

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 |

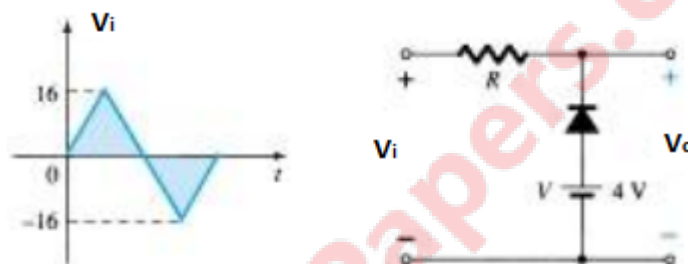


Figure 1

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 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.

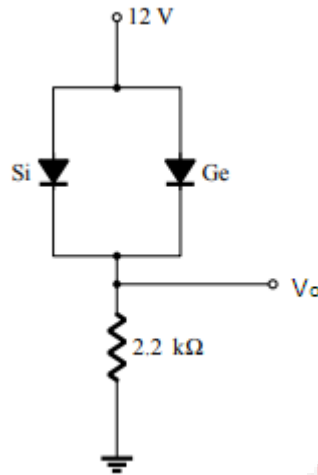


Figure 2

- 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
