Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– I & II (NEW) EXAMINATION – WINTER 2019

Subject Code: 3110016 **Date: 06/01/2020**

Subject Name: Basic Electronics

Time: 10:30 AM TO 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	**(a)**	Draw the circuit diagram of Half wave rectifier.	**03**
	(b)	Explain the bridge rectifier with diagrams.	**04**
	(c)	Determine the Vo for the network shown in figure 1	**07**

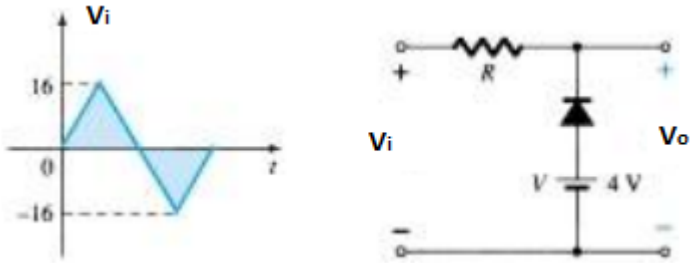

Figure 1

Q.2	**(a)**	Explain Varactor diode and varistor.	**03**
	(b)	Why Zener diode can be used as voltage regulator? Explain Zener as voltage regulator with necessary diagram	**04**
	(c)	Compare the logic families and explain any one of them.	**07**
		OR	
	(c)	Explain Ex-OR and Ex- NOR gate with truth table and construct OR gate using diodes.	**07**
Q.3	**(a)**	Explain about DC load line and Bias point of transistor	**03**
	(b)	Explain the working of PIN Diode.	**04**
	(c)	Briefly explain the h-parameters and draw h-parameter based equivalent circuit for CE transistor and derive equation for input impedance, output impedance and voltage gain.	**07**
		OR	
Q.3	**(a)**	Write truth table of AND, NAND and NOR gates.	**03**
	(b)	Explain the selection of a Q point for a transistor bias circuit and discuss the limitations on the output voltage swing.	**04**
	(c)	Explain the difference between clipping and clamping circuit. A positive voltage clamping circuit and a positive voltage clipping circuit each have ±12 V square Wave input. Sketch the output waveform for each circuit.	**07**
Q.4	**(a)**	Draw voltage multiplier circuit.	**03**
	(b)	Explain Transconductance and switching in FET.	**04**

	(c)	Explain the Depletion region and drain characteristics of n channel JFET.	**07**

OR

Q.4	**(a)**	Discuss about VI characteristic of Ideal Diode.	**03**
	(b)	Explain FET as an Amplifier.	**04**
	(c)	Determine the voltage Vo for the network of Figure 2. Give explanation for your answer.	**07**

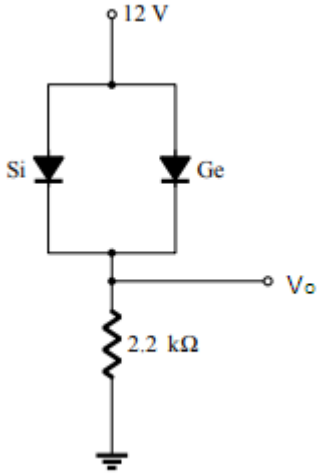

Figure 2

Q.5	**(a)**	Explain the working of Transistor as Switch	**03**
	(b)	Write a short note on E MOSFET as an Amplifier.	**04**
	(c)	Design a series noise clipping circuit which rectify the noise signal with amplitude lower than $\pm V_F$.	**07**

OR

Q.5	**(a)**	Explain the AC load line of transistor.	**03**
	(b)	Draw and explain seven segment display.	**04**
	(c)	Compare BJT with FET and explain D MOSFET.	**07**

****