks

1. (b) <u>Neighborhood Market at Kumbakonam</u>

Design a Neighborhood market by considering all the design requirements in the following site

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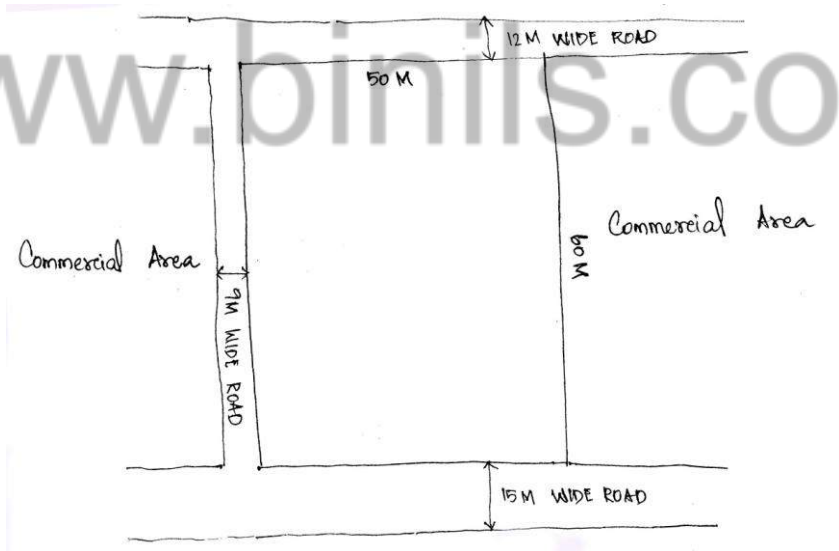

SITE PLAN

<u>Drawing Requirements:</u>

Site plan	-	1:200	-	10 Marks
Plan	-	1:100	-	20 Marks
Elevation	-	1:100	-	5 Marks
Section	-	1:100	-	5 Marks

V SEMESTER

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

V SEMESTER

2015-2016 onwards

www.binils.com

ESTIMATING AND COSTING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31251**

Semester : **V Semester**

Subject Title : **ESTIMATING AND COSTING**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
ESTIMATING AND COSTING	5Hours	75 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	INTRODUCTION, APPROXIMATE ESTIMATES	13
2	SPECIFICATION REPORT WRITING	13
3	MEASUREMENTS & MATERIAL REQUIREMENT, DATA:	13
4	VALUATION, RENT FIXATION	13
5	DETAILED ESTIMATE	13
6	TEST / REVISION	10
TOTAL		75

RATIONALE:

Diploma holders in Architectural Assistantship find employment with private architects and also some percentage of them start their own enterprises. Therefore, the profession demands the development of basic knowledge and skills of quantity surveying and costing. This subject covers different methods of taking out quantities, units of measurement, calculation of quantities of materials , preparation of cost estimates ,specification writing, Report writing, Valuation and rent fixation.

OBJECTIVES

- To study the types of estimates.
- To know the different methods of taking out quantities
- To prepare the rough cost estimate, detailed estimates, detailed reports, specifications, abstract of cost and material requirements for a small building
- To Calculate quantities of materials and analysis of rates for each items of work
- To value a building and also fix the rate

31251- ESTIMATING AND COSTING
DETAIL SYLLABUS
CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**1.1 INTRODUCTION** Estimation – Definition of Estimate - Types of Estimates - Approximate Estimate – Detailed Estimate – Revised Estimate – Supplementary Estimate – Sub Estimate – Annual maintenance Estimate – Repair Estimate – Complete Estimate. **1.2 APPROXIMATE ESTIMATES** Approximate estimate – Types – Plinth area method – Cubical content method – Service unit method – Typical bay method – Simple problems on preliminary estimate of a building project.	**6** **7**
II	**2.1 Specification & Report Writing** Specification – Necessity – Types of Specification - Essential requirements of Specification - Steps involved in Standard Specification – Detailed Specifications for the following items of works ➢ clearing and levelling site ➢ Excavation of Trenches for foundations. ➢ Laying plain cement concrete bed, Footings and Plinth with R.R. Masonry and Brick Masonry. ➢ Filling in foundation and Plinth. ➢ Laying Damp Proof course at Plinth level. ➢ Super structure with Brick Masonry in Cement Mortar. ➢ R.C.C works. ➢ plastering works ➢ Cement concrete flooring ➢ Wood works like Doors and Windows.	**7**

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	2.2 REPORT WRITING Report Writing – Points to be considered while a report writing - Writing typical reports for works such as i. Buildings – Residential / Hospital / School ii. Demolishing a building iii. Conservation of a monumental building iv. Water supply system for a village.	**6**
III	**3.1 MEASUREMENTS & MATERIAL REQUIREMENT** Units of measurements for works and materials - Degree of accuracy in measurements - Deduction for openings in masonry, plastering and white washing area – Painting co-efficient – out turn of works - working out of materials requirements – cement, sand, bricks and aggregates. **3.2 DATA:** Data – Theory – Main and sub data – Observed data - Lead statement – Schedule of rates – Standard data book - Sundries – Lump sum provision - Preparation of data using standard data and schedule of rates - Brick and Stone masonries – Lime Concrete and Cement Concrete - Flooring Works and weathering course - R.C. works for slab, sunshade, beam and column - Partition wall – Form works for beams and slabs - White washing and Painting works - A.C. sheet roofing – Wall plastering – ceiling plastering - Pointing – Plumbing and sanitary works in Buildings.	**6** **7**
IV	**4.1 VALUATION** Valuation – Purpose of Valuation- Types of Valuation - Book value – Market value – Salvage value – Scrap value - Depreciation – Obsolescence - Sinking fund – Land valuation(Classification Only)- Mortgage and lease - Problems on valuation - Annuity-Definition and types **4.2 RENT FIXATION** Fixation of rent – Out goings – Gross and net income – Years Purchase - Capital Cost -Standard rent – Market rent – Economical rent - Problems on rent calculation only (Simple Problems)	**6** **7**
V	**5.1 STAGES OF DETAILED ESTIMATE** Taking off quantities – Systems – Trade system – Group system – Advantages of group system – Methods – Long wall and Short wall method – Centre line method – Abstract estimate – Lump sum provision and contingencies – quantity surveyor – duties – essential qualities. **5.2 DETAILED ESTIMATE** Detailed estimate for buildings using Trade system. Taking off quantities for all items of works in the following types of buildings by centre line method. i. Residential building with two / three rooms (Load bearing structure)with RCC roof ii. Two Storied building (Framed structure) with RCC roof iii. Industrial buildings with AC / GI sheet roof with steel trusses	**4** **9**

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REFERENCES:

- Estimating and Costing by B.N.Dutta.
- Estimating and Costing by Mahajan
- Estimating, Costing and Accounts by DD Kohli
- Estimating and Costing by S.C.Rangwala.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

V SEMESTER

2015-2016 onwards

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ENVIRONMENTAL ENGINEERING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name **: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code **: 31252**

Semester **: V Semester**

Subject Title **: ENVIRONMENTAL ENGINEERING**

TEACHING AND SCHEME OF EXAMINATION:

No. of hours per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
ENVIRONMENTAL ENGINEERING	4Hours	60Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	QUANTITY AND QUALITY OF WATER	10
2	TREATMENT OF WATER AND DISTRIBUTION SYSTEM	10
3	ECOSYSTEM , BIODIVERSITY AND ITS CONSERVATION	10
4	ENVIRONMENTAL POLLUTION AND CONTROL	10
5	DISASTER MANAGEMENT	10
6	TEST / REVISION	10
TOTAL		60

RATIONALE:

Profound anthropogenic changes are occurring in the land, water, and air around us, and education needs to respond to these changes. These educate students so that they are well informed about vital, current issues and capable of full political participation. It has a responsibility to provide means for the study of environmental problems and to encourage students to develop their own perspectives on these problems. Environmental studies offers numerous opportunities for rigorous interdisciplinary work, addressing the scientific, engineering, social, political, economic, literary, and philosophical dimensions of environmental topics. The minor helps guide students to the many academic fields that afford a perspective on environmental problems and enables them to explore questions most compelling to them from the vantage point of various disciplines.

OBJECTIVES:

At the end of the study of V Semester the student will be able to

- State the quantity of water for various needs and forecasting future population.
- Describe the quality of water and specifying BIS Standards.
- Describe various treatment process and different distribution system.
- Understand the definitions of environmental studies
- To recognize the importance and public awareness about nature
- Field work and documentation give better perspective about ecosystem
- To gain knowledge about the eco system patterns and their functions
- To understand bio diversity and conservation
- To understand Causes, effects and control measures of environmental pollution
- To understand disaster management and environmental impact assessment.
- Create awareness about Environment Management and disaster management

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31252- ENVIRONMENTAL ENGINEERING

DETAIL SYLLABUS

CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**1.1 QUANTITY OF WATER** Water supply-need for protected water supply-importance aspects of public water supply schemes-demand-types of demand-domestic demand, industrial and commercial demand, demand for public uses, fire demand, demand for compensating various losses-per capita demand - factors affecting the per capita demand - population forecast - methods of forecasting population-problems in arithmetical increase method, geometrical increase method, incremental increase method - total quantity	5

	of water required for villages/towns-sources of water - surface sources - lakes & streams, ponds, rivers and storage reservoirs- subsurface sources - Infiltration gallery , Infiltration wells - shallow wells - Deep wells, Tube wells (Description only for all sources)– Selection of suitable source for a water supply scheme. **1.2 QUALITY OF WATER** Meaning of pure water – Requirements of potable or domestic water – Impurities in water - Sources, causes and effects of different types of impurities – Water Analysis -physical, Chemical and Bacteriological tests - standards laid down by B.I.S.I for drinking water – Living Organism in water-W.H.O standards - Maintenance of purity of water - water borne diseases and their causes.	**5**
II	**2.1 TREATMENT OF WATER** Layout of treatment plants – sedimentation – plain sedimentation, different types of sedimentation tanks – sedimentation with coagulation - common coagulants – choice of coagulants - Filtration - Theory of filtration -Types of filters - Description - Rapid sand Filters – Pressure filter (Horizontal type only) - Disinfection of water – Methods of Chlorination - Forms of chlorination – Dosage of chlorine - Mineral waters – Requirements - Treatment processes – Reverse Osmosis process. **2.2 DISTRIBUTION SYSTEM** Different systems of supplying water - Gravity system, Pumping system and combined system- Continuous and intermittent supply of water- Different layouts of distribution systems – Dead end, Grid iron, Radial and Circular systems – Merits, demerits and suitability of different layout systems – Service reservoirs – underground and over head tanks	**5** **5**
III	**3.1 ECOSYSTEM** Definition, Scope and importance of environmental study - Need for public awareness. Structure and function of an ecosystem – decomposers - Energy flow in the ecosystem – Ecological succession - Food chains, food webs and ecological pyramids. Types - characteristic features, structure and function of the following Forest ecosystem - Grassland ecosystem - Desert ecosystem – Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) **3.2 BIODIVERSITY AND ITS CONSERVATION** Introduction – Definition of Genetic, species and ecosystem diversity - Value of biodiversity - Consumptive use - productive use, social, ethical, and aesthetic and option values - Hot spots of biodiversity - Threats to biodiversity - Habitat loss, poaching of wildlife, man-wildlife conflicts - Endangered and endemic species of India - Conservation of biodiversity - In-situ and Ex-situ conservation of biodiversity	**5** **5**
IV	**4.1ENVIRONMENTAL POLLUTION AND CONTROL** Environment - Definition – Water pollution – Sources of water pollution – Effects and prevention of water pollution-Land pollution – Sources of land pollution – Effects and prevention of Land pollution – Pollution impact on	**10**

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	land due to non – biodegradable waste matters (polythene bags, P.V.C. & other plastic materials, Glass, etc.,) – Remedial measures - Air Pollution – Classification of Air Pollutants – Sources – Natural and Manmade sources – Effects of Air Pollution on human beings, animals, plants and materials – Control of Air Pollution – Different Equipments to control Air Pollution – Settling chambers, Cyclone and Electrostatic precipitators – Forest Management –Direct benefit from forest – deforestation causes and effective measures to conserve the forest wealth – Environmental degradation – Green House effect – Ozone layer depletion – Acid Rain. Noise pollution management – Effects of noise on people – Noise control methods .	
V	**5.1 DISASTER MANAGEMENT** Introduction – Definition for disaster –Types of disaster- major disaster – Floods – causes and Effects – Flood management (Preventive measures) Earth quakes – Definition, occurrence, causes & Effects of earth quake - Earth Quake mitigation (Preventive measures). Tsunami – Definition, Causes and effects of Tsunami – Tsunami management. Cyclone – Definition, Occurrence and effects of cyclone – cyclone management – Cyclone shelters –Warning systems – Man-made disasters – crisis due to fires, accidents, strikes, etc, -loss of property and life – causes for fire accident – Fire escapes in buildings.	**10**

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REFERENCES

1. S.K. Garg," Water supply and Sanitary Engineering" Kanna publishers, Delhi .
2. K.S. Rangwala, " Water supply and Sanitary Engineering"
3. G.S. Birdie and JS. Birdie," Water supply and Sanitary Engineering" Dhanpat rai publishers Delhi,
4. Suresh K.Dhamija,"Environmental Studies", S.K.Katarial Sons Delhi,
5. M.N. Rao & H.V. Rao," Air pollution " Tata Mcgrawhill Publishing Company Ltd.
6. Heywood, V.H & Watson, R.T. Global Biodiversity Assesment.Cambridge Univ. Press 1140p.
7. McKinney, M.L & Schoch, R.M. 1996. Environmental Science System & Solutions, Web enhanced edition. 639p.
8. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media (R).
9. Miller T.G. Jr., Environmental Sciences, Wadsworth Publishing Co. (TB)
10. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

www.binils.com

V SEMESTER

2015-2016 onwards

BUILDING SERVICES- II

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31253**

Semester : **V Semester**

Subject Title : **BUILDING SERVICES- II**

TEACHING AND SCHEME OF EXAMINATION:

No. of hours per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	Duration
BUILDING SERVICES - II	4 Hours	60 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	MECHANICAL SERVICES	10
2	HVAC (HEATING, VENTILATION & AIR CONDITIONING)	10
3	FIRE HAZARDS, SAFETY & DESIGN REGULATIONS	10
4	ACOUSTICS	10
5	MAINTENANCE, DEFECTS AND REPAIR WORKS IN BUILDINGS	10
6	TEST/REVISION	10
TOTAL		60

RATIONALE:

Students of Architectural Assistantship at diploma level are expected to prepare working drawings of various fittings and fixtures and water supply and sanitary installations. Also students should be well conversant with electrical and mechanical installations in the buildings. For this purpose, it is essential that the students are taught various aspects of building services like: sanitary installations, house drainage, domestic water supply, fittings and fixtures and electrical lay out and fittings. Therefore, the subject of building services is very important for students undergoing diploma courses in Architectural Assistantship. Teachers while imparting instructions are expected to show various fixtures and fittings, water supply and sanitary installations at work sites or by making use of literature, models, chart and other audiovisual aids so that students are able to comprehend the hardware used. Teacher should specifically point out problem areas and other environmental considerations while teaching this subject.

OBJECTIVES:

- Familiarize various electrical & mechanical services required to the building.
- Familiarize various electrical & mechanical services required to the building.
- To gain knowledge about the HVAC.
- To understand fire hazards, safety & design regulations.
- To understand building acoustics.
- To gain knowledge in maintenance of buildings.
- To gain knowledge in defects and repair works in buildings.

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31253- BUILDING SERVICES - II

DETAIL SYLLABUS

CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**I MECHANICAL SERVICES** MECHANICAL SERVICES - Lifts – Location –– Components – Types of Lifts – Sizes – Lift Well - Escalators – types – standards – uses – conveyers - Preparing the provision in construction and sections through lift-well and escalators.	**10**
II	**HVAC (HEATING, VENTILATION & AIR CONDITIONING)** **VENTILATION** – Natural and Mechanical Ventilation, Conditions of Comfort, Principle of Refrigeration. Comfort conditions, temperature control, humidity control, air filtration - Mechanical ventilation in buildings - Fans, blowers and air filters. **HEATING** - Heating of spaces – local and central heating - Heating equipments - Comfort conditions, temperature control, humidity control, air filtration **AIR CONDITIONING** – refrigeration and air cycle - Various systems of air conditioning - Window A.C Unit, split, Package, Direct Expansion, Chilled	**4** **2** **4**

	water System - Scope – Layout of Ducts –, Fan Coil System – Blowers & Diffusers, Cooling Towers – air conditioning layout, fittings and fixtures	
III	**FIRE HAZARDS, SAFETY & DESIGN REGULATIONS** Fire, causes of fire and spread of fire - Fire fighting, protection and fire resistance - Firefighting equipment and different methods of fighting fire - Code of safety, fire regulations - Combustibility of materials - Fire escape routes and elements – planning and design Wet risers, dry risers, sprinklers, smoke detectors, fire dampers, fire - doors, water and curtains etc.	**10**
IV	**ACOUSTICS** Acoustics of Buildings – Characteristics of Audible Sound – Principles of Acoustics – Acoustic Defects – Sound Absorption Materials Acoustics Treatment of Buildings such as Cinema Theatre, Radio Broadcasting Studios, Concert Halls, Cold storage units, Conference Hall, Seminar and Lecture Hall Sound Insulation of Buildings – Sound Insulation and Sound Absorption – Practical consideration of Noise Control and Sound Insulation of Buildings Preparation of layout for the above rooms	**10**
V	**5.1. MAINTENANCE OF BUILDINGS:** Introduction - Maintenance works in buildings - Painting - Flooring - Doors and windows - Sanitary appliances - Water supply and drainage system - Cracks in concrete - Types - Common methods of crack repair - preventive maintenance - special precautions for repairs of building **5.2. DEFECTS AND REPAIR WORKS IN BUILDINGS:** Defects in buildings - Prevention of defects in buildings - Major causes of defects - Treatment of toilet sunken portion - Improper laying of weathering course - Maintenance works - Specification for weathering course - Lime jelly concrete with tiles - Thermal insulation combined with water proofing for flat concrete roofs - Expansion joints- water proofing - Repair of rain water leakage in buildings.	**5** **5**

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REFERENCES

1. Fire Safety in Building – London – Thomas Adam and Charles Black, London.
2. Designing for Fire Safety – E.G. Bucher & A.C. Parhall – John Wiley & sons.
3. Fire & Human Behaviors – David Gunter – John Wiley & sons.
4. National Building Code of India, 1983

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

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V SEMESTER

2015-2016 onwards

ELEMENTS OF INTERIOR DESIGN

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31254**

Semester : **V Semester**

Subject Title : **ELEMENTS OF INTERIOR DESIGN**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	Duration
ELEMENTS OF INTERIOR DESIGN	5 Hours	75 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	INTRODUCTION AND DESIGN THEORY OF INTERIORS	13
2	FUNCTION AND PLANNING	13
3	DETAILING OF SIMPLE HOUSEHOLD FURNITURE	13
4	FINISHES, FURNISHING & ACCESSORIES	13
5	LAYOUT PLANNING AND DETAILING	13
6	TEST / REVISION	10
TOTAL		75

RATIONALE

Student of Architectural Assistantship at the diploma level are expected to know design and execute building interiors. Therefore the basic knowledge of building construction and detailed knowledge of building material is required with the knowledge of this subject the students can help in handling interior project from the concept stage to the project implementation stage Also this exercise if necessary since the interior are becoming more integral part of architecture and considerable stress is being laid in interior design.

Teacher while imparting instruction are expected to explain concept and principle introducing various building finishing materials. The course would be supplemented with literature and sample of materials.

OBJECTIVES

- To study about the basics of interiors, furniture's, decorative finishes and its applications.
- To know the layout plans of Interiors.

31254- ELEMENTS OF INTERIOR DESIGN

DETAIL SYLLABUS
CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**INTRODUCTION AND DESIGN THEORY OF INTERIORS** Importance of Interior Design Environment – Elements of design – Principles of design –Elements and Application of Principles of design in Interiors and their uses in Interior Design	13
II	**FUNCTION AND PLANNING** Activities and Function - Functional contents of an Interior Environment – Planning inter-relationship of Functional Spaces and Interior Elements – Anthropometrical study – Dimension Standards of Interior Elements - Furniture, Activity and Circulation	13
III	**DETAILING OF SIMPLE HOUSEHOLD FURNITURE** Floor and Wall Furniture – Materials – Specification – Joinery and finishes. Ready to assemble modular units in Interior design. Simple design of household furniture such as Tables, Chairs, Sofa Sets, Cupboards, Room dividers, built-in Fitments and Detailed Drawing of two types in each for Residence.	13
IV	**FINISHES, FURNISHING & ACCESSORIES** Various types of Finishes for Walls, Floors and Ceiling. Furnishing – Drapery, Blinds, Upholstery and Household Linen accessories – Artifacts, Paintings, Murals, Sculptures, Plants (Natural & Artificial), Aesthetic and functional Lighting and other accessories, Decorative accessories for Kitchen and Bathroom.	13
V	**LAYOUT PLANNING AND DETAILING (**Including Integrated Service Layouts): Layout of floor plan, wall panels, furniture, false ceiling, Air conditioning and Ducting - Residential Spaces and Restaurant	13

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REFERENCES :

1. Home Furnishing - Anna Hong Rutt
2. Designing and Decorating Interiors - David Van Dommalan
3. Easy steps to successful Decorating - Barbara Bradford Taylor
4. Art of Colour and Design - Maitland Graves
5. Art of design in Home Living - Frances M Obst
6. Design for you - Beitler & Lockhart
7. Colour your Home - Mary Gilliatt
8. IS 5533 – 1969 Dimensions of Spaces- Bureau of Indian Standards
9. National Building Code of India
10. Lighting in Architectural Design - Derek Phillips
12Human Dimension and Interior Space - Julius Parcero
13. Interior Design - John F. Pile
14. Interior Design Illustrated - Francis D.K. Ching
15. Interior Design - Ahmed Khasu

MAGAZINES:

1. Inside outside (Business India group)
2. Homes & Gardens
3. Indian Architect & Builders
4. Fountain Head
5. 80 Designs
6. Interiors Today.
7. Interior Design

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

V SEMESTER

2015-2016 onwards

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COMPUTER APPLICATION IN ARCHITECTURE – I

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name **: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code **: 31255**

Semester **: V Semester**

Subject Title : **COMPUTER APPLICATION IN ARCHITECTURE – I**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
COMPUTER APPLICATION IN ARCHITECTURE – I	6 Hours	90 Hours	25	75	100	3 Hours

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RATIONALE:

In the present times an architectural assistant should be capable of drafting drawings on the computer as most of the architects lay greater stress on computerized drawings for their ease of drafting, editing, managing and presentation. At the end of the course the students should be able to make 2-D architectural drawings for presentation and construction purposes. The student should get familiar with the latest CAD software.

GUIDELINES:

- All the exercises given in the syllabus should be completed and given for the end semester practical examination.
- The external examiners are requested to ensure that a single exercise question should not be given to more than four students while admitting a batch of 30 students during Board Practical Examinations

31255- COMPUTER APPLICATION IN ARCHITECTURE - I
DETAIL SYLLABUS
CONTENTS: PRACTICAL

UNIT – I

Introduction to Auto Cad – Recommended Hardware – New – Save – Save As – Q new – Open – Close – Quit – Line – Circle – Erase – Oops – D settings – Arc – Ellipse –- Polygon – D settings – Move – Copy – Array – Break – Mirror – Offset – Scale – Rotate – Trim – Extend – Stretch – Solid – Donut – Limits – Units – Rev cloud – Exercise on sketches using all the above Commands

UNIT – II

Text – M text – Style – Scale text – Spell – Zoom – Pan – View – Colour – Line type – Line weight – Layer – Lay trans – Layer – Properties – Match prop – B hatch – Hatch – P line – P edit – Fillet – Chamfer – Editing with grips – Id – List – Dist – Area – Lengthen – Sp line – Sp line edit – M line – Ml style – Ml edit – Dimensioning – Dim Linear – Dim Aligned – Dim Radius – Dim Diameter – Dim Center – 55 Dim Angular – Dim Baseline – Dim Continue – Dim Ordinate – Q dim – Exercise on sketches using all the above Commands

UNIT – III

Tolerance – Leader – Q leader – Associative Dimensioning – Dim reassociate – Dim style – Dim override – X line – Ray – Filter – Group – Cal – Block – Insert – W block – Attributes – AttDef - Base – Attdisp – Eattedit – Attredef – Battman– Minsert – Divide – Measure – Mslide – Vslide – Slide Library – Script – Extracting Attribute Information – Attext – Creating Compound Documents with OLE – Insertobj – Olelinks – CAD standards – Batch Standards Checker – Working with Hyperlinks – Exercise on sketches using all the above Commands.

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UNIT – IV

Blocks Vs External REFERENCES s – Xref – Xbind – Using Layer and Spatial Indexes – Circular REFERENCES s – Clipping Boundaries – Editing REFERENCES s in Place – Layer – Xopen – Etransmit – Communication Center – AutoCAD Design Center – Tool Palettes – Xplode – Exercise on sketches using all the above Commands

UNIT – V

Plotting in AutoCAD – Configuring Serial Ports – Drawing Web Format – Design Publisher – Autodesk Express Viewer – Publish to Web – Layout Management – Working in Paper space – Determining Layout Settings – Creating Non Rectangular Viewports– Exercise on sketches using all the above Commands

EXERCISES:

1. Study of various menus of Auto CAD package.
2. Setting limits and creating entities like LINE, ARC, CIRCLE, etc.
3. Draw 5 different Geometric Shapes and hatch it with different patterns showing dimensions and area.
4. Draw elevation and cross section for a window and a door with dimensioning.
5. Draw a plan of single room showing 2 windows and a door showing dimensions and area.
6. Do furniture arrangements for the plan shown in plate 5.
7. Draw front elevation and a cross section showing different levels for the plan shown in plate 5
8. Draw a plan of a double bedroom residence (100 Sq.m) with two toilets, living room, kitchen and portico showing doors, windows and all dimensions.
9. Draw front elevation of a plan shown in plate 8 showing the front compound wall design and entrance gate.
10. Draw cross sections from two sides of a plan shown in plate 8 showing all levels, furniture and structural components.
11. Prepare a site plan by locating the plan shown in plate 8 in a site area of 225 Sq.m showing compound wall, entrance gate, pathway, drive way, landscaping around the building and approach road.
12. Prepare a set of approval drawings of a plan shown in plate 8 with Local Authority norms and regulations showing all the necessary details.

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ALLOCATION OF MARKS

For a given line plan of minimum plinth area 100 Sq.m, draw plan, Elevation, Section and dimension the same. (By lot)

Note: The examiners should prepare minimum of 10 line plans

Plan	-	20 marks
Elevation	-	20 marks
Section	-	20 marks
Dimensioning	-	10 marks
Viva-voce	-	5 marks

REFERENCES :

1. Auto CAD REFERENCES S manual - Autodesk UNC, 2010

WEBSITES:

http://www.sin.fi.edu/-Computer drafting
http://www.ccollege.hccs.cc.tx.us/-Comp.graphic

DETAILS OF INSTRUMENTS

Computer, table & chair - Each per 1 student

Reference manuals – Each per 1 student

SOFTWARE USED

Cad Software

V SEMESTER

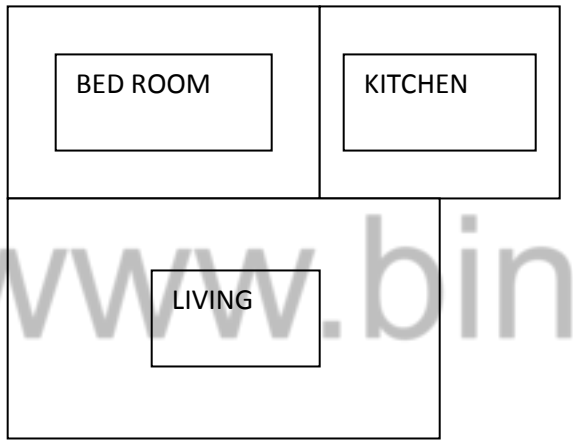
31255 - COMPUTER APPLICATIONS IN ARCHITECTURE - I
MODEL QUESTION PAPER

Duration: 3 Hours **Maximum marks: 75**

ALLOCATION OF MARKS:

Plan	-	20 marks
Elevation	-	20 marks
Section	-	20 marks
Dimensioning	-	10 marks
Viva-voce	-	5 marks

Draw the Building plan shown in figure with Elevation, Section with Dimensioning and specifications using Auto CAD:



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Note: The examiners should prepare minimum of 10 line plans (Area approximately equal to 100 sq.m).

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

V SEMESTER

2015-2016 onwards

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ARCHITECTURAL DESIGN STUDIO - II

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31256**

Semester : **V Semester**

Subject Title : **ARCHITECTURAL DESIGN STUDIO - II**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
ARCHITECTURAL DESIGN STUDIO - II	6 Hours	90 Hours	25	75	100	3 Hours

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RATIONALE

Large percentage of diploma holders in Architectural Assistantship find employment with private architects and also majority of them go for self-employment. Therefore, diploma holders are required to design institutional and Multi- storied buildings. This course aims at providing practical exercises in designing so as to develop appropriate knowledge and skills in building design. Teachers are expected to show various types of designs of small to medium residential buildings to develop an appreciation of different designs.

31256 - ARCHITECTURAL DESIGN STUDIO - II
DETAIL SYLLABUS
CONTENTS: PRACTICAL

Single level planning in small scale, small span, horizontal movement and simple vertical movement, data collection, case studies, analysis and presentation of studies

Data collection with respect to design and detailing for physically handicapped persons - Concepts and presentation of design with scales models

Examples of exercises include

DESIGN PROBLEM – 1

Institutional buildings: nursery / primary schools/school for children with learning disabilities

Design problem shall deal with planning for small group of children and minor activities for the above and shall include data collection, Literature study, Case study, Conceptual design scheme, Detailed Design and presentation drawings which includes Plan, Elevation, Section, Perspective Views etc.,

DESIGN PROBLEM – 2

Multi - storied building: Apartment design / group housing

Design problem shall deal with planning for the above by applying the principles of Intelligent Architecture and shall include data collection, Literature study, Case study, Conceptual design scheme, Detailed Design and presentation drawings which includes Plan, Elevation, Section, Perspective Views etc.,

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NOTE:

Case study and measured drawing of the building studied (either School or Apartment) can be 50% of the design problem so that the remaining 50% the Student can understand and design the building.

ALLOCATION OF MARKS

Any one question from Design Problem – I and II - 75 marks. (By lot)

For Design Problem – I

Plan	-	20 marks
Elevation	-	15 marks
Section	-	15 marks
Site Plan	-	10 marks
View	-	10 marks
Viva – voce	-	5 marks

For Design Problem – II

Plan	-	30 marks
Elevation	-	15 marks
Section	-	15 marks
Site Plan	-	10 marks
Viva – voce	-	5 marks

REFERENCES:

1. De Chiara and Callender,Time Saver Standards Building Types, McGraw Hill Co.,2nd Edition,1980.
2. Edward D.Mills, Planning - The Architects Handbook - 10th Edition,British Library C Taloguing in Publishing Data,1985.
3. Wakita/Linde,The Professional practice of Architectural working, drawing John Wiley &Sons,1984.
4. Andrew Alpern,Handbook of Speciality Elements in Architecture, McGraw Hill Book Co.,1982.
5. Julius Panero & Martin Zelnik,Human Dimension and Interior Space,Whitney Library of Design Publication,1979.
6. Neufet Architect's Data,Rudoll Herg,Crosby Lockwood and Sons Ltd.,1970.

WEBSITES

http://www.hamptons.com/freshair
http://www.columbiamedical.com/
http://www.mgarchitects.com/

DETAILS OF INSTRUMENTS

Drafting Table with stool - Each 1 per student

Pinner board - 1 No

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V SEMESTER

31256 – ARCHITECTURAL DESIGN STUDIO - II
MODEL QUESTION PAPER

Duration: 3 Hrs **Max. Marks: 75**

Any one question from Design Problem – I and II - 75 marks. (By lot)

1 Primary School at Trichy:

Education is life and people doing things the school is both a kind of shelter and a kind of stage. It brings together children and adults on the day to day business of contending, learning and Working hard, having fun and adults on stage.

The process of planning a school which will respond to the real needs of learning, teaching philosophic, community objectives and which will really meet the basic needs of the people. It demands a nice balance of experience, wisdom and professional skills.

The rectangular of land which is located in Trichy amongst residential area. (Please refer to the attached plan).

- Frame the requirements according to the modern trends.
- Apply the rules and regulations of local authority
- The built form that would reflect the educational/ children's activities.

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SITE PLAN

Drawing Requirements:

Site plan	-	1:400	-	10 Marks
Plan	-	1:100	-	20 Marks
Elevation	-	1:100	-	15 Marks
Section	-	1:100	-	15 Marks
View	-	your own scale	-	10 Marks

2 Apartment at Thanjavur:

Apartment building also known as flats are effective alternative for individual houses in cities and big towns where the housing needs of increasing population cannot be solved otherwise with limited availability land many such apartment of projects are coming up in towns and cities.

The apartment building spaces themselves must be simple and universal enough to adapt to a variety of life styles. As far as the movement through the apartment is concerned for more specific criteria can be established relying on basic circulation patterns that are valid for most living conditions. A well planned apartment provided maximum privacy for various activities make movement any room possible without crossing another.

The proposed apartment building has to be designed with the following requirements:

No. of dwelling units - 8 Nos
Area of each dwelling unit - 1200 Sgft.

- Adequate areas for passages, lobbies, porch, and stair services should be provided wherever necessary.
- Apply the rules and regulations of local authority and also apply the intelligent concepts.

The rectangular piece of land which is located is the New Bus stand area of Thanjavur amongst high rise residential buildings and has a public park situated adjust to it on the south (please refer to the attached site plan).

Front margin (Main road) - 5m
Side and rear margins - 3m

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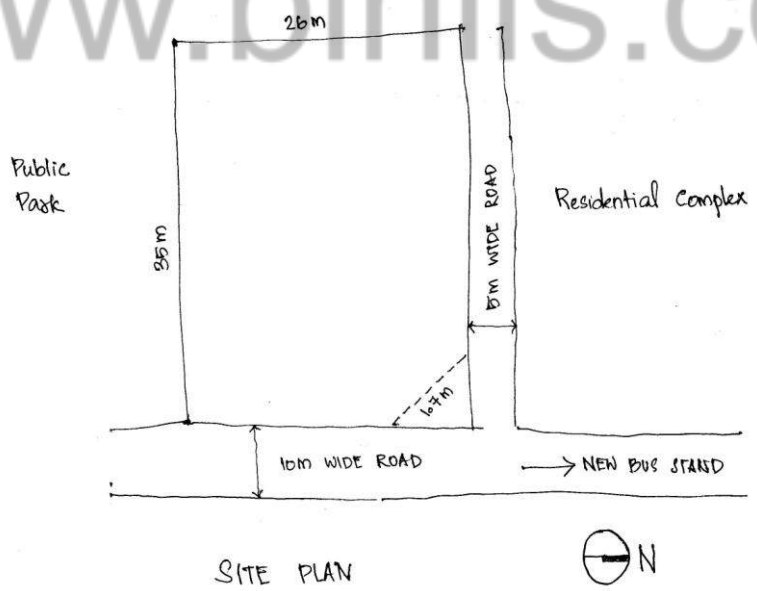

SITE PLAN

Drawing Requirements:

Site plan	-	1:200	-	10 Marks
Plan	-	1:100	-	30 Marks
Elevation	-	1:100	-	15 Marks
Section	-	1:100	-	15 Marks

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

V SEMESTER

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2015-2016 onwards

LIFE AND EMPOLYABILITY SKILL PRACTICAL [COMMON TO ALL ENGINEERING BRANCHES]

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING – SYLLABUS – M Scheme

(Being implemented from the Academic Year 2016-2017 onwards)

Course Name : **All Branches of Diploma in Engineering and Technology and Special Programmes**

Subject Code : **30002**

Semester : **V**

Subject Title : **LIFE AND EMPLOYABILITY SKILLS PRACTICAL**

Teaching and Scheme of Examination: **No. of Weeks per Semester: 15 Weeks**

Subject	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Internal assessment	Board Examination	Total	Duration
Life and Employability Skills	4 Hours	60 Hours	25	75	100	3 Hours

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Topics and Allocation of Hours:

Sl. No.	Section	No. of Hours
1	**Part – A** Communication	**30**
2	**Part – B** Entrepreneurship, Project Preparation, Productivity, Occupational Safety, Health, Hazard, Quality Tools& Labour Welfare	**20**
3	**Part – C** Environment, Global Warming, Pollution	**10**
TOTAL		**60**

RATIONALE

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Against the backdrop of the needs of the Industries, as wells as based on fulfilling the expectations of the Industries, the Diploma Level students have to be trained directly and indirectly in toning up their competency levels. Proficiency in Communication only, equips them with confidence and capacity to cope with the employment. Hence, there is a necessity to focus on these in the curriculum. At the end of the Course, the student is better equipped to express himself in oral and written communication effectively.

SPECIFIC INSTRUCTIONAL OBJECTIVES

1. **Emphasize and Enhance Speaking Skills**
2. **Increase Ability to Express Views & Opinions**
3. **Develop and Enhance Employability Skills**
4. **Induce Entrepreneurship and Plan for the Future**
5. **Expose & Induce Life Skills for Effective Managerial Ability**

LIFE AND EMPLOYABILITY SKILLS PRACTICAL

SYLLABUS

Unit	Topics	Activity	Hours
I	**Communication, Listening, Training, Facing Interviews, Behavioural Skills**	-- instant sentence making – say expressions/phrases-- self- introduction/another higher official in company – describe/explain product – frame questions based on patterns – make sentences based on patterns	**30**
II	**Entrepreneurship, Project Preparation, Marketing Analysis, Support & Procurement**	-- prepare an outline of a project to obtain loan from bank in becoming an entrepreneur – prepare a resume	**10**
III	**Productivity – comparison with developed countries, Quality Tools, Circles, Consciousness, Management, House Keeping**	-- search in the website -- prepare a presentation – discuss & interact	**05**
IV	**Occupational Safety, Health Hazard, Accident & Safety, First-Aid,Labour Welfare Legislation, Welfare Acts**	-- search in the website -- prepare a presentation – discuss & interact	**05**

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V	**Environment, Global Warming, Pollution**	-- taking down notes / hints – answering questions -- fill in blanks the exact words heard	**10**

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LEARNING STRUCTURE **100 Marks**

-- Focus more on Speaking & Listening Skills
-- Attention less on Reading & Writing Skills
-- Apply the skills in fulfilling the Objectives on Focused Topics

a) Listening **25 Marks**

1. Deductive Reasoning Skills (taking down notes/hints) **10**
2. Cognitive Skills (answering questions) **10**
3. Retention Skills (filling in blanks with exact words heard) **05**

b) Speaking Extempore/ Prepared **30 Marks**

1. Personality/Psychological Skills (instant sentence making) **05**
2. Pleasing & Amiable Skills (say in phrases/expressions) **05**
3. Assertive Skills (introducing oneself/others) **05**
4. Expressive Skills (describe/explain things) **05**
5. Fluency/Compatibility Skills (dialogue) **05**
6. Leadership/Team Spirit Skills (group discussion) **05**

c) Writing & Reading **20 Marks**

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1. Creative & Reasoning Skills (frame questions on patterns) **05**
2. Creative & Composing Skills (make sentences on patterns) **05**
3. Attitude & Aim Skills (prepare resume) **05**
4. Entrepreneurship Skills (prepare outline of a project) **05**

d) Continuous Assessment (Internal Marks) **25 Marks**

(search,read, write down, speak, listen, interact & discuss)

1. Cognitive Skills (Google search on focused topics)
2. Presentation Skills& Interactive Skills (after listening, discuss)

Note down and present in the Record Note on any 5 topics **10 Marks**
Other activities recorded in the Record note **10 Marks**
Attendance **05 Marks**

INTERNAL MARKS **25 MARKS**

EXTERNAL MARKS AT END EXAMINATION **75 MARKS**

MODEL QUESTION

Time: 3 Hours **Maximum Marks: 75**

A. LISTENING **25 Marks**

1. Listen to the content and take down notes/hints 10
2. Listen to the content and answer the following questions. 10
3. Listen to the content and fill in the blanks the exact words heard. 05

B. SPEAKING **30 Marks**

1. Say in a sentence instantly on hearing the word(5 words, one after another). 05
2. Say any five expressions commonly used in communication. 05
3. Imagine, a consultant has come to your department.
   Introduce him to your subordinates. 05
4. Explain/describe the product you are about to launch in the market. 05
5. Speak with your immediate boss about the progress you have made. 05
6. Discuss within the group on the topic of focus in the syllabus. 05

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C. WRITING & READING **20 Marks**

1. Frame new questions from the pattern given by changing sets of words with your own. 05

a.	When	do	you	return?
b.	How	is	his performance?	
c.	Where	has	the manager	gone?
d.	What	is	the progress	today?
e.	Why	are	the machines	not functioning?

2. Make sentences from the pattern given by changing sets of words with your own. 05

a.	The workers	are	on strike		
b.	The labourers	are paid	well	in this factory	
c.	There	is	a rest room	for the workers	
d.	These	are	the new products	launched	by our company
e.	Almost everyone	come	to the company	on motorbikes	

3. Prepare a resume for the post of Department Manager. 05

4. Prepare an outline of a project to obtain a loan. (Provide headings and subheadings) 05

I. Guidelines for setting the question paper:

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A. LISTENING :

ONLY TOPICS related to
POLLUTION /
ENVIRONMENT /
GLOBAL WARMING are to be taken.
These topics are common for all the three types of evaluation.

B. SPEAKING :

1. WORDS of common usage
2. Fragments – expression of politeness, courtesy, cordiality
3. Introduce yourself as an engineer with designation or
   Introduce the official visiting your company/department

4. Describe/Explain the product/machine/department
5. Dialogue must be with someone in the place of work.
6. Group of six/eight
   Discuss the focused topic prescribed in syllabus

C. WRITING & READING:

1. Provide five different structures.

Students are to substitute at least one with some other word/words

2. Provide five different structures.

Students are to substitute at least one with some other word/words

3. Provide some post related to industries.

4. Outline of the project (skeleton/structure)

Only the various headings and subheadings

Content is not needed

II. Guidelines for recording the material on the Focused Topics in the Record note.

Write in the record note, **on any five topics**, from the list of topics given below. **10 Marks**

(5 topics x 10 marks = 50 marks. Thus, the **Average of 5 topics is 10 Marks)**

1. Productivity in Industries – Comparison with developed countries
2. Quality Tools, Quality Circles and Quality Consciousness
3. Effective Management
4. House Keeping in Industries
5. Occupational Safety and Hazard
6. Occupational Accident and First Aid
7. Labour Welfare Legislations
8. Labour Welfare Acts and Rights
9. Entrepreneurship
10. Marketing Analysis, Support and Procurement

LABORATORY REQUIREMENT:

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1. An echo-free room
2. Necessary furniture and comfortable chairs
3. A minimum of two Computers with internet access
4.A minimum of two different English dailies
5. A minimum of Three Mikes with and without cords
6. Colour Television (minimum size – 29")
7. DVD/VCD Player with Home Theatre speakers
8. Smart board
9. Projector

Suggested Reading:

1. Production and Operations Management by S.N. Chary, TMH
2. Essentials of Management by Koontz &Weihrich, TMH
3. Modern Production / Operations Management by E.S. Buffa and R.K. Sarin, John Wiley & Sons
4. Production Systems: Planning, Analysis and Control by J.L.Riggs, 3rd ed., Wiley.
5. Productions and Operations Management by A.Muhlemann, J.Oakland and K.Lockyer, Macmillan
6. Operations Research - An Introduction by H.A.Taha, Prentice Hall of India

7. Operations Research by J.K.Sharma, Macmillan
8. Business Correspondence & Report Writing by R.C. Sharma and K.Mohan, TMH
9. How to prepare for Group Discussion & Interview (With Audio Cassette) by Prasad, TMH
10. Spoken English – A self-learning guide to conversation practice (with Cassette)
11. Introduction to Environmental Engineering by Mackenzie, L. Davis and A. David, Cornwell, McgrawHill, 3rd Ed.
12. Environmental Engineering by Peary, Rowe and Tchobanoglous, McgrawHill
13. Total Quality Management – An Introductory Text by Paul James, Prentice Hall
14. Quality Control and Applications by Housen&Ghose
15. Industrial Engineering Management by O.P. Khanna

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VI SEMESTER

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

VI SEMESTER

2015-2016 onwards

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STRUCTURAL DESIGN

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31261**

Semester : **VI Semester**

Subject Title **: STRUCTURAL DESIGN**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
STRUCTURAL DESIGN	6 Hours	90 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	INTRODUCTION TO LIMIT STATE METHOD DESIGN OF BEAMS FOR FLEXURE BY L.S.M	16
2	DESIGN OF SLABS BY L.S.M	16
3	DESIGN OF BEAMS FOR SHEAR BY L.S.M DESIGN OF STAIRCASES	16
4	DESIGN OF COLUMNS & FOOTINGS BY L.S.M	16
5	STEEL STRUCTURES	16
6	Test / Revision	10
TOTAL		**90**

RATIONALE

Diploma holders in Architectural Assistantship find employment with private Architects & Civil Engineers and also some percentage of them start their own enterprises. Therefore, the profession demands the development of basic knowledge and skills of Structural Engineering. This subject covers the analysis and design of reinforced concrete structural elements like slab, beam, column, column footing, staircase, etc. Also the students gain knowledge about the design of steel beam, tension and compression members.

OBJECTIVES

- To know about the materials used in R.C.C.
- To study about Limit State Design.
- To design the R.C.C. structural elements like beam, slab, column, footing, staircase, etc.,
- To design the Steel structural elements like beam, compression and tension members.

31261- STRUCTURAL DESIGN
DETAIL SYLLABUS
CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**PART – A: Reinforced Concrete Structures** **1.1 GENERAL** Reinforced Cement Concrete – Concept of Composite material – Purpose of providing reinforcement – materials used in R.C.C and their requirements – different grades of cement and steel – Characteristic strength and grades of concrete – types of loads on structures as per (IS: 875) **1.2 INTRODUCTION TO LIMIT STATE METHOD** Concept – different limit states- Characteristic strength and design strength of materials – Characteristic loads and design loads - partial safety factors for loads and material strength - Limit state of collapse in flexure – assumptions – stress strain curves for concrete and steel – Stress block – limiting values of neutral axis for different grades of steel (Proof not necessary) – Moment of resistance of singly/ doubly reinforced rectangular sections – Problems. **1.3 DESIGN OF BEAMS FOR FLEXURE BY L.S.M** Effective span of cantilever, simply supported and continuous beams – breadth and depth requirements for beams – control of deflection – minimum depth requirement for stiffness –minimum concrete cover for durability and fire resistance – minimum and maximum reinforcement, spacing for main reinforcement and side face reinforcement as per IS 456-2000-design bending moments – Design of singly and doubly reinforced rectangular beams –cantilever, simply supported beams.	**16**
II	**2.1 DESIGN OF ONE WAY SLABS BY L.S.M** Classification of slabs – Effective spans - Imposed loads on slabs (IS: 875) – strength and stiffness requirements –minimum and maximum permitted	

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	size, spacing and area of main and secondary reinforcement as per IS 456 -2000. Design of cantilever, simply supported slabs and sun shades by limit state method. **2.2 DESIGN OF TWO WAY SLABS BY L.S.M** Introduction –Effective span –thickness of slab for strength and stiffness requirements - Middle and edge strips – B.M coefficients – design of B.M. – simply supported and restrained slabs – tension and torsion reinforcement requirement– Design of two way slabs using B.M. coefficients. Simply supported two way slabs only (Corners not held down only) – curtailment of reinforcement – check for stiffness**.**	**16**
III	**3.1 DESIGN OF BEAMS FOR SHEAR BY L.S.M** Limit state of collapse in shear – design shear strength of concrete – design strengths of vertical / inclined stirrups and bent up bars in shear –.principle of shear design – critical sections for shear – nominal shear stress – design of vertical stirrups and bent up bars for rectangular beams using limit state method –simple problems. **3.2 DESIGN OF STAIRCASES** Types of stairs according to geometry and structural behavior – planning a staircase – effective span of stairs – effective breadth of flight slab – distribution of loads on flights – Design of doglegged staircase only.	**16**
IV	**R.C.C STRUCTURES** **4.1 DESIGN OF COLUMNS BY L.S.M** Limit state of collapse in compression – assumptions - limiting strength of short axially loaded compression members - effective length of compression members – slenderness limits for columns – classification of column - minimum eccentricity for column loads – longitudinal and transverse reinforcement as per I S 456-2000-Design of axially loaded short columns with lateral ties – square , Rectangular & circular columns. (With circular ties only) **4.2 DESIGN OF COLUMN FOOTINGS** Types of Footings – Footings with uniform thickness and sloped footings – minimum thickness – critical sections – minimum reinforcement – development length, anchorage value, cover, minimum edge thickness requirements as per IS 456-2000 – Design of isolated footing (Square and Rectangular only) with uniform thickness by Limit State method – For Examination , (i) Problems on Design of size of footing and area of steel only. (ii)For given sizes and other required details of the footing, check for punching shear and transverse shear only. (Any one problem**)**	**16**
V	**STEEL STRUCTURES** **5.1 DESIGN OF SIMPLE BEAMS BY LSM** Classification of beams – lateral buckling of beams – assumptions – minimum thickness of elements – limiting deflection of beams – Design of laterally supported beams using single rolled steel sections (Built up sections not included). **5.2 DESIGN OF TENSION MEMBERS BY LSM** General – Effective sectional area of Angles /T-sections connected by one leg / flange (welded connections only) – Design of ties using single angle	**16**

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	5.3 DESIGN OF COMPRESSION MEMBERS BY LSM Effective length of compression members – slenderness ratio – minimum thickness of elements – effective sectional area – Design of steel columns using single rolled steel sections without cover plates. (Lacing and battens, Built up sections not included).	

REFERENCES

1. S.R.Karve and V.L.Shah, ”Limit state Theory and Design of Reinforced Concrete”, Pune Vidya Griha Prakashan,1986.
2. P C Varghese,” Limit state Design of Reinforced Concrete”, Prentice-Hall of India Pvt. Ltd”, 1997.
3. Dr. S. Ramachandra, ”Limit State Design of Concrete Structures”, Scientific publishers, 2004.
4. Park. R and Pauley. T, ” Reinforced Concrete Structures, John Wiley & Sons, New York,1975.
5. Mallick and Rangasamy, ”Reinforced Cement Concrete” Oxford-IBH,1982.
6. I S 456-2000, I S 875-1974, I S 800 -1984
7. Explanatory hand book SP24, Design Aid SP 16, Detailing of Reinforcement SP 34
8. Dr. Ram Chandra, ”Design of Steel Structures, Vol-I ”, Standard Book House, New Delhi, Tenth Edition, 1999.
9. S.K. Duggal, “Design of Steel Structures”,Tata McGraw Hill, 2000.
10. Ashok.K.Jain – LSM Design

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

VI SEMESTER

2015-2016 onwards

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PROFESSIONAL PRACTICE & PROJECT MANAGEMENT

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31262**

Semester : **VI Semester**

Subject Title : **PROFESSIONAL PRACTICE & PROJECT MANAGEMENT**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
PROFESSIONAL PRACTICE & PROJECT MANAGEMENT	5 Hours	75 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	ARCHITECT AND HIS SERVICES	13
2	RULES AND REGULATIONS OF THE ARCHITECTURE	13
3	TENDER AND CONTRACT	13
4	PROJECT MANAGEMENT	13
5	ELEMENTARY ACCOUNTANCY	13
6	Test / Revision	10
TOTAL		75

RATIONALE

The knowledge of this subject is required for all engineer/technicians who wish to choose industry/field as their career. This course is designed to develop understanding of various functions of management, role of workers and architects services, CPM, PERT, Banking accounts etc, which are essential attributes for a successful technician.

OBJECTIVES

- To know about the role of Architects in the planning and execution of a project
- To know about how to start the construction work through tender and contract.
- To understand the various types of Architectural services
- To know how to scheduling in construction field by using CPM, PERT network techniques
- To gain knowledge about the banking accounts.

31262- PROFESSIONAL PRACTICE & PROJECT MANAGEMENT

DETAIL SYLLABUS
CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**ARCHITECT AND HIS SERVICES** Definition of an architect – Role of an architect in the planning and execution -of projects – Schedule of fees for various type of projects – Normal services, additional services and special services – Various stages for the fees collection – Calculation of architect's fees for various types of buildings.	13
II	**RULES AND REGULATIONS OF THE ARCHITECTURE PROFESSION** Professional Code of conduct – Architect's Act 1972 – Architectural design competition – Apartment and Flats act – Easement rights in the context of buildings – The role of council of architecture, India – The role of Indian institute of architects – Builders and Promoters – Arbitration.	13
III	**TENDER and CONTRACT** Invitation of tender – Condition of tender – Types of tender – Tender documents – Scrutiny and acceptance of tender – Work order. Various forms of contracts – Agreements – Conditions of contract – Legal aspects Completion period – Maintenance period – Advantages and disadvantages of various types of contracts – M-book –M-book entry – Check measurements Preparation of bills – Payments – Penal actions and penalties for defaults and delays.	13

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IV	**PROJECT MANAGEMENT:** Introduction to Project Management – Advantages of Project Management, need and scope of Project management – Construction schedules – Bar charts, Mile stone charts – Event, Activity, Duration, Float, Slack, Range, Variance – CPM and PERT networks – Advantages of Network – Comparison of CPM and PERT – Numbering and forming the network – Tracing the critical path for simple problems.	13
V	**ELEMENTARY ACCOUNTANCY:** Classification of Banks – Various types of bank accounts – Various forms of deposits – FD, RD, Bond, Chit and Shares –Withdrawal – Demand Draft – Mail transfer – Cheque, crossing of cheques, payment through cheque – Transaction through ATM – Credit Card and Debit Cards – Introduction to e- Banking – Maintenance of accounts – Receipts and Vouchers – Formalities related to avail a housing loan from a Govt. authorized bank – Building insurance scheme.	13

REFERENCES :

1. CPM and PERT network analysis by Punmia
2. Indian Institute of Architect's Manual on Professional Practice
3. CPWD manual on Tender and Contract documents
4. Principles of Acountancy – T.S.Reddy
5. Introduction to Accountancy – C.B.Guptha
6. A Text book of Banking (Law, Practice, Theory) – N.Vinayagam, M.Radhaswamy & S.V.Vasudevan
7. Insurance- Principle and Practice – M.Rahdaswamy & S.V.Vasudevan
8. Professional Practice –Roshan Namavathy
9. architectural practice and procedure- Ar. Vasants.Apte

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

VI SEMESTER

2015-2016 onwards

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LANDSCAPE DESIGN AND DETAILING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code **: 31281**

Semester : **VI Semester**

Subject Title **: LANDSCAPE DESIGN AND DETAILING**

TEACHING AND SCHEME OF EXAMINATION:

No. of hours per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
LANDSCAPE DESIGN AND DETAILING	5 Hours	75 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	INTRODUCTION TO LANDSCAPE ARCHITECTURE	**13**
2	SITE SURVEY AND ANALYSIS	**13**
3	SOFT LANDSCAPE	**13**
4	HARD LANDSCAPE	**13**
5	INDOOR LANDSCAPE	**13**
6	TEST / REVISION	**10**
TOTAL		**75**

RATIONALE:

Architectural building locate in specific locations require that these relate with the surroundings consequently it is imperative that the setting of the building be dealt if

great detail. This course would help the students in creating suitable surrounding in different contexts. This course would deal into study of landscape feature relate to the built up mass.

OBJECTIVES:

- To Describe introduction to landscape architecture
- To Understand site survey and analysis
- To gain knowledge of soft landscape
- To understand hard landscape
- To understand indoor landscape

31281- LANDSCAPE DESIGN AND DETAILING
DETAIL SYLLABUS
CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**INTRODUCTION TO LANDSCAPE ARCHITECTURE** 1.1. History of Landscape Architecture: Salient features of Italian garden, Japanese Garden, English garden & Mughal garden with one example each. 1.2. Components of Landscape: Climate, Light, Water, Soil, Plant Ecology.	**13**
II	**SITE SURVEY AND ANALYSIS** 2.1.Location & Type of Site Boundaries: Local Climate, Topography, Geology & Soils, Water & Drainage, Access & Circulation, Surrounding Land use, Existing vegetation, Existing buildings/Structures/Historic features, Services, Views from within and without.	**13**
III	**SOFT LANDSCAPE** 3.1.Types of Plants: Trees, Shrubs & Hedges, Climbers & Wall shrubs, Ground covers, Herbaceous plants & Shrubs, Grasses. 3.2.Plant Selection Criteria: Form, Texture, Colour, Scent, Sound	**13**
IV	**HARD LANDSCAPE** 4.1. Site Furniture: Seating, Shelter, Convenience elements, Information, Lighting, Traffic control & Protection, Utilities, Seasonal elements & Special features. 4.2.Recreational & Athletic Facilities: Basic dimensions of Court games, Track & Field and Swimming pools 4.3.Fountains & Pools: Purpose of water display, Types of water effects, Operating systems 4.4. Outdoor Lighting: General design principles, Lamp characteristics, Light Distribution, Categories of light fixtures, Landscape lighting effects.	**13**
V	**INDOOR LANDSCAPE** 5.1. Physical requirements of Plants: Light, Temperature, Humidity & Air quality, Water, Planting medium, Space, Weight and Maintenance. **5.2.** Characters of Interior Plants: Size, Growth Habit, Texture, Colour. List of commonly used indoor plants and their characters. Advantages and Disadvantages of Terrace Gardening. **5.3** Sustainable landscape design – introduction – Need – overview - case study	**13**

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REFERENCES:

1 Time-Savers Standards for Landscape Architecture:
2 Harris & Dines Landscape Design Guide, Volume1,
3 Soft Landscape: Adrian Lisney & Ken Field house.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

VI SEMESTER

2015-2016 onwards

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TOWN PLANNING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name **: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code **: 31282**

Semester **: VI Semester**

Subject Title **: TOWN PLANNING**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
TOWN PLANNING	5 Hours	75 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	TOWN PLANNING PRINCIPLES, SURVEYS AND ZONING	13
2	HOUSING and SLUMS	13
3	PUBLIC BUILDINGS, PARKS AND PLAY GROUNDS, MASTER PLAN	13
4	URBAN ROADS, TRAFFIC MANAGEMENT	13
5	BUILDING BYE-LAWS, MISCELLANEOUS TOPICS	13
6	TEST / REVISION	10
TOTAL		**75**

RATIONALE

Sum percentage of students find employment in the state department of town and country planning housing board and urban development authorities Student are

expected to prepare master plan and layout of housing schemes road parking etc Therefore the course in Town Planning equip the student with appropriate knowledge to perform above said functions. While teaching this subject teachers should show some of the typical master plan and layout plan to bring conceptual clarity the mind of students.

OBJECTIVES

- To understand the principle of Town planning and surveys.
- Study the requirements of housing and slums.
- Study the requirement of Public buildings, parks and play grounds.
- Preparation of Master plan and Re-planning of existing Towns.
- Knows about Building bye laws and other miscellaneous topics.

31282 - TOWN PLANNING

DETAIL SYLLABUS

CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**1.1 TOWN PLANNING PRINCIPLES** General-evolution of planning-objects of town planning-Economic justification for town planning-principles of Town planning-Necessity of town planning-origin of towns-growth of towns-stages in town development-personality of town- Distribution of land uses-Forms of planning-site for an ideal Town-Requirements of new Towns-Planning of the modern Town-Powers required to enforce T.P. schemes-cost of Town planning-present position of Town Planning in India. **1.2 SURVEYS** General-Necessity-collection of Data-Types of surveys-Uses of surveys. **1.3 ZONING** Meaning of the term-Uses of land-objects-principles of Zoning-Advantages of Zoning-Importance of Zoning-Aspects of Zoning-Transition Zone-Economy of Zoning-Zoning powers-Maps for Zoning.	**6** **3** **4**
II	**2.1 HOUSING** General-Importance of housing-Demand for houses-Building site-Requirements of residential buildings-Classification of residential buildings-Design of residential areas-Rural Housing-Agencies for housing-Investment in housing- HUDCO - CIDCO- Housing problem in India. **2.2 SLUMS** General-Causes of slums-Characteristics of slums-Effects of slums-Slum clearance- Works of improvement-Open plot scheme-Slum clearance and rehousing- Prevention of slum formation-Resources for slum clearance programmes-The Indian slum.	**7** **6**
III	**3.1 PUBLIC BUILDINGS** General - Location of Public Buildings – Classification of public Buildings - Principles of design of public buildings - Town centre - Grouping of public buildings - Civic aesthetics. **3.2 PARKS AND PLAY GROUNDS**	**3**

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	General-Types of recreation-Location of urban green spaces-classification of parks-park systems-park design-Finance of parks-parkways-playgrounds-space standards-Landscape architecture. **3.3 MASTER PLAN** General-Objects-Necessity-Data to be collected-Drawings to be prepared-Features of master plan-Planning standards-Report-stages of preparation-Method of Execution-conclusion. **3.4 RE-PLANNING EXISTING TOWNS** General-Objects of re-planning-Defects of existing towns-Data to be collected- Urban renewal projects-Decentralization-Garden city-Surface drains-Refuse of Town.	**3** **3** **4**
IV	**4.1 URBAN ROADS** General-Objects- Requirements of good city road-Factors to be considered-Classification of urban roads-Types of street systems-Through and By-pass roads- Outer and inner ring roads-Expressways- Freeways-Precincts-Road aesthetics. **4.2 TRAFFIC MANAGEMENT** General-Object-Traffic survey-Traffic congestion-Traffic control-Road junction- Parking-Traffic capacity of road-Road traffic problems –Road accident-Traffic signal –Road sign –Road marking-Street lighting in a town –Traffic problem of existing towns –Peculiarities of traffic.	**6** **7**
V	**5.1 BUILDING BYE-LAWS** General- Objects of bye-laws-importance of bye-laws-Function of local authority- Responsibility of owner-Applicability of bye-laws-set-back-Light plane-Floor space index-Off-street parking-Fire protection-Minimum plot sizes-Some other terms-Principles underlying building bye-laws-Building bye-laws for residential area of a typical town planning scheme-Building bye-laws-Development control rules- General rules of metropolitan Area-CMDA rules. **5.2 MISCELLANEOUS TOPICS** Airports-Location-size-Noise control-Parts of an airports-Betterment and compensation-city blocks-conurbations-Cul-de-sac streets-Focal point-Green belt- Public utility services-Rapid transit –Remote sensing application –urban planning using remote sensing-site suitability analysis-Transportation planning..	**7** **7**

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REFERENCES:

1. K.S.Rangwala and P.S.Rangwala,. “Town Planning”,Charotar Publishing House,15th Edition,1999.
2. Michael Hord, R. Remote sensing methods and application, John Wiley and Sons, New York, 1986.
3. National Building Code of India- Part-III.
4. Municipal and Panchayat bye-laws, CMDA Rules and Corporation bye-laws.
5. KA. Ramegowda, Urban and regional planning , University of Mysore
6. M/s Dvan, The urban pattern, city planning and design.
7. Time saver standards for site planning, Mc Graw Hill Book company
8. John Rate life, An Introduction to town and country planning,London
9. The art of home landscaping – Mc Graw Hill Book company
10. Harvey M. Rubenstain ,A Guide to site and Environmental planning,Newyork.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

VI SEMESTER

2015-2016 onwards

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CLIMATOLOGY

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name **: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code **: 31283**

Semester **: VI Semester**

Subject Title **: CLIMATOLOGY**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
CLIMATOLOGY	5 Hours	75 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	INTRODUCTION	**13**
2	RELATION OF CLIMATE AND COMFORT	**13**
3	SUN CONTROL AND SHADING DEVICES	**13**
4	WIND CONTROL	**13**
5	USE OF BUILDING MATERIALS WITH RESPECT TO CLIMATE	**13**
6	TEST / REVISION	**10**
TOTAL		**75**

RATIONALE

Understanding of the basic principles of climatology and environment are very important for diploma holders in Architectural Assistantship. The knowledge of this subject will be very useful in the design of buildings. Teachers are expected to impart instructions of the above course keeping in view the effect of above course in the design of buildings

OBJECTIVES

- To know the various types of climates, element of climates, effect of wind on climate and lighting.
- To study the orientation of buildings and materials with respect to climate.

31283 - CLIMATOLOGY
DETAIL SYLLABUS
CONTENTS: THEORY

Unit	Name of the Topic	Hours
I	**INTRODUCTION** Introduction to Climatology- Movement of earth around sun-Different elements of climate like: Wind, temperature, humidity, precipitation and pressure-Different climatic zones- Effect of climate on man and shelter- Orientation of building with respect to above mentioned elements of Climate	**13**
II	**RELATION OF CLIMATE AND COMFORT** Macro-micro climatic effects - Concept of comfort zone and bio-climatic chart - Climatic evaluation by season	**13**
III	**SUN CONTROL AND SHADING DEVICES** Solar Chart (sun path diagram) - Orientation for sun - Internal and external sun protection devices - Natural lighting - Introduction and objectives of Solar Passive Design - Passive solar heating and cooling	**13**
IV	**WIND CONTROL** Orientation for wind - Effect of wind on climate - Wind protection devices	**13**
V	**USE OF BUILDING MATERIALS WITH RESPECT TO CLIMATE** Concrete – Brick – Tiles – Glass – Wood – Plastics – Stone – Insulating materials	**13**

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REFERENCES:

1. O.H.Koenigsberger and others, Manual of Tropical Housing and Building – Part I – Climatic Design, Longmans, London, 1980.
2. M.Evans - Housing, Climate and Comfort - Architectural Press, London, 1980.
3. B.Givoni,Man, Climate and Architecture, Applied Science, Banking, Essex,1982.
4. Donald Watson and Kenneth Labs., Climatic Design - McGraw Hill Book Company - New York -1983.

WEBSITES

http://www.envinst.conu.edu/~envinst/research/built.html
www.terin.org/
http://www.pge.com/pec/archives/w98passi.html
http://solstice.crest.org/efficiency/index.shtml

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

VI SEMESTER

2015-2016 onwards

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STRUCTURAL DETAILING AND DRAWING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 31264

Semester : VI Semester

Subject Title : STRUCTURAL DETAILING AND DRAWING

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
STRUCTURAL DETAILING AND DRAWING	4 Hours	60 Hours	25	75	100	3 Hours

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RATIONALE:

This is a detailing subject which covers broad elements of Structural Engineering. Study of this subject enables the student to know the position and placement of reinforcement for the RCC structural elements; connection of Steel structural elements. The student will learn to analyze and design simple structural elements using STADPRO software.

OBJECTIVES:

1. To know the disposition of reinforcement in R.C.C Structural elements.
2. To know the connection details of the Steel members.
3. To workout the Bar bending Schedule for R.C.C members.

31264- STRUCTURAL DETAILING AND DRAWING
DETAIL SYLLABUS

CONTENTS: PRACTICAL

Unit	Name of the Topic	Hours
I	**SLABS:** Detailing of 1. One way slab 2. Two way slab	**12**
II	**BEAMS:** Detailing of the following Beams 1. Singly reinforced Beam (Cantilever and simply supported beams) 2. Doubly reinforced Beam (Simply supported beams) **3.** Lintel cum sunshade	**12**
III	**COLUMN AND FOOTING:** Detailing of Columns and Foundations – Square and Rectangular footings with Column.	**12**
IV	**STEEL MEMBERS:** Detailing of 1. Beam to Beam connection 2. Beam to Column connection (Framed and Seated connections) **3.** Roof Truss	**12**
V	**ANALYSIS USING SOFTWARE (For practice only):** Using any design software like STADDPRO, SCADS, etc., analyze the following and prepare structural drawings (not to be asked in the examination): 1. Simply supported beam 2. Fixed beam **3.** Simple portal frame	**12**

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LIST OF EXERCISES:

PART A

1. Detailing of a simply supported one way Slab.
2. Detailing of a Two way Slab with corners held down.
3. Detailing of a Two way Slab with corners not held down
4. Detailing of Lintel Beam with Sunshade.
5. Detailing of a Singly Reinforced Rectangular Beam. (Cantilever / simply supported)
6. Detailing of a Doubly Reinforced Rectangular Beam. (Simply supported)
7. Detailing of a Square sloped Footing with Column.
8. Detailing of a Rectangular Footing with Column

PART B

9. Detailing of a Steel Beam to Beam connection. (Welded connection only)
10. Detailing of a Steel Beam to Column connection. (Framed and seated Connections - Welded connection only)
11. Detailing of a Roof Truss, with welded joint details.

(Exercises 12 to 15 –not for practical examination-practice only)

12. Generation and analysis of a simply supported beam with Point Load & UDL.
13. Generation and analysis of a Fixed beam with Point Load & UDL.
14. Generation and analysis of a simple portal frame with vertical load only.
15. Generation and analysis of a simple Portal Frame subjected to vertical and horizontal Loads.

Note: Prepare bar bending schedule for all the RCC works (Exercise 1 to 8)

ALLOCATION OF MARKS:

EVALUATION

Detailing of a RCC Structure (Units I-III) – 45 MARKS

Detailing of a Steel Structure (Unit IV) – 25 MARKS

Viva – Voce – 5 MARKS

DETAILS OF INSTRUMENTS:

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Drafting Table with stool - Each 1 per student

Pinner board - 1No

SOFTWARE:

STAAD PRO - 2 users

VI SEMESTER
31264- STRUCTURAL DETAILING AND DRAWING
MODEL QUESTION PAPER

Duration: 3 Hours **Maximum marks: 75**

NB: Answer ALL Questions.

ALLOCATION OF MARKS

Part – A – 45 MARKS
Part – B – 25 MARKS
Viva – Voce – 5 MARKS

PART – A (45 Marks)

I) The following are the details of a singly reinforced partially fixed beam:

Clear span : 6000 mm
Width of supports : 300mm
Size of beam : 300 x 600 mm
Clear cover to reinforcement : 25 mm

Reinforcement Details:

Tension reinforcement : 5 Nos. of 20mm dia Fe 415 steel
Hanger bars : 2 nos. 10 mm dia Fe 415 steel
(Approximately 20% of main bars)
Stirrups : 8 mm dia 2 legged Fe 415 steel @ 340mm c/c
Negative reinforcement: 2 nos. of 20mm dia at support to a distance of 0.10 l (or) L_d whichever is greater.

Use standard anchorage and curtailment practices wherever necessary.
Assume any other data required.
Draw to a suitable scale:

1. The longitudinal section of the beam (15 marks)
2. The cross section of the beam at support (8 marks)
3. The cross section of the beam at mid span (7 marks)
4. Prepare the bar bending schedule for the beam. (15 marks)

PART – B (25 Marks)

II) The following are the details of beam to beam connections.

Size of main beam : ISMB 400 @ 616 N/m
Size of cross beam : ISMB 300 @ 442 N/m
Size of cleat Angles : 2 Nos. of ISA 90x90x8 mm
Assume any other data required suitably.

Draw to a suitable scale the following:

Beam to beam connection – Top of main and cross beam at different level.

1) Elevation with main beam in section (15 marks)
2) Elevation with cross beam in section (10 marks)

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

VI SEMESTER

2015-2016 onwards

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ARCHITECTURAL MODEL MAKING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP
M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name **: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code **: 31265**

Semester **: VI Semester**

Subject Title **: ARCHITECTURAL MODEL MAKING**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
ARCHITECTURAL MODEL MAKING	4 Hours	60 Hours	25	75	100	3 Hours

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TOPICS & ALLOCATION OF HOURS:

Sl. No	Topics	Time (Hrs)
1	SOLID MODELLING	10
2	BLOCK MODELLING	10
3	FURNITURE MODELLING	10
4	BUILDING INTERIOR COMPONENTS	10
5	DETAILED MODEL	20
TOTAL		60

RATIONALE:

In Diploma level Architectural Assistantship Technical education development of auto motor skills plays a vital role. The auto motor skill development can be achieved

by on hand experience in handling various instruments, apparatus and equipment for preparation of architectural models to the various building elements and buildings. This is accomplished by doing architectural models related to building elements and buildings of different types in architectural workshop. Further the students will guide in making architectural models for their project work.

31265- ARCHITECTURAL MODEL MAKING
DETAIL SYLLABUS
CONTENTS: PRACTICAL

NOTE: 1) both drawings and models are to be prepared to all the exercises and evaluated for awarding internal marks.

Unit	Name of the Topic	Hours
I	**Solid Modeling:** Basic Geometrical shapes – Cube, Cylinder, Cone, Sphere, pyramids, Prism. (Based on development of surface)	**10**
II	**Block Modeling:** **Building Modeling –** (To express scale proportion and colour) – Watchman cabin, Car shed, Reading room, Snack bar, Cafeteria, Shop, Ice cream parlour.	**10**
III	**Furniture Modeling:** Chairs, Sofa, dining table, Cot, Cabinets, Dressing table, wall units, (Built in units), Kitchen units etc.	**10**
IV	**Building Interior Components:** Staircase, Partition, Ward robe, Room Divider, and Windows	**10**
V	**Detailed Model:** A building model to express site, landscape, road, and exterior features.	**20**

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LIST OF PLATES:

1) Prepare development surface and model for solids cube, cone cylinder and prism, pyramid using Snow white board / mount board. (not for examination)
2) Prepare plan, elevation section and block model for snack bar, cafeteria, and ice cream parlour using mount board.
3) Prepare plan, elevation section and model for furnitures like sofa, dining table & chair using mount board / snow white board.
4) Prepare plan, elevation and block model for a spiral staircase using mount board.
5) Prepare plan, elevation, section and model for a room divider using mount board snow white board.
6) Prepare plan, elevation section and model for a paneled bay window using mount board / snow white board.
7) Prepare plan, elevation section and model for a residential building of area 100 sq.m. With full landscape & exterior finishes using mount board / snow white board.

ALLOCATION OF MARKS

Part A: Any one of exercises (by lot) from 2 to 6 that are done in studio and Architectural workshop using snow white board / mount board during the Semester to carry **30 marks**.

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Part B: Model of a residential building of area 60 sq.m. With full landscape & exterior finishes using mount board / snow white board to carry **40 marks.**

Viva-Voce: **5 marks**

Total: **75** Marks

Note: The plan, elevation and section for the Part – B question shall be given to the Students a day before the start of examination.

VI SEMESTER

31265- ARCHITECTURAL MODEL MAKING
MODEL QUESTION PAPER

Duration: 3HRS **Max.marks:75**

PART - A

1 Draw the details of a sofa and prepare model for the same using snow white board. Assume suitable scale and dimensions. (Question is chosen by lot.

30 marks

PART – B

2. Prepare the Model of a residential building of area 60 sq.m. With full landscape & exterior finishes using mount board / snow white board.

40 marks

PART – C

VIVA-VOCE **5 marks**

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

www.binils.com

VI SEMESTER

2015-2016 onwards

COMPUTER APPLICATIONS IN ARCHITECTURE - II

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP
M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPOLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31266**

Semester : **VI Semester**

Subject Title : **COMPUTER APPLICATIONS IN ARCHITECTURE - II**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
COMPUTER APPLICATIONS IN ARCHITECTURE - II	6 Hours	90 Hours	25	75	100	3 Hours

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RATIONALE:

In Diploma level Architectural Assistantship Technical education development of auto motor skills plays a vital role. The auto motor skill development can be achieved by on hand experience in handling various instruments, apparatus and equipment for preparation of detail to the various building components. This is accomplished by doing drawings related to construction details of different components of the building in studios

GUIDELINES:

- All the exercises given in the syllabus should be completed and given for the end semester practical examination.
- The external examiners are requested to ensure that a single exercise question should not be given to more than four students while admitting a batch of 30 students during Board Practical Examinations

31266 - COMPUTER APPLICATIONS IN ARCHITECTURE - II
DETAIL SYLLABUS
CONTENTS: PRACTICAL

UNIT – I. PROJECT

Any design problem done in 3rd / 4th / 5th semester as main project shall be taken up for preparing complete set of drawings, including all plans, elevations (Minimum 2) and sections (Minimum 1) showing all interior layouts, joinery schedule, tree plantations, parking layout etc. using Auto Cad.

UNIT – II. FUNDAMENTALS OF 3D DRAFTING

- Basic features
- Co-ordinate system
- 3D entities and surfaces

UNIT – III. MAKING AN EXISTING 2D PLAN DRAWING COMPATIBLE TO 3D DRAFTING

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- Commands and modifications to 2D drawings
- 3D Poly, rectangle elevation, extrude – requirements and applications
- 3D of exterior of blocks – preparation, modification of 2D drawings
- 3D of interiors of block – preparation, modification of 2D drawings

UNIT – IV. 3D MODELING

- Wire frame, surface and 3D solid modeling
- Viewing 3D models
- Editing 3D objects
- Importing and exporting library

UNIT – V RENDERING (Using 3D STUDIO MAX)

- Rendering Techniques
- Material application

EXERCISES:

1 – 3: Converting simple geometrical shapes into 3D objects (3 exercises).
4 –6: Converting given 2D building elements into 3D models (3 exercises).
7– 9: Converting the 2D building plans into 3D presentation models (3 exercises).
10: Rendering the above (7-9) by exporting to 3DS Max

DETAILS OF INSTRUMENTS:

Computer, table and chair = Each per 1 student

SOFTWARE:

Cadd software
3ds max

ALLOCATION OF MARKS:

For a given line plan of minimum plinth area 60 Sq.m. Create a 3D model and render the same. (By lot)

Note: The examiners should prepare minimum of 10 line plans

Plan - 10 marks

3D Modeling - 40 marks

Rendering - 20 marks

Viva-voce - 05 marks

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VI SEMESTER

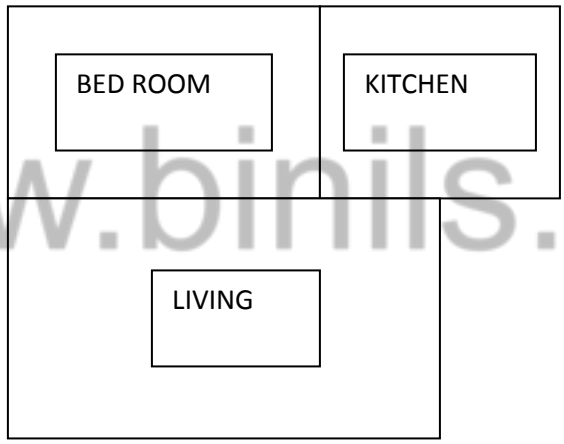
31266 - COMPUTER APPLICATIONS IN ARCHITECTURE - II
MODEL QUESTION PAPER

Duration: 3 Hours **Maximum marks: 75**

ALLOCATION OF MARKS:

Plan	-	10 marks
3D Modeling	-	40 marks
Rendering	-	20 marks
Viva-voce	-	5 marks

Create a 3D Rendered model of the Building plan shown in the Figure below using Auto CAD and 3D Studio Max software:



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Note: The examiners should prepare minimum of 10 line plans.

EQUIPMENTS REQUIRED FOR 30 STUDENTS:

1) Pentium 3GHz Computers - 15 Nos.
2) Laser Printer - 2 Nos.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

M - SCHEME

VI SEMESTER

2015-2016 onwards

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PROJECT WORK

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP
M-SCHEME

(To be implemented for the students admitted from the year 2015-2016 onwards)

Course Name : **DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP**

Subject Code : **31267**

Semester : **VI Semester**

Subject Title : **PROJECT WORK**

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
PROJECT WORK	4 Hours	75 Hours	25	75	100	3 Hours

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OBJECTIVES:

1) The objective of the project work is to enable the students to work inconvenient groups of not more than six members in a group on a Project involving theoretical and real studies related to Architecture.
2) Every project Work shall have a Guide who is a member of the faculty.
3) Five Hours per week shall be allotted in the Time table for this important activity and this time shall be utilized by the students to receive directions from the Guide, Case studies, Library reading, computer analysis , field work or model making as assigned by the Guide.
4) Each group shall present periodical seminars in the progress made In the Project.
5) Each student shall finally produce a comprehensive report covering the Project Work details such as Architectural Design, Working Drawing, Model and Approximate estimate of the Project and Conclusion.
6) The continuous assessment and a final evaluation may be carried out for the award of marks.
7) The students may be exposed to the various natural and manmade disasters they may encounter in the field of work and taught how to manage them.

GUIDELINES:

Major Project Work aims at developing innovative skills in the students whereby they apply in totality the knowledge and skills gained through the course work in the solution of particular problem or by undertaking a project. The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students. For this purpose, students should be asked to identify the type of project work, they would like to execute. It is also essential that the faculty of the respective department may have a brainstorming to identify suitable project assignments for their students. The project assignment can be individual assignment or a group assignment. There should not be more than 3 students if the project work is given to a group. The students should identify themselves or accept the given project assignment at least two to three months in advance. The project work identified in collaboration with industry should be preferred. Each teacher is expected to guide the project work of 5–6 students.

The project assignments may consist of:

1. Plans
2. Elevations
3. Sections
4. Perspective views
5. Models

Effort should be made to provide actual field problem a project work to students. Project selected should be not too large in size and complexity and be related to local situations.

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31267 PROJECT WORK
(PROJECT WORK NORMS AS PER THE LATEST REGULATIONS ONLY)

The Project shall be Planning and designing of any one of the following:

1. Residential Building
2. College Building
3. Hostel Building
4. Hotel Building
5. Nursing Home
6. School Building
7. Guest House
8. Bank Building
9. Shopping Complex
10. Community Hall
11. Theatre
12. Apartment
13. Staff Quarters
14. Restaurant

(The building selected should have a minimum of TWO floors.)

- Minimum Marks for Pass is 50 out of which minimum 35 marks should be obtained out of 75 marks in the board Examination alone.

- Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment
- Get exposure on industrial environment and its work ethics.
- Understand what entrepreneurship is and how to become an entrepreneur.
- Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
- Carry out cooperative learning through synchronous guided discussions within the class in key dates, asynchronous document sharing and discussions, as well as to prepare collaborative edition of the final project report.
- Understand the facts and importance of environmental management.
- Understand and gain knowledge about disaster management

INTERNAL ASSESSMENT:

The internal assessment should be calculated based on the review of the progress of the work done by the student periodically as follows.

Detail of assessment	Period of assessment	Max. Marks
First Review	6th week	10
Second Review	14th week	10
Attendance	Entire semester	5
Total		25

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EVALUATION FOR BOARD EXAMINATION:

Details of Mark allocation	Max Marks
Marks for Report Preparation, Demo, Viva-voce	65
Marks for answers of 4 questions which is to be set by the external examiner from the given question bank consisting of questions in the following two topics Disaster Management and Environmental Management. Out of four questions two questions to appear from each of the above topics i.e. 2 questions x 2 topics = 4 questions 4 questions x 2 ½ marks = 10 Marks	10
Total	**75**

DETAILED SYLLABUS

ENVIRONMENTAL & DISASTER MANAGEMENT

1. ENVIRONMENTAL MANAGEMENT

Introduction – Environmental Ethics – Assessment of Socio Economic Impact – Environmental Audit – Mitigation of adverse impact on Environment – Importance of Pollution Control – Types of Industries and Industrial Pollution.

Solid waste management – Characteristics of Industrial wastes – Methods of Collection, transfer and disposal of solid wastes – Converting waste to energy – Hazardous waste management Treatment technologies.

Waste water management – Characteristics of Industrial effluents – Treatment and disposal methods – Pollution of water sources and effects on human health.

Air pollution management – Sources and effects – Dispersion of air pollutants – Air pollution control methods – Air quality management.

Noise pollution management – Effects of noise on people – Noise control methods.

2. DISASTER MANAGEMENT

Introduction – Disasters due to natural calamities such as Earthquake, Rain, Flood, Hurricane, Cyclones etc – Man made Disasters – Crisis due to fires, accidents, strikes etc – Loss of property and life..

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Disaster Mitigation measures – Causes for major disasters – Risk Identification – Hazard Zones – Selection of sites for Industries and residential buildings – Minimum distances from Sea – Orientation of Buildings – Stability of Structures – Fire escapes in buildings - Cyclone shelters – Warning systems.

Disaster Management – Preparedness, Response, Recovery – Arrangements to be made in the industries / factories and buildings – Mobilization of Emergency Services - Search and Rescue operations – First Aids – Transportation of affected people – Hospital facilities – Fire fighting arrangements – Communication systems – Restoration of Power supply – Getting assistance of neighbors / Other organizations in Recovery and Rebuilding works – Financial commitments – Compensations to be paid – Insurances – Rehabilitation.

LIST OF QUESTIONS

1. ENVIRONMENTRAL MANAGEMENT

1. What is the responsibility of an Engineer-in-charge of an Industry with respect to Public Health?
2. Define Environmental Ethic.
3. How Industries play their role in polluting the environment?

4. What is the necessity of pollution control? What are all the different organizations you know, which deal with pollution control?
5. List out the different types of pollutions caused by a Chemical / Textile / Leather / Automobile / Cement factory.
6. What is meant by Hazardous waste?
7. Define Industrial waste management.
8. Differentiate between garbage, rubbish, refuse and trash based on their composition and source.
9. Explain briefly how the quantity of solid waste generated in an industry could be reduced.
10. What are the objectives of treatments of solid wastes before disposal?
11. What are the different methods of disposal of solid wastes?
12. Explain how the principle of recycling could be applied in the process of waste minimization.
13. Define the term 'Environmental Waste Audit'.
14. List and discuss the factors pertinent to the selection of landfill site.
15. Explain the purpose of daily cover in a sanitary landfill and state the minimum desirable depth of daily cover.
16. Describe any two methods of converting waste into energy.
17. What actions, a local body such as a municipality could take when the agency appointed for collecting and disposing the solid wastes fails to do the work continuously for number of days?

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18. Write a note on Characteristics of hazardous waste.
19. What is the difference between municipal and industrial effluent ?
20. List few of the undesirable parameters / pollutants anticipated in the effluents from oil refinery industry / thermal power plants / textile industries / woolen mills / dye industries / electroplating industries / cement plants / leather industries (any two may be asked)
21. Explain briefly the process of Equalization and Neutralization of waste water of varying characteristics discharged from an Industry.
22. Explain briefly the Physical treatments "Sedimentation" and "Floatation" processes in the waste water treatment.
23. Explain briefly when and how chemical / biological treatments are given to the waste water.
24. List the four common advanced waste water treatment processes and the pollutants they remove.
25. Describe refractory organics and the method used to remove them from the effluent.
26. Explain biological nitrification and de-nitrification.
27. Describe the basic approaches to land treatment of Industrial Effluent.

28. Describe the locations for the ultimate disposal of sludge and the treatment steps needed prior to ultimate disposal.
29. List any five Industries, which act as the major sources for Hazardous Air Pollutants.
30. List out the names of any three hazardous air pollutants and their effects on human health.
31. Explain the influence of moisture, temperature and sunlight on the severity of air pollution effects on materials.
32. Differentiate between acute and chronic health effects from Air pollution.
33. Define the term Acid rain and explain how it occurs.
34. Discuss briefly the causes for global warming and its consequences
35. Suggest suitable Air pollution control devices for a few pollutants and sources.
36. Explain how evaporative emissions and exhaust emissions are commonly controlled.
37. What are the harmful elements present in the automobile smokes? How their presence could be controlled?
38. What is the Advantage of Ozone layer in the atmosphere? State few reasons for its destruction.
39. Explain the mechanism by which hearing damage occurs.
40. List any five effects of noise other than hearing damage.
41. Explain why impulsive noise is more dangerous than steady state noise.
42. Explain briefly the Source – Path – Receiver concept of Noise control.
43. Where silencers or mufflers are used ? Explain how they reduce the noise.
44. Describe two techniques to protect the receiver from hearing loss when design / redress for noise control fail.
45. What are the problems faced by the people residing along the side of a railway track and near to an Airport? What provisions could be made in their houses to reduce the problem?

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2. DISASTER MANAGEMENT

1. What is meant by Disaster Management? What are the different stages of Disaster management?
2. Differentiate Natural Disasters and Man made Disasters with examples.
3. Describe the necessity of Risk identification and Assessment Surveys while planning a project.
4. What is Disasters recovery and what does it mean to an Industry?
5. What are the factors to be considered while planning the rebuilding works after a major disaster due to flood / cyclone / earthquake? (Any one may be asked)
6. List out the public emergency services available in the state, which could be approached for help during a natural disaster.

7. Specify the role played by an Engineer in the process of Disaster management.
8. What is the cause for Earthquakes? How they are measured? Which parts of India are more vulnerable for frequent earthquakes?
9. What was the cause for the Tsunami 2004 which inflicted heavy loss to life and property along the coast of Tamilnadu ? Specify its epicenter and magnitude.
10. Specify the Earthquake Hazard Zones in which the following towns of Tamilnadu lie: (a) Chennai (b) Nagapattinam (c) Coimbatore (d) Madurai (e) Salem.
11. Which parts of India are experiencing frequent natural calamities such as (a) heavy rain fall (b) huge losses due to floods (c) severe cyclones
12. Define basic wind speed. What will be the peak wind speed in (a) Very high damage risk zone – A, (b) High damage risk zone, (c) Low damage risk zone.
13. Specify the minimum distance from the Sea shore and minimum height above the mean sea level, desirable for the location of buildings.
14. Explain how the topography of the site plays a role in the disasters caused by floods and cyclones.
15. Explain how the shape and orientation of buildings could reduce the damages due to cyclones.
16. What is a cyclone shelter ? When and where it is provided ? What are its requirements ?
17. What Precautionary measures have to be taken by the authorities before opening a dam for discharging the excess water into a canal/river ?
18. What are the causes for fire accidents ? Specify the remedial measures to be taken in buildings to avoid fire accidents.
19. What is a fire escape in multistoried buildings ? What are its requirements ?
20. How the imamates of a multistory building are to be evacuted in the event of a fire/Chemical spill/Toxic Air Situation/ Terrorist attack, (any one may be asked).
21. Describe different fire fighting arrangements to be provided in an Industry.
22. Explain the necessity of disaster warning systems in Industries.
23. Explain how rescue operations have to be carried out in the case of collapse of buildings due to earthquake / blast / Cyclone / flood.
24. What are the necessary steps to be taken to avoid dangerous epidemics after a flood disaster?
25. What relief works that have to be carried out to save the lives of workers when the factory area is suddenly affected by a dangerous gas leak / sudden flooding ?
26. What are the difficulties faced by an Industry when there is a sudden power failure? How such a situation could be managed?
27. What are the difficulties faced by the Management when there is a group clash between the workers? How such a situation could be managed?

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28. What will be the problems faced by the management of an Industry when a worker dies because of the failure of a mechanical device due to poor maintenance? How to manage such a situation ?
29. What precautionary measures have to be taken to avoid accidents to labourers in the Industry in a workshop / during handling of dangerous Chemicals / during construction of buildings / during the building maintenance works.
30. Explain the necessity of medical care facilities in an Industry / Project site.
31. Explain the necessity of proper training to the employees of Industries dealing with hazardous products, to act during disasters.
32. What type of disaster is expected in coal mines, cotton mills, Oil refineries, ship yards and gas plants?
33. What is meant by Emergency Plan Rehearsal? What are the advantages of such Rehearsals?
34. What action you will take when your employees could not reach the factory site because of continuous strike by Public Transport workers?
35. What immediate actions you will initiate when the quarters of your factory workers are suddenly flooded due to the breach in a nearly lake / dam, during heavy rain?
36. What steps you will take to avoid a break down when the workers union of your Industry have given a strike notice?
37. List out few possible crisis in an organization caused by its workers? What could be the part of the middle level officials in managing such crisis?
38. What types of warning systems are available to alert the people in the case of predicted disasters, such as floods, cyclone etc.
39. Explain the necessity of Team work in the crisis management in an Industry / Local body.
40. What factors are to be considered while fixing compensation to the workers in the case of severe accidents causing disability / death to them?
41. Explain the legal / financial problems the management has to face if safely measures taken by them are found to be in adequate.
42. Describe the importance of insurance to men and machinery of an Industry dealing with dangerous jobs.
43. What precautions have to be taken while storing explosives in a match/ fire crackers factory?
44. What are the arrangements required for emergency rescue works in the case of Atomic Power Plants?
45. Why residential quarters are not constructed nearer to Atomic Power Plants?

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