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Code No. : 14543 AS

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD**

Accredited by NAAC with A++ Grade

**B.E. (Mech. Engg.) IV-Semester Advanced Supplementary Examinations, September-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.	Explain about Kirchhoff's Laws.	2	1	1	1,2,3
2.	Define form factor and peak factor.	2	1	1	1,2,3
3.	List out different types of transformers.	2	1	2	1,2,3
4.	Define slip of a three phase induction motor. Write its effect on rotor e.m.f and reactance under running condition.	2	3	2	1,2,3
5.	Draw the V-I characteristics of SCR and MOSFET.	2	2	3	1,2,3
6.	Draw the circuit and characteristic diagrams of low pass filter.	2	1	3	1,2,3
7.	Mention the conditions for ideal OP-AMP s.	2	2	4	1,2,3
8.	Differentiate any two points on the inverting and non-inverting amplifiers.	2	3	4	1,2,3
9.	Draw the logic diagram of full adder.	2	2	5	1,2,3
10.	Write the truth table of JK flip flop.	2	2	5	1,2,3
<b>Part-B (5 × 8 = 40 Marks)</b>					
11. a)	Explain the concept of Power factor and Power for lagging and leading loads.	4	2	1	1,2,3
b)	Find the current through $R_L$ for a value of $9 \Omega$ .	4	3	1	1,2,3
12. a)	Derive the torque equation for DC motors.	4	2	2	1,2,3
b)	Explain the principle of operation of 1-phase Induction motor.	4	3	2	1,2,3

Contd... 2

13. a)	Describe the operation and V-I characteristics of BJT with a neat sketch.	4	2	3	1,2,3
b)	Explain operation of half wave rectifier with neat diagrams.	4	3	3	1,2,3
14. a)	Draw and explain operation of comparator using opamp.	4	2	4	1,2,3
b)	Discuss the applications of opamp.	4	3	4	1,2,3
15. a)	Explain the operation of Parallel adder with a neat diagram.	4	2	5	1,2,3
b)	Explain in detail about RS flip flop with a neat sketch.	4	3	5	1,2,3
16. a)	Differentiate the voltage and current relations in a star connected 3-phase balanced load.	4	2	1	1,2,3
b)	Explain the operating principle of a transformer with a neat diagram.	4	4	2	1,2,3
17.	Answer any <i>two</i> of the following:				
a)	Describe the operation and V-I characteristics of PN junction diode with a neat sketch.	4	1	3	1,2,3
b)	Explain the differentiator using opamp with a neat sketch.	4	3	4	1,2,3
c)	Write any four Logic Gates with truth table.	4	2	5	1,2,3

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

i)	Blooms Taxonomy Level – 1	15%
ii)	Blooms Taxonomy Level – 2	35%
iii)	Blooms Taxonomy Level – 3 & 4	50%

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