

C. U. SHAH UNIVERSITY

Winter Examination-2022

Subject Name: Applied Physics

Subject Code : 4TE02APH1

Branch: B.Tech (All)

Semester: 2

Date: 22/09/2022

Time: 11:00 To 02:00

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) The breakdown mechanism in a lightly doped p-n junction under reverse biased condition is called
(A) avalanche breakdown. (B) zener breakdown.
(C) breakdown by tunnelling. (D) high voltage breakdown.
- b) Insulating material used in spark plug is
(A) rubber (B) porcelain
(C) mica (D) Polystyrene
- c) The common collector amplifier is also known as
(A) collector follower (B) Base follower
(C) Emitter follower (D) Source follower
- d) A BJT is a:
(A) current controlled & bipolar device
(B) voltage controlled device & bipolar device
(C) current controlled & Unipolar device
(D) voltage controlled device & Unipolar device
- e) The phototransistor is a semiconductor device that is able to sense light levels and alter the _____ flowing between emitter and collector according to the level of light it receives.
(A) current
(B) voltage
(C) both current & voltage
(D) none of above
- f) Define bias stabilization for transistor.
- g) State controlling equation for JFET.
- h) LED stands for.
- i) Explain Fermi level.
- j) Define Pinch-Off Voltage.
- k) State advantages of fiber optics.
- l) Define Numerical Aperture for fiber optics.



- m) What is PIV?
- n) Define holography

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

Q-2	Attempt all questions	(14)
A	Differentiate between P-type and N-type Semiconductors. Also name the doping materials used for their formation?	07
B	Discuss the electrical conduction phenomenon w.r.t. semiconductor.	07
Q-3	Attempt all questions	(14)
A	Explain Zener Diode as a Voltage Regulator.	07
B	Explain working of varactor diode.	07
Q-4	Attempt all questions	(14)
A	Explain the working of positive clamping circuit.	07
B	Draw the circuit diagram of half wave rectifier.	07
Q-5	Attempt all questions	(14)
A	Explain about DC load line and bias point of transistor.	07
B	Enlist various types of biasing methods for transistor and explain any one in detail.	07
Q-6	Attempt all questions	(14)
A	Discuss enhancement MOSFET and their characteristics.	07
B	Explain CD configuration for JFET with necessary diagram.	07
Q-7	Attempt all questions	(14)
A	Compare step index fiber and graded index fibre. State various applications of OFC.	07
B	Describe stimulated and spontaneous emission w.r.t LASER.	07
Q-8	Attempt all questions	(14)
A	Draw the circuit of a BJT in CE configuration and the corresponding V-I characteristics.	06
B	Compare :(i) BJT and FETs (ii) Clipper and Clamper Circuits.	08

