Enrollment No: _____ Exam Seat No:_____

C. U. SHAH UNIVERSITY

Winter Examination-2021

Subject Name : Applied Physics

Subject Code : 4TE02APH1 **Branch: B.Tech (All)**

Semester: 2 **Date: 20/10/2021** **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 PNP transistor

b) The zener diode is designed to work in break down region while ordinary diode is designed to work in both forward and break down region. (True/False)

c) Avalanche phenomena is present in_____.
(1) Ordinary diode (2) Zener diode 3) Both the diode 4) None of the above

d) The barrier potential for Ge type ordinary diode is ____volt.
1) 0.3 2) 0.7 3) 1.0 4) 10

e) The _____ is used as P 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 ordinary diode.

g) State the name of various configurations of transistors.

h) The transistor can be used as an amplifier. (True/False)

i) The diode have_____ potential barrier. 1) One 2) Two 3) Three 4) Four

j) The efficiency of_____rectifier is better. 1) Half wave 2) Bridge type
3) Centre tapped full wave (4) Any of the above

k) State the function of Gate terminal in the MOSFET.

l) List any two applications of laser

m) Today's mobile technology use fiber optic cable infrastructure.(True/False)

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.	**7**
	(b)	Write short note on PN junction diode.	**7**
Q-3		**Attempt all questions**	**(14)**
	(a)	Write a short note on Bridge rectifier.	**7**
	(b)	Write a short note on half wave rectifier and its waveform.	**7**
Q-4		**Attempt all questions**	**(14)**
	(a)	Explain difference between BJT and FET	**7**
	(b)	Explain output characteristics of CE transistors.	**7**
Q-5		**Attempt all questions**	**(14)**
	(a)	Write short notes on Light emitting diode and tunnel diode.	**7**
	(b)	Write short notes on clipper and clamper circuits.	**7**
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.	**7**
	(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 .	**7**
Q-7		**Attempt all questions**	**(14)**
	(a)	With the help of energy band diagram explain energy band theory.	**7**
	(b)	Explain the law of mass action for atomic particles.	**7**
Q-8		**Attempt all questions**	**(14)**
	(a)	Explain the concept of forward bias and reverse bias of diode with suitable sketch.	**7**
	(b)	Explain various types of optical fiber configuration.	**7**