Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 53555

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

Second Semester

Mechanical Engineering

GE 6252 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Mechanical Engineering (Sandwich), Aeronautical Engineering, Agriculture Engineering, Automobile Engineering, Civil Engineering, Environmental Engineering, Geoinformatics Engineering, Industrial Engineering, Industrial Engineering and Management, Manufacturing Engineering, Marine Engineering, Materials Science and Engineering, Mechanical and Automation Engineering, Mechatronics Engineering, Petrochemical Engineering, Production Engineering, Robotics and Automation Engineering, Chemical Engineering, Chemical and Electrochemical Engineering, Fashion Technology, Food Technology, Handloom and Textile Technology, Petrochemical Technology, Petroleum Engineering, Plastic Technology, Polymer Technology, Textile Chemistry, Textile Technology, Textile Technology (Fashion Technology))

(Regulations 2013)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. State the Ohm's law.

2. How ammeter and voltmeter are connected in a circuit ? Why ?

3. Why starter is necessary for to start dc motor ?

4. List the types of single phase induction motor.

5. What is break down in diodes ?

6. What is the different analysis available to analyze a transistor ?

7. List the applications of A/D and D/A converters.

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8. List the classification of logic families.

9. What are the advantages of optical fiber communication ?

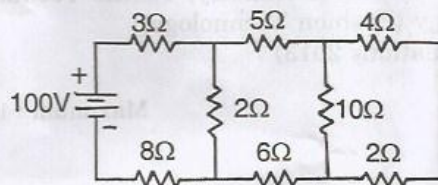10. Compare the amplitude modulation and frequency modulation.

PART – B   (5×16=80 Marks)

11. a) i) A series circuit has R = 10 ohm, L = 50 mH and C = 100 microF and is supplied with 220V, 50Hz. Find :

        i) impedance

        ii) current

        iii) power

        iv) power factor

        v) voltage drop across each element.   (8)

    ii) Find the current through each loop by network reduction technique :   (8)

(OR)

  b) i) List the types of MC meters ? Explain its operation with its neat sketches. (8)

    ii) Describe the working principles of Dynamometer type watt meter with neat diagram. (8)

12. a) i) Explain the construction and principle of operation of single phase induction motor. (10)

    ii) What are the factors controlling the speed of the dc motor ? Explain any one method of speed control of shunt motors. Write the advantages and disadvantages of the method. (6)

         (OR)

  b) i) Drive the EMF equation of a transformer. (8)

    ii) An ideal transformer has an input voltage of 480 V. The output current and voltage are 10 A and 120 V. Determine the value of input current. (8)

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13. a) Explain the operation of half wave rectifier with neat diagram and derive the necessary expression. (16)

(OR)

b) Compare the input resistance, output resistance and voltage gain of CB, CC and CE configuration. (16)

14. a) i) Design a full adder and implement it using logic gates. (8)

ii) Explain the operation of various types of shift register. (8)

(OR)

b) With necessary diagrams explain the function of the following. (8+8)

i) Decade counter

ii) D/A converter.

15. a) i) With neat diagram, explain the principle of operation of amplitude modulation and derive its power relations. (10)

ii) Draw the block diagram of optical fiber communication systems. (6)

(OR)

b) i) Draw the functional block diagram of Monochrome TV transmitter and receiver. (10)

ii) With block diagram explain the microwave communication. (6)

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