

1079

B.E. Second Semester  
EC-202: Basic Electronics

Time allowed: 3 Hours

Max. Marks: 50

*NOTE: Attempt five questions in all, selecting atleast two questions from each Unit.*

x-x-x

UNIT - I

- I. Explain the conductivity of intrinsic and extrinsic semiconductors. Give an elaboration of the same on the basis of the following:-
- Temperature variation
  - Charge carrier mobility
- (10)

a) What is transistor? Explain its working. Draw the I/P and O/P characteristics of an npn transistor in CB configuration.

b) A transistor has  $I_{CBO} = 48 \text{ nA}$  and  $\alpha = 0.992$

i) Find  $\beta$  and  $I_{CEO}$

ii) Find its collector current when  $I_B = 30 \mu\text{A}$

(2x5)

II. a) Explain Zener diode as voltage regulator with the help of circuit diagram.

b) Explain why p-n junction diode cannot work as voltage regulator. (2x5)

III. a) Explain the working of full wave bridge rectifier.

b) Write short note on Uni-Junction Transistor. (2x5)

UNIT - II

IV. a) Perform the following conversion:-

$$(143)_8 \rightarrow ( )_{16}$$

$$(10010)_2 \rightarrow ( )_{10}$$

$$(18.75)_{10} \rightarrow ( )_2$$

$$(489)_{10} \rightarrow ( )_{16}$$

b) Draw h-model of BJT in CE configuration and define different parameters. (2x5)

V. a) Explain the truth table of R-S flip flop. Obtain J-K flip flop from this.

b) Define thermal runaway in BJT. How can it be avoided? (2x5)

P.T.O.

(2)

- VI. a) In context of BJT, define the operating point. Discuss why it is necessary to stabilize this?
- b) How the construction of MOSFET is different from that of FET? Explain briefly the equivalent circuit of FET. (2x5)
- VII. Write technical notes on the following:-
- a) Bias stabilization
- b) Logic gates (2x5)

x-x-x