Hall Ticket Number:

Code No. : 11113 S N/O

VASAVI COLLEGE OF ENGINEERING *(AUTONOMOUS)*, HYDERABAD

Accredited by NAAC with A++ Grade

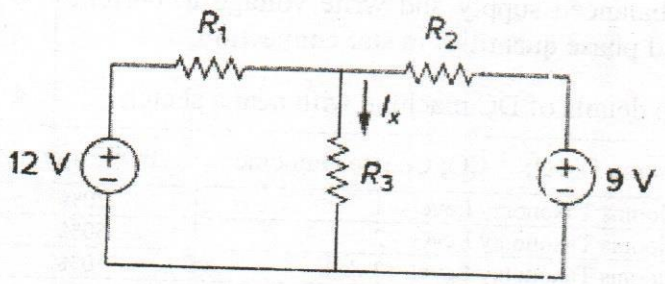
B.E. (Civil Engg.) I-Semester Supplementary Examinations, August-2023

Basic Electrical Engineering for Civil Engineers

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

*Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	Define Kirchhoff voltage law.	2	1	1	1,2
2.	Write the relation between voltage and current in a capacitor.	2	1	1	1,2
3.	An alternating voltage is given by v = 50sin314t. Determine the form factor of the voltage.	2	2	1	1,2
4.	Give any two advantages of three phase ac supply.	2	1	1	1,2
5.	Explain the use of Fleming's Left Hand rule in a DC machine.	2	1	2	1,2
6.	Write the equation of torque produced by armature in DC motor.	2	1	2	1,2
7.	If a 4-pole 50 Hz 3-phase induction motor runs at 1400 rpm, then calculate the value of slip?	2	2	3	1,2
8.	List any two applications of three phase induction motor.	2	1	3	1,2
9.	Write the statements of Kirchhoff current law.	2	1	1	1,2
10.	Describe the significance of power factor in AC electrical circuits.	2	1	1	1,2
	Part-B (5 × 8 = 40 Marks)				
11. a)	What is a passive element in an electric circuit? And why resistor is an example of a passive element?	4	2	1	1,2
b)	Using mesh analysis, determine current I_x in the circuit shown below with $R_1 = 6\ \Omega$, $R_2 = 12\ \Omega$ and $R_3 = 8\ \Omega$. 	4	3	1	1,2

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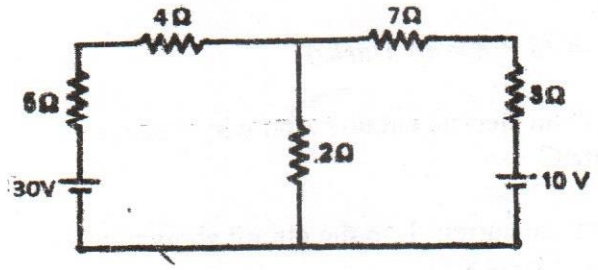
12. a)	In series RL circuit, derive the expression for current, impedance, active power consumed and power factor of the circuit.	4	2	1	1,2
b)	A resistance of 30 Ω and inductor of 79.5 μF are in series and they are connected across 100 V, 50 Hz supply. Calculate (i) current in the circuit, (ii) impedance of the circuit and (iii) power consumed and (iv) power factor of the circuit.	4	3	1	1,2
13. a)	Write the terminal voltage equations for different types of DC motors.	4	2	2	1,2
b)	Determine the torque established by the armature of a six pole wave wound DC motor having 920 conductors, 18 mWb and the armature current is 30 A.	4	3	2	1,2
14. a)	Describe the construction of three phase induction motor with a neat schematic diagram.	4	2	3	1,2
b)	Explain the principle of three phase induction motor with a neat diagram.	4	2	3	1,2
15. a)	Describe the procedure of nodal analysis in electrical circuits with suitable example.	4	2	1	1,2
b)	In series RC circuit, derive the expression for current, impedance, active power consumed and power factor of the circuit.	4	3	1	1,2
16. a)	Explain the speed control methods of DC shunt motor in detail.	4	2	2	1,2
b)	Explain the production of rotating magnetic field in three phase induction motor	4	3	3	1,2
17.	Answer any ***two*** of the following:				
a)	Using mesh analysis, determine current through 4 Ω resistor. 	4	3	1	1,2
b)	What is a three phase balanced supply and write voltage & current relation between line and phase quantities in star connection.	4	2	1	1,2
c)	Explain the construction details of DC machine with neat a sketch.	4	2	2	1,2

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	50%
iii)	Blooms Taxonomy Level – 3 & 4	30%

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