POLYTECHNIC, B.E/B.TECH, M.E/M.TECH, MBA, MCA & SCHOOL

Notes Syllabus Question Papers Results and Many more... Available @ www.binils.com

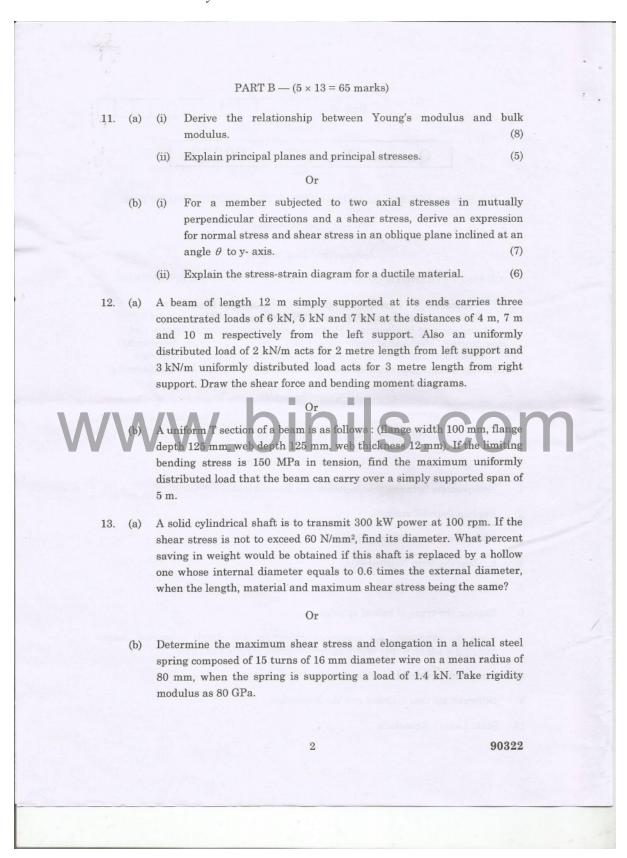
		32
	The second secon	
	Reg. No. :	
	Question Paper Code: 90322	
	B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2	2022.
	Third/Fourth Semester	
	Aeronautical Engineering	
	CE 8395 – STRENGTH OF MATERIALS FOR MECHANICAL ENGINE	ERS
	(Common to: Aerospace Engineering / Automobile Engineering / Industrial Engineering / Industrial Engineering and Management / Manufacturing Engineering / Marine Engineering / Material Science a Engineering / Mechanical Engineering / Mechanical Engineering (Sandw Mechanical and Automation Engineering / Mechatronics Engineering Production Engineering / Robotics and Automation / Safety and Fire Engin (Regulations 2017)	nd ich) /
V	Answer ALL questions. Maximum: 10 PART $A - (10 \times 2 = 20 \text{ marks})$	0 marks
	Differentiate between tensile stress and shear stress.	
	2. Explain thermal stresses.	
	3. Define the Point of Contraflexure.	
	4. Explain the term Neutral axis.	
	5. Define torsional rigidity.	
	6. Explain the types of helical springs.	
	 State the expression for maximum deflection of a simply supporte carrying a udl of 'w' per unit length over entire length 1' of beam. 	d beam
	8. State and explain Maxwell's reciprocal theorem.	
	8. State and explain Maxwell's reciprocal theorem.	
	8. State and explain Maxwell's reciprocal theorem.9. Differentiate thin cylinder and thick cylinder.	
	 8. State and explain Maxwell's reciprocal theorem. 9. Differentiate thin cylinder and thick cylinder. 10. State Lame's Equations. 	

POLYTECHNIC, B.E/B.TECH, M.E/M.TECH, MBA, MCA & SCHOOL

Notes Syllabus Question Papers Results and Many more...

www.binils.com

Available @



POLYTECHNIC, B.E/B.TECH, M.E/M.TECH, MBA, MCA & SCHOOL

Notes Syllabus Question Papers Results and Many more...

Available @

www.binils.com

34

14. (a) A simply supported beam of span 6 m and uniform rectangular cross section 150 mm wide and 300 mm deep is subjected to an UDL of 2 kN/m over the entire span and a point load of 3 kN at 4 m from the left support.

Find the maximum slope and deflection of the beam. E = 210 kN/mm².

Or

- (b) A steel cantilever 7 m long carries the point loads of 12 kN at the free end and 20 kN at a distance 3 m from the free end. Also a UDL of 3 kN/m acts over the entire span. Find (i) slope at the free end (ii) Deflection at the free end. Take I = 1.3×10^8 mm⁴ and E = 2×10^5 N/mm².
- 15. (a) Derive expressions for change in length, change in diameter and change in volume of a thin cylindrical shell subjected to an internal pressure.

Or

(b) Derive expressions for stress, change in diameter and change in volume of a thin spherical shell subjected to an internal pressure.

PART C — $(1 \times 15 = 15 \text{ marks})$

16. (a) A compound tube consists of a steel tube with 120 mm internal diameter and 140 mm external diameter and outer brass tube with 140 mm internal diameter and 160 mm external diameter. The two tubes are of same length. The compound tube carries an axial load of 800 kN. Find the stresses and load carried by each tube. Length of each tube is 200 mm. Take E for steel as 2.1 × 10⁵ N/mm² and for brass as 1.2 × 10⁵ N/mm².

Or

(b) At a certain point in a strained material, the intensities of stresses on two planes at right angles to each other are 20 N/mm² and 10 N/mm² both tensile. They are accompanied by a shear stress of magnitude 10 N/mm². Find the location of principal planes and evaluate principal stresses.

90322