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OSMANIA UNIVERSITY
FACULTY OF ENGINEERING
UNIVERSITY COLLEGE OF ENGINEERING (AUTONOMOUS)
B.E. (ECE, BME,CSE, AI&ML) I-Semester (MAIN) Examinations JAN/FEB-2025

BASIC ELECTRICAL ENGINEERING

Time : 3 hours **Max. Marks : 60**

Note : *i) Answer **Question No. 1** (Compulsory) and answer any **four questions** from the remaining questions (2- 7). Each question caries 12 marks.*
ii) Answers must be written in same order as they occur in the Question Paper.
*iii) **Missing data, if any may suitably be assumed.***

		Marks	BT	CO
1. a)	Compute the equivalent resistance of three resistors connected in parallel.	2	1	1
b)	Define form factor and peak factor.	2	1	2
c)	Differentiate between ideal and practical transformer.	2	3	3
d)	State Fleming's rules.	2	1	4
e)	What is the difference between MCB and MCCB.	2	3	5
f)	Define power factor.	2	1	5
2. a)	State and explain Superposition theorem with an example.	6	2	1
b)	A Wheatstone bridge ABCD is arranged as follows: AB = 10Ω, BC = 30Ω, CD = 15Ω and DA = 20Ω. A 2 volt battery of internal resistance 2Ω is connected between A and C with A positive. A galvanometer of resistance 40Ω is connected between B and D. Find the magnitude and direction of current through galvanometer using Kirchhoff's laws.	6	3	1
3. a)	Derive the relation between phase and line values of 3-phase balanced star connected load.	6	3	2
b)	A series circuit has R = 10 Ω, L = 50 mH and C = 100 μF and is supplied with 200 V, 50 Hz. Find (i) Impedance, (ii) Current (iii) Power (iv) Power factor and (v) voltage drop across each element.	6	3	2

4. a)	Explain how rotating magnetic field is produced in a 3-phase Induction motor.	7	2	3
b)	A 6600/440 V, 1-phase 600 kVA transformer has 1200 primary turns. Find (i) transformation ratio (ii) secondary turns (iii) voltage per turn (iv) secondary current when it supplies a load of 400 kW at 0.8 pf lagging.	5	3	3
5.	With the aid of neat sketches, classify DC Generators. Mark the current directions and give the equations for the terminal voltage, generated emf and power developed in the armature.	12	2	4
6. a)	What is the purpose of earthing. Explain any one type of earthing process.	6	2	5
b)	Explain the working of MCCB with the help of a neat sketch.	6	2	5
7. a)	Draw the power triangle and explain the various types of powers.	6	2	1
b)	Explain the working of practical transformer with inductive load connected on the secondary side, draw the phasor diagram.	6	2	3

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