D 42015 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2007

Electrical and Electronics Engineering

CE 04 306 – ELECTRICAL AND ELECTRONICS ENGINEERING

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

I. (a) A current in a circuit is due to a potential drop of 10 V applied to a resister of resistance of 100 Ω. What resistance would permit the same current to flow if the supply voltage were 100 V ?

(b) A parallel network consists of three resistors of 4 Ω, 8 Ω and 16 Ω. If the current in the 8 Ω resistor is 3A, what are the currents in the other resistors ?

(c) Draw a neat wiring diagram for staircase lighting.

(d) Discuss the different types of switches bringing out the merits and demerits of each.

(e) Explain with reference to a semiconductor material, what is meant by

(a) intrinsic conductivity.

(b) extrinsic conductivity.

(f) Sketch one form of full-wave rectifier circuit together with smoothing components. If the supply frequency is 400 Hz, what is the ripple frequency ?

(g) Define the following :

(i) Transducer.

(ii) Inverse Transducer.

(iii) Output Transducer.

Give suitable examples.

(h) Describe the different types of phosphor materials used in a CRO and list their applications.

(8 × 5 = 40 marks)

II. (a) (i) A coil of power factor 0.8 is in series with a 100μ F capacitor and then connected to a 50 c/s supply. The potential difference across the coil is found to be equal to that across capacitor by measurement. Find the resistance and inductance of the coil.

(7 marks)

(ii) A pure inductor, a non-inductive resistor and a capacitor are connected in series. The supply e.m.f. is 85 V at 50 Hz, the potential difference across the inductor is 40 V and the potential difference across the resistor and capacitor together is 85 V. The current is 5 A. Calculate the values of all components and power factor of the circuit.

(8 marks)

Or

Turn over

(b) (i) Draw a neat diagram of a d.c. 3–point starter and explain its working.

(7 marks)

(ii) Discuss the working of a split phase capacitor start induction run sir

3 marks)

III. (a) (i) Draw the wiring diagram of fluorescent lamp. Describe its working.

(15 marks)

Or

(ii) Draw the wiring layout for a residential Building and explain it.

(15 marks)

IV. (a) With the h how a Zener diode is used as a voltage regulator.

(15 marks)

Or

(b) (i) Explain the following terms in a PN junction diode.

(a) Maximum forward current ;

(b) Peak inverse voltage ; and

(c) Maximum power rating.

(9 marks)

(ii) Mention the applications of PN junction diode

(6 marks)

V. (a) (i) Describe in detail the vertical amplifier used in CRO.

(7 marks)

(ii) Describe the different types of sweeps used in a CRO. Explain their spheres of application.

(8 marks)

Or

(b) Explain the theory and working of LCDs. Describe the difference between light scattering and field effect types of LCDs. Also explain the advantages of LCDs.

(15 marks)

[4 × 15 = 60 marks]