

EC - 304**B.E. III Semester**

Examination, December 2015

Electronics Devices*Time : Three Hours**Maximum Marks : 70*

- Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
 ii) All parts of each question are to be attempted at one place.
 iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
 iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

- Give the energy band description of semiconductor.
 - Differentiate between diffusion and transition capacitance.
 - Discuss the effect of temperature on semiconductor.
 - What is p-n Junction? Explain the formation of potential barrier in p-n Junction.

OR

Write short note on :

- Limitation in the operating condition of p-n junction.
- Knee voltage

Unit - II

- Discuss the importance of Peak inverse voltage in rectifier.
 - An ac voltage of peak value 20V is connected in series with a silicon-diode and Load Resistance of 500Ω. If the forward resistance of diode is 10Ω, find peak current through diode.
 - What is ripple factor? What is its value for half wave rectifier?
 - Explain the working of full wave bridge rectifier.

OR

With the help of diagram differentiate between a Clipper and Clamper circuit.

Unit - III

- What is Schottky diode? Write three applications of it.
 - Discuss the mechanism of avalanche breakdown.
 - Draw the V-I characteristic of Zener diode and write the advantages and disadvantages of zener diode.
 - Write short note on :
 - Photo diode
 - Photo transistor

OR

Explain how zener diode maintains constant current across the load.

Unit - IV

- Define the following:
 - Voltage gain
 - Power gain
 - Effective collector load
 - In a common base connection, current amplification factor is 0.9, if the emitter current is 1mA, determine the value of base current.
 - Explain the operation of transistor as an amplifier.
 - Write a short note on:
 - Ebers moll model
 - Uni-Junction Transistor (UJT)

OR

Draw the input and output characteristics of CB connection. What do you infer from these characteristics.

Unit - V

- Define pinch off voltage V_p .
 - Define NMOS and PMOS devices.
 - State the properties of MOSFET. (Any three)
 - Explain the basic operation and characteristics of P-channel depletion type MOSFET.

OR

Given $I_{DSS} = 6\text{mA}$ and $V_p = -4.5\text{V}$

- Determine I_D at $V_{GS} = -2$ and -3.6V
- Determine V_{GS} at $I_D = 3$ and 5.5mA
