

# C.U.SHAH UNIVERSITY

## Summer Examination-2019

**Subject Name: Applied Physics****Subject Code: 4TE02APH1****Branch: B.Tech (All)****Semester: 2****Date: 30/04/2019****Time: 02:30 To 05:30****Marks: 70****Instructions:**

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
  - (2) Instructions written on main answer book are strictly to be obeyed.
  - (3) Draw neat diagrams and figures (if necessary) at right places.
  - (4) Assume suitable data if needed.
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**Q-1****Attempt the following questions:****(14)**

- a) Draw the Symbol of ordinary PN Junction Diode.
- b) Avalanche phenomena is present in \_\_\_\_\_.
  - (1) Ordinary diode (2) Zener diode (3) Both the diode (4) None of the above
- c) The barrier potential for Si type ordinary diode is \_\_\_\_\_ volt.
  - 1) 0.3 2) 0.7 3) 1.0 4) 10
- d) As compare to the ordinary diode the Zener diode is designed to work in \_\_\_\_\_ region . Forward bias and linear 2 ) Reverse Bias and Break down 3) Both  
4) None of the above
- e) The \_\_\_\_\_ is used as N type impurity to be added with pure silicon material.
  - 1) Aluminium 2) Boron 3) Antimony 4) Any of the above
- f) State the application of schottky diode.
- g) State the name of various configurations of transistors.
- h) The transistor can be used as an amplifier.  
The above statement is True/False. (Select correct option)
- i) The transistor have \_\_\_\_\_ potential barrier. 1) One 2) Two 3) Three 4) Four
- j) The efficiency of \_\_\_\_\_ rectifier is better. 1) Half wave 2) Bridge type Full wave  
3) Centre tapped full wave (4) Any of the above
- k) State the function of Drain terminal in the MOSFET.
- l) List any two applications of laser
- m) Today's mobile technology use fiber optic cable infrastructure.



The above statement is True/False. (Select correct option)

- n) Give any two advantages of fiber optic communication.

**Attempt any four questions from Q-2 to Q-8**

<b>Q-2</b>	<b>Attempt all questions</b>	<b>(14)</b>
(a)	Write short note on Zener Diode.	<b>07</b>
(b)	Write short note on PN junction diode.	<b>07</b>
<b>Q-3</b>	<b>Attempt all questions</b>	<b>(14)</b>
(a)	For a semiconductor, explain what is drift current and diffusion current?	<b>07</b>
(b)	Briefly Explain about N- type semiconductors.	<b>07</b>
<b>Q-4</b>	<b>Attempt all questions</b>	<b>(14)</b>
(a)	Write short notes on Bridge rectifier.	<b>07</b>
(b)	Explain difference between BJT and FET.	<b>07</b>
<b>Q-5</b>	<b>Attempt all questions</b>	<b>(14)</b>
(a)	Explain the series positive and negative clipper circuits with waveforms.	<b>07</b>
(b)	Explain the phenomena of potential barrier in ordinary diode.	<b>07</b>
<b>Q-6</b>	<b>Attempt all questions</b>	<b>(14)</b>
(a)	Draw the common base and common emitter configuration of transistor. State how transistor act in both the mode.	<b>07</b>
(b)	Find the concentrations of holes and electrons in p type silicon at 300 <sup>0</sup> Kelvin . Assume resistivity as 0.02 ohm-cm. Assume $\mu_p = 475 \text{ m}^2/\text{volt-sec.}$ , $n_i = 1.458 \times 10^{10} \text{ per m}^3$ .	<b>07</b>
<b>Q-7</b>	<b>Attempt all questions</b>	<b>(14)</b>
(a)	With the help of energy band diagram explain energy band theory.	<b>07</b>
(b)	Explain the law of mass action for atomic particles.	<b>07</b>
<b>Q-8</b>	<b>Attempt all questions</b>	<b>(14)</b>
(a)	Explain the concept of forward bias and reverse bias of diode with suitable sketch.	<b>07</b>
(b)	Explain various types of optical fiber configuration.	<b>07</b>

