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Code No. : 13146 S

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (Civil Engg.) III-Semester Supplementary Examinations, August-2022

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.	Determine the value of R_{AB} in the circuit shown in Fig	2	3	1	1,2
2.	State Kirchoff's voltage law.	2	2	1	1
3.	Give the phase difference between voltage and current for a pure inductive circuit.	2	2	1	1
4.	Write any two advantages of 3 phase circuits over single phase circuits.	2	2	1	1
5.	Draw the torque speed characteristics of DC shunt motor.	2	3	2	1
6.	Mention the purpose of Yoke in the construction of DC machine.	2	2	2	1
7.	List the types of three phase Induction motors.	2	2	3	1
8.	Write the applications of 3 phase Induction motor.	2	2	3	1
9.	Discuss Independent sources.	2	2	1	1
10.	Write the units for Inductive reactance and capacitive reactance.	2	2	1	1
Part-B (5 × 8 = 40 Marks)					
11. a)	Determine I in the network shown in Fig	5	3	1	1,2
b)	Explain Nodal analysis with a suitable example.	3	1	1	1
12. a)	Derive the relationship between line and phase quantities in 3-phase delta connected system.	4	2	1	1

b)	In a A.C series RL circuit resistance and inductances are 10Ω and $0.1H$ respectively. It is supplied with a $220v$, $50Hz$ supply determine the current in the circuit, active and reactive power consumed by the network elements.	4	3	1	1,2
13. a)	Explain the construction and working principle of a DC generator with neat diagram.	5	1	2	1
b)	In an 4 pole DC machine, the flux per pole is 0.1 wb , 500 conductors and speed 400 rpm . Calculate the generated EMF when the armature is wave connected.	3	3	2	1,2
14. a)	Explain how rotating magnetic field is generated in 3 phase induction motor.	4	1	3	1
b)	Explain the working principle of motors used in lifts and escalators.	4	1	3	1
15. a)	Calculate the power observed by 1Ω resistor and power consumed or delivered by $2V$ voltage source for the circuit shown in Fig using mesh analysis.	4	3	1	1,2
b)	Define RMS value and derive its value for a sinusoidal waveform.	4	2	1	1
16. a)	Derive the torque equation of a DC motor.	4	3	2	1
b)	Explain, how three phase induction motor is self started.	4	2	2	1
17.	Answer any <i>two</i> of the following:				
a)	Discuss various electrical elements with suitable examples.	4	2	1	1
b)	For a A.C circuit which consists a pure capacitance, determine the current in the circuit, phase relation between voltage and current, active power consumed by the network elements and capacitive reactance of the capacitance.	4	3	2	1
c)	A 10 KW , $200V$ DC shunt generator has armature and field resistance of 0.05 ohm and 200 ohm respectively. Calculate total armature power developed by the armature.	4	3	3	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	40%
iii)	Blooms Taxonomy Level - 3 & 4	40%

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