

**C.U.SHAH UNIVERSITY****Winter Examination-2018****Subject Name: Applied Physics****Subject Code: 4TE02APH1****Branch: B.Tech (All)****Semester: 2****Date: 25/10/2018****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) Draw the symbol of Zener Diode.
- c) The ordinary P-N junction diode passes the charge carriers in the forward direction and blocks the charge carrier in the reverse direction.  
The above statement is True/False. (Select correct option)
- d) The Zener diode is designed to work in the reverse bias and break down region .  
The above statement is True/False. (Select correct option)
- e) The Aluminum is used as P type impurity to be added with pure silicon material.  
The above statement is True/False. (Select correct option)
- f) State any two application of ordinary PN junction diode.
- g) Draw the symbol of Transistor.
- h) The transistor can be used as an amplifier.  
The above statement is True/False. (Select correct option)
- i) The diode can be used as a rectifier.  
The above statement is True/False. (Select correct option)
- j) The forward voltage drop of ordinary PN junction diode is 0.7 V.  
The above statement is True/False. (Select correct option)
- k) State the full name of 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 Write short notes on: (14)**
- (a) Zener Diode. **07**
  - (b) 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 P- type semiconductors. **07**
- Q-4 Write short notes on: (14)**
- (a) Half wave rectifier. **07**
  - (b) LED and Tunnel Diode. **07**
- Q-5 Attempt all questions (14)**
- (a) Briefly List the type of Transistors and type of MOSFET used for electronics application. Draw their output characteristic. **07**
  - (b) Write short note on Bridge rectifier. **07**
- Q-6 Attempt all questions (14)**
- (a) Draw the common base and common emitter configuration of transistor. State how these transistors act in both the modes? **07**
  - (b) Briefly explain about gain alpha and beta in case of transistor. Derive the relation between the two gain. **07**
- Q-7 Attempt all questions (14)**
- (a) With the help of energy band diagram explain energy band theory. **07**
  - (b) Explain voltage divider biasing circuit for transistor. **07**



