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**BIEL-001**

## B.Tech. (BTCSVI / BTECVI / BTELVI)

## Term-End Examination

00573

**June, 2018**

## BIEL-001 : BASICS OF ELECTRONICS ENGINEERING

*Time : 3 hours* *Maximum Marks : 70*

***Note :*** *Attempt any **seven** questions. All questions carry equal marks.*

**1.** (a) Draw energy band diagram of insulator and semiconductor and explain the properties of each. *5*

(b) What is the difference between intrinsic and extrinsic semiconductor ? How can an intrinsic semiconductor be converted to an extrinsic semiconductor ? *5*

**2.** (a) Draw and explain the energy band diagram of pn junction with no bias condition. *5*

(b) What is drift and diffusion current ? Calculate drift and diffusion capacitance. *5*

3. (a) Explain the following : (i) active mode in NPN transistor, and (ii) current components at boundary conditions in active mode. *5*

(b) Explain the working of photodiodes and varactor diodes and also write their applications. *5*

4. Draw the circuit diagram of common emitter configuration BJT and explain its input and output characteristics. *10*

5. (a) Explain the working of tunnel diode and its characteristics. Also state the applications of tunnel diode. *5*

(b) What is the use of voltage regulator ? How does voltage regulation occur in series regulator ? *5*

6. Explain the working of a half-wave rectifier. Also mention its ripple factor, efficiency and diode rating. *10*

7. Explain the structure of MOSFET and draw its characteristics. *10*

8. How does a capacitor filter work in DC power supplies ? What is the use of bleeder resistor ? *10*

**9.** (a) What is Fermi level ? Where does it lie in N-type and P-type semiconductors ? *5*

(b) What is semiconductor heterojunction ? Explain its V-I characteristics. *5*

**10.** Write short notes on any ***two*** of the following : *2×5=10*

(a) UJT

(b) PIN Diode

(c) JFET