

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 V_o for the network shown in figure 1	07

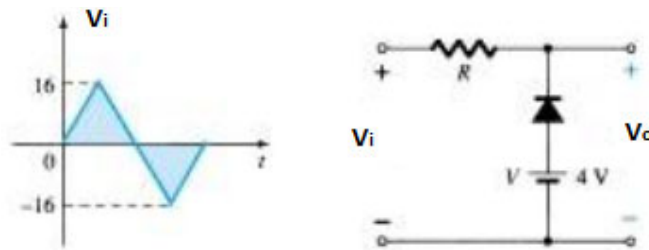


Figure 1

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 V_o for the network of Figure 2. **07**
 Give explanation for your answer.

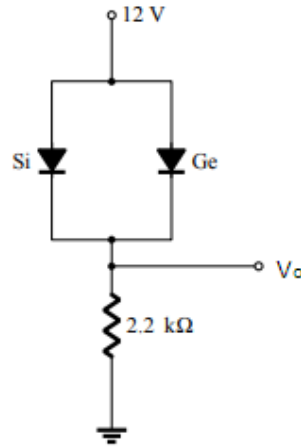


Figure 2

- 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**
