INDIAN INSTITUTE OF INFORMATION TECHNOLOGY UNA [HP]

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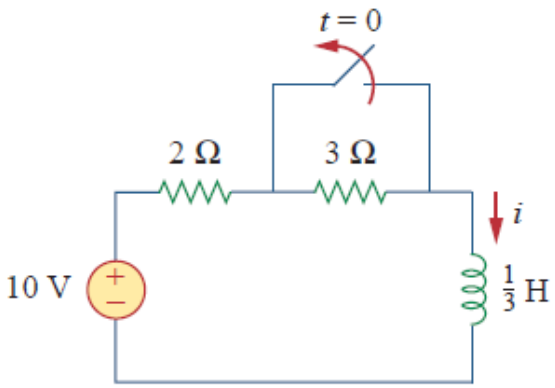
School of Computing

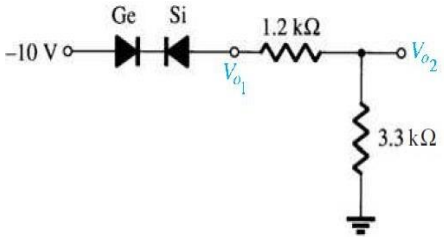
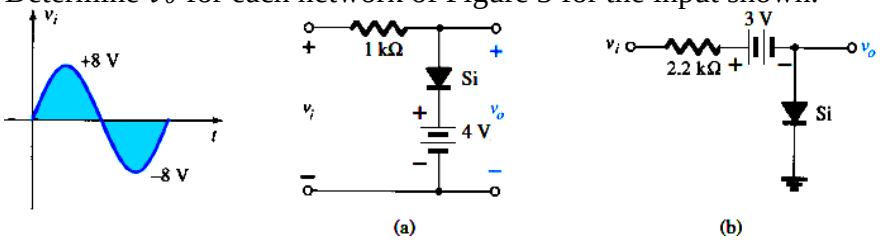
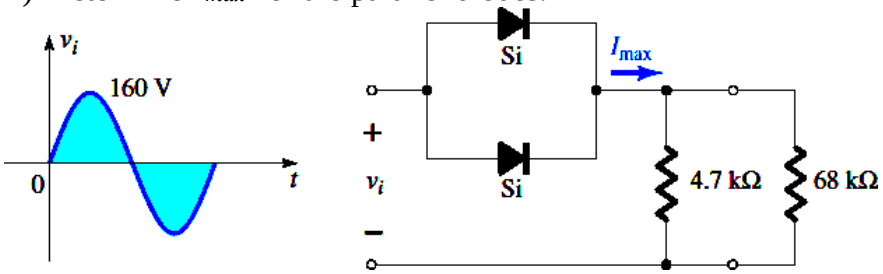
CURRICULUM: IIITUGCSE20

Cycle Test – I

15, Feb.'22

Degree	B. Tech.	**Branch**	CSE
Semester	I		
Subject Code & Name	EEC103 (Basic Electrical and Electronics Engineering)		
Time: 60 Minutes	**Answer All Questions**		**Maximum: 20 Marks**

Sl. No.	**Question**	**Marks**
1.a	Apply the conditions for checking the linearity in an electrical circuit.	(2)
1.b	Construct the variation of XL, XC and R with respect to frequency in parallel resonance.	(2)
2.a	Find i(t) in the circuit of Figure 1 for t > 0. Assume that the switch has been closed for a long time.  Figure 1: Circuit diagram for Problem 2. (a)	(2)
2.b	Make use of the balanced Wye-Wye three-phase balanced connection to demonstrate the need of neutral wire from the three-phase source to load.	(2)
3.a	Explain why is it necessary to use a voltage regulator circuit in a power supply.	(1)
3.b	Illustrate the constructional features of a wire-wound resistor.	(1)

3.c	Demonstrate a voltage regulator that will maintain an output voltage of 20 V across a 1-kΩ load with an input that will vary between 30 V and 50 V. That is, determine the proper value of *RS* and the maximum current *IZM*.	(2)
4.a	Determine V_{o1} and V_{o2} for the network in Figure 2.  Figure 2: Circuit Diagram 4. (a)	(1)
4.b	Discuss the DC load line analysis of a PN junction diode.	(1)
4.c	Determine v_o for each network of Figure 3 for the input shown.  Figure 3: Circuit Diagram for Problem 4. (c)	(2)
5.a	Given P_{max} = 14 mW for each diode at Figure 4, i) Determine the maximum current rating of each diode (using the approximate equivalent model). ii) Determine I_{max} for the parallel diodes.  Figure 4: Circuit Diagram for Problem 5. (a)	(2)
5.b	Compare different types of rectifiers on the basis of various comparison parameters. Select the best rectifier for making a voltage regulater power supply with justification	(2)