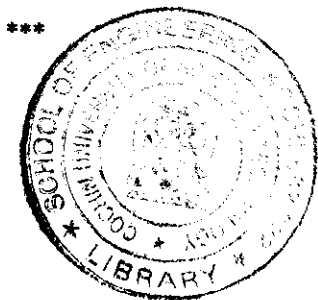


- b) With the help of suitable diagrams explain amplitude modulation, and define modulation index. (12)

OR

- XII a) Compare the performance of AM and FM. (6)
- b) What are the advantages of digital communication over analog communication? Give one example of a Digital Communication System. (10²/₃)



Code No. BTS 044

B.Tech. Degree (F.T) I & II Semester (combined) Examination in Information Technology/Computer Science and Engineering/Electronics and Communication Engineering/Civil Engineering/Mechanical Engineering/Safety and Fire Engineering/Electronics and Instrumentation Engineering/Biomedical Engineering and (P.T) in Electronics and Communication Engineering, June 2000

IT/CS/EC/CE/ME/SE/EI/BE 108 FUNDAMENTALS OF ENGINEERING - II

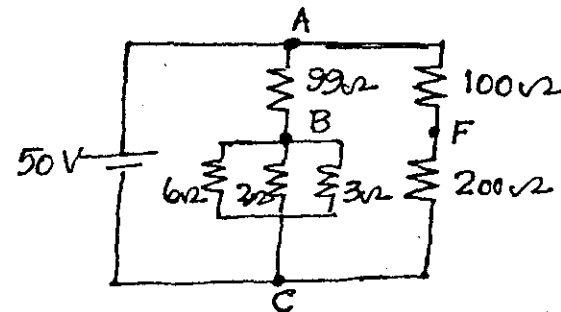
Time: 3 Hours

Max. Marks: 100

(Answer all questions. All questions carry equal marks)

PART - A

- I a) State and explain Kirchoff's current law and voltage law. (5)
- b) In the following circuit find the current through the 6Ω resistor using the voltage divider principle. (11²/₃)



OR

- II a) How will you represent ideal and practical current sources. (4)
- b) What are the steps to be followed to arrive at a (i) Thevanin equivalent circuit (ii) Norton equivalent circuit of a network. (12²/₃)

(P.T.O)

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- III a) State and explain Faraday's and Lenz's laws. (10²/3)
- b) Define (i) self-induced emf (ii) mutually induced emf (iii) coefficient of coupling. (6)

OR

- IV a) What are the different types of ammeters used for current measurement? Explain any one type with suitable diagrams. (11²/3)
- b) An air-cored toroidal coil has 450 turns and a mean diameter of 30 cm and a cross-sectional area of 3 cm². Calculate (i) the inductance of the coil (ii) the average emf induced if a current of 2A is reversed in 0.04 second. (5)

- V a) Draw a general sinusoid whose equation is given by $\phi(t) = V_m \sin(\omega t - \theta_1)$ and find expressions for average value, rms value, with the negative value clipped, but with conduction in both half-cycles. (12)
- b) Define lagging and leading power factor. (4²/3)

OR

- VI a) Draw a series RLC circuit and explain how resonance is achieved in such a circuit. (10)
- b) Compare single and three phase supply systems. (3)
- c) Compare the features of star and delta connections. (3²/3)

PART - B

- VII a) Explain with the help of neat sketches, the energy-band diagram of a semiconductor pn junction under equilibrium, when forward biased and reverse biased. (10²/3)

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- b) Differentiate between avalanche breakdown and zener breakdown. (3)
- c) The breakdown voltage of a zener diode is 15V. If the maximum power rating of the diode is 500mW find the maximum current. (3)

OR

- VIII a) Draw neat diagrams of the input and output characteristics of an NPN transistor in the CB, CE and CC configurations. (9)
- b) Draw the circuit diagrams and waveforms of a full-wave rectifier using two diodes without and with capacitor filter. (4²/3)
- c) Give four advantages of full-wave rectifier over half-wave rectifier. (3)

- IX a) Explain with neat sketches, the principle of operation of a silicon controlled rectifier. Why there is no Ge controlled rectifier. (10²/3)
- b) What are LED's made of? How do you get different colour LED's? (6)

OR

- X a) Draw the block diagram of a CRO and explain each block. Give three applications of CRO's. (12²/3)
- b) Give one typical example of a transducer for each of the following measurements. (4)
 - (i) pressure (ii) velocity
 - (iii) vibration (iv) temperature.

- XI a) What is the need for modulation in communication. (4²/3)