Enrollment No: _____ Exam Seat No: _____

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.

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

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