Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS) April/May
B.E. / B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, 2024

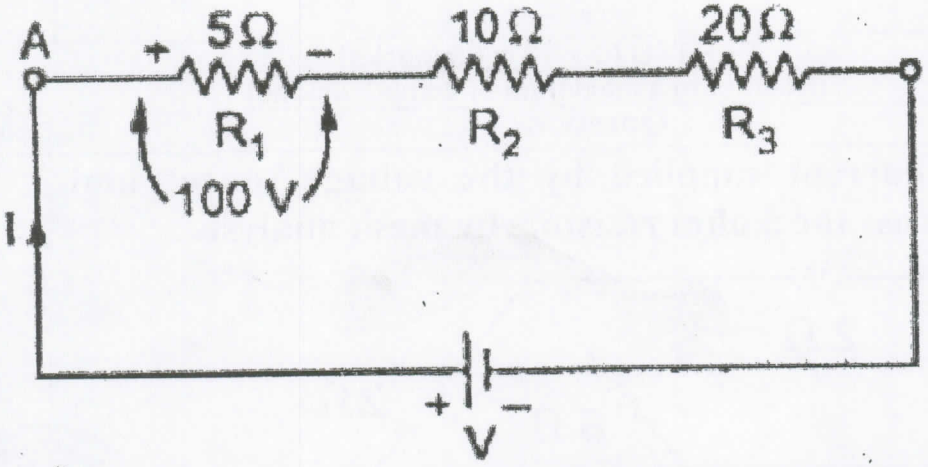
Mining Engineering

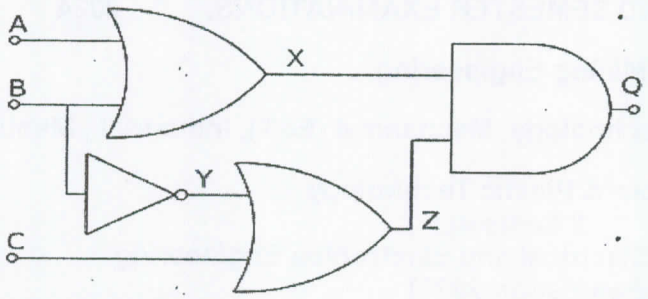
Common to Printing & Packaging Technology, Mechanical (E&T), Industrial , Manufacturing

Rubber & Plastic Technology
II Semester
EE3151 Basic of Electrical and Electronics Engineering
(Regulation 2023)

Time: 3hrs **Max. Marks: 100**

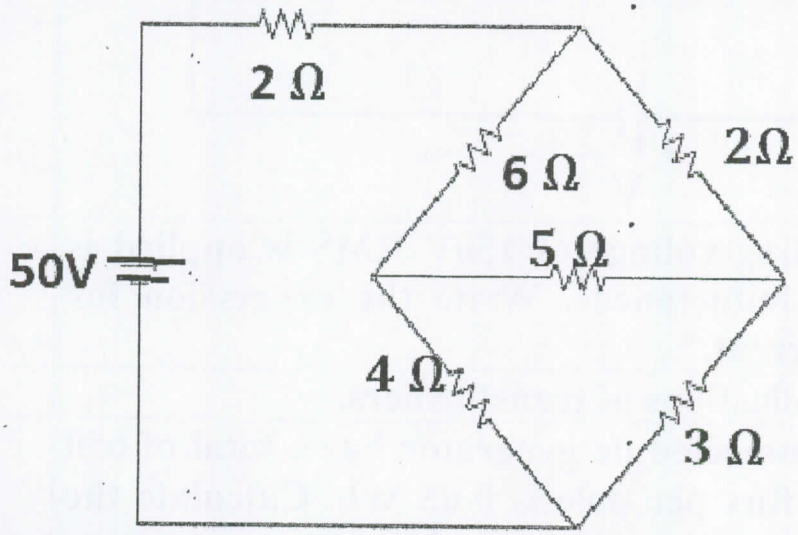
PART- A (10 x 2 = 20 Marks)
(Answer all Questions)

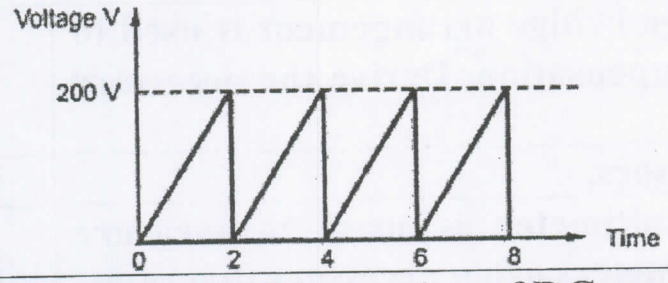
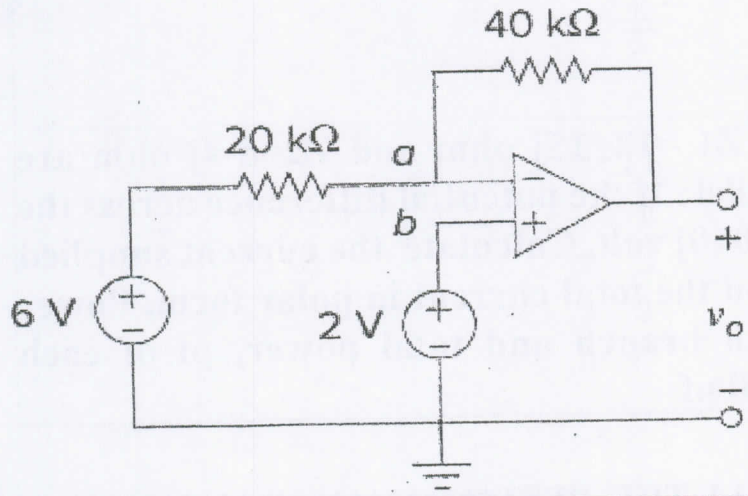
Q. No	Questions	Marks
1	If the voltage drop across the 5 ohm is 100 V, find the supply voltage 	2
2	A 50 Hz alternating voltage of 150V RMS is applied is applied to 0.2H inductance . Write the expression for instantaneous current.	2
3	List any two applications of transformers.	2
4	A six-pole, lap-connected dc generator has a total of 650 conductors. The flux per pole is 0·05 Wb. Calculate the speed at which the armature is to be driven to generate an EMF of 220 V.	2
5	What is the logic output for the circuit given below? Assume A=0;B=1;C=1.What is the value of intermediate variables X, Y, Z?	2

		
6	Sketch the output characteristics of CB BJT configuration	2
7	State the working principle of thermal imagers.	2
8	State the working principle of photo sensors.	2
9	Distinguish between spring control and Gravity control	2
10	What is creeping in energy meter? State the reason for creeping ?	2

PART- B (5 x 13 = 65 Marks)

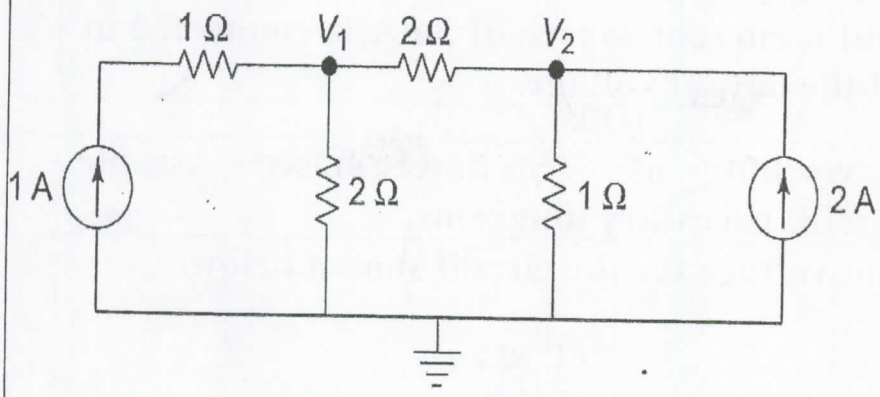
(Restrict to a maximum of 2 subdivisions)

Q. No	Questions	Marks
11 (a) (i)	Find the current supplied by the voltage source and voltage across the 5 ohm resistor by mesh analysis . 	7
(ii)	An alternating voltage of 80 + j60 V is applied to a circuit and the current flowing is 4 – j 2 A. Find the (i) impedance, (ii) phase angle, (iii) power factor, and (iv) real power ,reactive power & Apparent power .	6
	(OR)	
11 (b) (i)	A resistance of 25 ohm and an inductance of 200 mH are connected in parallel across at 230 V, 50 Hz supply. Calculate the branch currents, supply current, and power factor. Also calculate the real , reactive power in the	7

	circuit. Express answers in polar form wherever applicable. Sketch the phasor diagram.	
(ii)	Find the average and RMS value for the signal shown below.  	6
12 (a) (i)	Derive the EMF equation of DC generator.	5
(ii)	Explain the construction and working of shaded pole Induction motor with neat sketch.	8
	(OR)	
12 (b) (i)	Derive the torque equation of DC motor.	5
(ii)	Explain the construction and working of BLDC motor with neat sketch.	8
13 (a) (i)	Explain the working of S&H circuit with its circuit diagram.	6
(ii)	Design an inverting amplifier with gain of 2; If for the designed circuit a current source of 5mA is connected at the input ,find the output voltage.	7
	(OR)	
13 (b) (i)	Explain the working of 555 timer based Astable multivibrator with necessary diagrams.	6
(ii)	Find the output voltage for the circuit shown below.  	7
14 (a) (i)	Explain the construction and working of LVDT with neat sketch.	7

(ii)	Discuss about piezoelectric transducers.	6
	(OR)	
14 (b) (i)	Explain how strain gauge bridge arrangement is used to achieve temperature compensation. Derive the necessary equations involved.	7
(ii)	Discuss about smart sensors.	6
15 (a) (i)	Discuss how digital multimeter is used to measure unknown electrical parameters using necessary diagrams.	9
(ii)	Sketch the block diagram of DSO	4
	(OR)	
15 (b) (i)	Explain the construction and working of PMMC type instrument with neat sketch ; Derive its torque equation.	9
(ii)	Discuss about current transformers.	4

PART- C (1 x 15 = 15 Marks)
(Q.No. 16 is Compulsory)

Q. No	Questions	Marks
16 (i)	Find the current through all the branches by nodal analysis. 	7
(ii)	Two impedances Z1 =12+15j ohm and Z2=8-4j ohm are connected in parallel . If the potential difference across the combination is 230+0j volt. Calculate the current supplied to each branch and the total current in polar form, Power consumed by each branch and total power, pf of each branch and overall pf	8

**********ALL THE BEST**********