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322352(28)

B. E. (Third Semester) Examination, April-May 2021

(New Scheme)

(CSE Branch)

BASIC ELECTRONICS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) of each question is compulsory. Solve any* ***two*** *parts from (b), (c) and (d) of each questions.*

Unit-I

1. (a) What is an ideal diode? 2

(b) Draw and explain V-I characteristics of normal and ideal p-n junction diode. 7

(c) The current flowing in a certain PN junction diode at room temperature is 2×10^{-7}A. When the large

reverse voltage is applied. Calculate the current flowing when 0.1 V forward bias is applied at room temperature. 7

(d) Assuming standard value for silicon, find the resistivity if a donar type impurity in added to the extent of 1 in 10^8 atoms. 7

Unit-II

2. (a) How the full wave rectifier is superior to half wave rectifier? 2

(b) With a neat circult diagram, explain the operation of a bridge rectifier. 7

(c) Explain zener diode breakdown mechanism. 7

(d) A 4.7 V zener has a resistance of 15 Ω, what is the terminal voltage when the current is 20 mA? 7

Unit-III

3. (a) Write the different types of transistor configuration. 2

(b) Explain why collector region is larger than that of the emitter and base. 7

(c) Draw Eber's Moll model of a transistor and hence explain transistor action. 7

(d) A certain transistor has $\alpha = 0 \cdot 98, I_{co} = 5\mu A$, $I_B = 100\mu$. find the values of collector current and amitter current. 7

Unit-IV

4. (a) What do you mean by biasing? 2

(b) Define stability factor w.r.t. transistor biasing. State the factors affecting the stability. 7

(c) Why is biasing needed for a transistor to work as an amplifier? Explain with the help of neat diagram. 7

(d) Draw a self bias circuit. Expalin why such a circuit is an improvement on the fixed bias circuit as for as stability is concerned. 7

Unit-V

5. (a) Draw symbol for N-channel and P-channel JFET. 2

(b) Distinguish between JFET and MOSFET. 7

(c) Explain the difference between the enhancement mode and deplection mode MOSFETs. 7

(d) Sketch and explain the basic structure of an N-channel junction field effect transistor. 7