Total Pages—2

I—Sem/COMMON/2019(S)(New)

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Theory-4(a, b))

Full Marks : 80

Time : 3 hours

Answer any five questions including Q.Nos.1 & 2

*Figures in the right-hand margin indicate marks*

1. Answer *all* questions :   2 × 10

    (a) State Ohms law.

    (b) State KCL and KVL.

    (c) Define r.m.s and average value.

    (d) Define power factor and draw the power triangle.

    (e) State the principle of operation of dc generator.

    (f) Define conductor.

    (g) Define electron emission and write down the types.

    (h) Define SCR.

    (i) Define transistor biasing and what is its purpose ?

    (j) Define Modulation.

2. Answer *all* :   5 × 6

    (a) Find the circuit current I and branch currents I_1, I_2 and I_3 for the below figure.
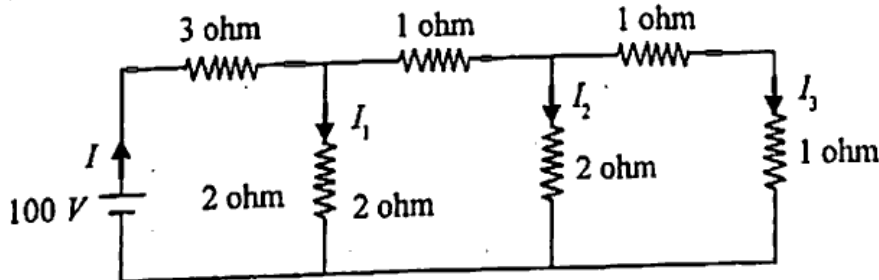
    (b) Give a brief classification of dc motor on the basis of field excitation.

    (c) Write down the different uses of PMMC types of instruments.

    (d) Differentiate between intrinsic semiconductor and extrinsic semiconductor.

    (e) What is pn-junction ? Explain the formation of potential barrier in a pn-junction.

    (f) Define transducer. State and explain different types of transducers briefly.

3. (a) With a neat block diagram explain briefly about the nuclear power plant.   5

    (b) Describe a full wave bridge rectifier using crystal diode.   5

(*Turn Over*)

4. (a) A resistance of 20 ohm, inductance of 0.2 H and capacitor of 150 µF are connected in series and are fed by a 230 Volt, 50 Hz supply. Find $X_L, X_C, Z, Y, p.f.$ 5

   (b) Briefly explain the working of a basic oscillator with different elements through simple block diagram.   5

5. (a) Briefly explain the types of Wiring for domestic installations.   5

   (b) Explain the construction and working of a cathode ray tube.   5

6. (a) Explain briefly about the main parts of dc machines.   5

   (b) Write a short note on zener diode and draw the equivalent circuit of an ideal zener in the breakdown region.   5

7. (a) A building has the following electrical appliances :   5

   (i) A 3 HP motor running for 8 hrs in a day.

   (ii) Three fans each of 80 watt running for 08 hrs in a day.

   (iii) Five tube lights each of 40 watt running for 08 hrs per day.

   Find the monthly bill if, 1 unit = Rs.2.50/-. The month is August.

   (b) State the different types of modulations and explain briefly about the amplitude modulation.   5