G. S. Mandal's

Maharashtra Institute of Technology, Aurangabad

(An Autonomous Institute)

END SEMESTER EXAMINATION

First Year B.Tech (AIDS/CSE/EC/EE) -April/May 2022

Course Code : ESC104   Course Name : Basic Electrical Engineering
Duration : 2 Hrs   Max. Marks : 50   Date : 11/04/2022

Instructions :

i)   All questions are compulsory
ii) Assume suitable data wherever necessary and clearly state it
iii) Figures to right indicate full marks

Q. 1	Solve/ Answer Any Five (Marks-10)			
	Questions	Marks	CO	BL
a)	A 100 V lamp has a hot resistance of 250 Ω. Find the current taken by the lamp and its power rating in watts. Calculate also the energy it will consume in 24 hours.	2	1	1
b)	State the Superposition Theorem.	2	1	1
c)	Define Coefficient of coupling.	2	2	1
d)	State the Significance of Power factor.	2	2	1
e)	State the reasons for the use of 3 phase system	2	3	1
f)	Compare the core and shell type transformer	2	3	1
Q. 2	Two coils, A of 12,500 turns and B of 16,000 turns, lie in parallel planes so that 60% of flux produced in A links coil B. It is found that a current of 5A in A produces a flux of 0·6 mWb while the same current in B produces 0·8 mWb. Determine (i) mutual inductance and (ii) coupling coefficient.	8	4	3
Q. 3	The following are the details of load on a circuit connected through a supply meter : (i) Six lamps of 40 watts each working for 4 hours per day (ii) Two fluorescent tubes 125 watts each working for 2 hours per day (iii) One 1000 watt heater working for 3 hours per day If	8	6	5

	each unit of energy costs 70 P, what will be the electricity bill for the month of June ?			
Q. 4	Using superposition theorem, find the current in 23 Ω resistor in the circuit shown 	8	6	4
Q. 5	Explain apparent, true and reactive power	8	5	3
	OR			
	A pure inductance of 318 mH is connected in series with a pure resistance of 75W. The circuit is supplied from 50 Hz source and the voltage across 75 W resistor is found to be 150 V. Calculate the supply voltage and the phase angle.	8	5	3
	OR			
Q. 6	What are the voltage and current ratios of a transformer? What is the phase relationship between the primary and secondary voltages?	8	6	4
	OR			
	Explain in detail how primary current changes when load current is set up in the secondary winding of the transformer?	8	6	5