

Code No: 07A3EC01

R07**Set No. 2**

II B.Tech I Semester Examinations, MAY 2011
ELECTRICAL AND ELECTRONICS ENGINEERING
 Common to CE, ME, MECT, MEP, AME

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
 All Questions carry equal marks

1. A 11000/230 V, 150 KVA, 1- Phase, 50Hz transformer has core loss of 1.4 kW and full load copper loss of 1.6 kW. Determine:
 - (a) KVA load for maximum efficiency and value of maximum efficiency at unity power factor.
 - (b) The efficiency at half full load 0.8 power factor leading. [16]
2. What do you mean by synchronous reactance of an alternator. Explain the factors responsible for making terminal voltage of an alternator less than induced voltage. [16]
3. A 6-pole, 12 KW, 240 V, DC-machine is wave connected, if the same machine is lap connected, all other things remain same. Calculate its voltage, current and power ratings. [16]
4. (a) Explain the different methods of supporting the moving system in instruments.
 (b) Explain the advantages and disadvantages of different damping systems. [8+8]
5. (a) A current of 5A is reduced to 2A in 0.05 seconds in a coil of inductance 1.0H. Calculate the mean value of the EMF induced in the coil.
 (b) List the advantages and disadvantages of Inductances. With proofs. [8+8]
6. (a) How many types of focusing of electron beam possible in CRO? Name them.
 (b) The distance between the plates of a plane parallel capacitor is 1 cm. An electron starts at rest from the negative plate. If a direct voltage of 1000 volts is applied, how will it take the electron to reach the positive plate? [8+8]
7. (a) Explain the drift and diffusion currents for a semiconductor. State and explain Mass-action law.
 (b) Compute the conductivity of a silicon semiconductor which is doped with acceptor impurity to a density of 10^{22} atoms/m³.
 Given that $n = 1.4 \times 10^{16}$ /m³, $\mu_n = 0.145$ m²/V-s and $\mu_p = 0.05$ m²/V-s. [8+8]
8. (a) A sinusoidal voltage $V_i = 200 \sin 314t$ is applied to an SCR whose forward break down voltage is 150 V. Determine the time during which SCR remains OFF.
 (b) What is the advantages of TRANSISTOR over SCR? [8+8]

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3. (a) Explain the different methods of supporting the moving system in instruments.
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 Given that $n = 1.4 \times 10^{16}$ /m³, $\mu_n = 0.145$ m²/V-s and $\mu_p = 0.05$ m²/V-s. [8+8]
8. (a) How many types of focusing of electron beam possible in CRO? Name them.
 (b) The distance between the plates of a plane parallel capacitor is 1 cm. An electron starts at rest from the negative plate. If a direct voltage of 1000 volts is applied, how long will it take the electron to reach the positive plate? [8+8]

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7. (a) Explain the different methods of supporting the moving system in instruments.
 (b) Explain the advantages and disadvantages of different damping systems. [8+8]
8. A 6-pole, 12 KW, 240 V, DC-machine is wave connected, if the same machine is lap connected, all other things remain same. Calculate its voltage, current and power ratings. [16]

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