Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 51513

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Second Semester

Civil Engineering

GE 2151/EE 26/EE 1153/10133 EE 206/080280011 — BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Aeronautical, Automobile, Marine, Mechanical, Production, Chemical, Petroleum Engineering, Biotechnology, Polymer, Textile, Textile (Fashion), Plastic Technology, Environmental Engineering, Geoinformatics Engineering, Industrial Engineering, Industrial Engineering and Management, Manufacturing Engineering, Material Science and Engineering, Mechanical and Automation Engineering, Mechatronics Engineering, Petrochemical Engineering, Chemical and Electrochemical Engineering, Petrochemical Technology, Pharmaceutical Technology and Textile Chemistry)

(Regulation 2008/2010)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the advantages of sinusoidal alternating quantity.
2. What do you mean by balanced load in a 3–phase circuit?
3. Define voltage regulation of a transformer.
4. Why is starter necessary for a dc motor?
5. What is doping?
6. Give the other names of depletion region.
7. Define Flip flop. What are the different types of flip-flop?
8. Mention the types of Analog to Digital converter.
9. Why are AM systems preferred in broadcasting over FM systems?
10. List the various types of Microwave antennas.

PART B — (5 × 16 = 80 marks)

11. (a) (i) A series circuit has $R = 10\,\Omega$, $L = 50\text{mH}$, and $C = 100\,\mu\text{F}$ and is supplied with 200V, 50Hz. Find
    (1) Impedance
    (2) Current
    (3) Power
    (4) Power factor
    (5) Voltage drop across the each element.   (8)
    (ii) Describe the working principle of PMMC meters.   (8)

Or

(b) In the circuit shown, determine the current through the 2ohm resistor and the total current delivered by the battery. Use Kirchhoff's laws. (16)
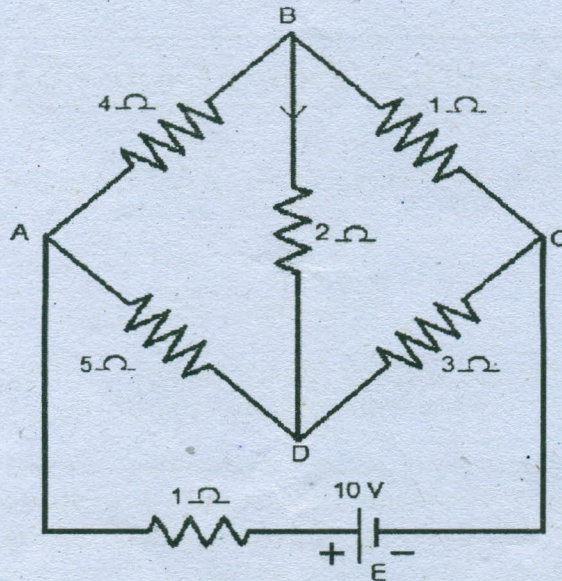
12. (a) A 4 pole, wave wound generator having 40 slots and 10 conductors placed per slot. The flux per pole is 0.02 wb. Calculate the generated emf when the generator is driven at 1200 rpm. (16)

Or

(b) A 25kw, 250V, dc shunt generator has armature and field resistances of 0.06 ohm and 100 ohm respectively. Determine the total armature power developed when working

   (i) as a generator delivering 25kw output and

   (ii) as a motor taking 25kw. (16)

13. (a) Describe the working of a PN junction diode with neat diagrams. Also explain its V-I Characteristics. (16)

Or

(b) Explain the working of the CB configuration of a BJT. (16)

14. (a) Write short notes on : (16)

   (i) RS-flip flop

   (ii) D-flip flop

   (iii) JK-flip flop

   (iv) T-flip flop.

Or

(b) With necessary diagrams explain the functioning of any one type of ADC and DAC. (16)

15. (a) Explain the principle of Amplitude and Frequency modulation. (16)

Or

(b) Draw and explain the functional block diagram of Monochrome TV transmitter and receiver. (16)

2 51513