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Code No. : 14548

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (Mech. Engg.) IV-Semester Main & Backlog Examinations, August-2022

Basic Electrical & Electronics Engineering

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.	Mention the advantages of 3 phase over single phase circuits.	2	2	1	1
2.	Write the relation between line voltages and phase voltages of a star connected 3 phase circuits.	2	2	1	1
3.	List the different types of losses in DC machines.	2	2	2	1
4.	List the various types of Transformers.	2	2	2	1
5.	Draw the V-I characteristics of PN junction diode.	2	2	3	1
6.	Mention any two applications of SCR.	2	2	3	1
7.	List the Ideal characteristics of op amp.	2	2	4	1
8.	Differentiate between inverting and noninverting op amp.	2	2	4	1
9.	Write the truth table for XOR gate with a neat sketch.	2	2	5	1
10.	Implement half adder using AND and OR gates.	2	3	5	1
Part-B (5 × 8 = 40 Marks)					
11. a)	Calculate the current passing through the 60Ω resistor in the given network.	4	3	1	1,2
b)	With neat sketch explain about the single phase R-C series AC circuit.	4	1	1	1

12. a)	Describe the types of DC motors with neat sketches.	4	2	2	1
b)	Explain the construction and working principle of 3 phase Induction motor.	4	1	2	1
13. a)	Explain the operation of BJT and mention the applications.	4	1	3	1
b)	Discuss the operation and advantages of basic filters.	4	2	3	1
14. a)	Design adder and subtractors using op amp.	4	4	4	1
b)	Design zero crossing detector using op amp and explain its operation.	4	4	4	1
15. a)	Implement SR flip flop using NAND gates and explain its operation with truth table.	4	4	5	1
b)	Design full adder with two half adders and give its truth table.	4	4	5	1
16. a)	State and explain Kirchoff's current Law using suitable example	4	1	1	1
b)	Three identical coils each having a resistance and inductive reactance of 3Ω and 5Ω respectively are connected across 400V, three phase supply. Determine the active and reactive power consumed by the load. When the load is connected in delta.	4	3	2	1,2
17.	Answer any <i>two</i> of the following:				
a)	Discuss full wave uncontrolled rectifiers.	4	2	3	1
b)	Explain how integrator and differentiator can be designed using op amp.	4	4	4	1
c)	Differentiate between T and D flip flops.	4	2	5	1

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

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	42.5%
iii)	Blooms Taxonomy Level – 3 & 4	37.5%
