

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - II Computer Science & Business Systems : WINTER : 2023
SUBJECT : PRINCIPLES OF ELECTRONICS ENGINEERING

Day : Friday

Time : 10:00 AM-01:00 PM

Date : 24-11-2023

W-24140-2023

Max. Marks : 60

N.B.

- 1) All Questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non – programmable calculator is **ALLOWED**
- 4) Assume suitable data **WHEREVER** necessary.
- 5) Draw neat labeled diagrams **WHEREVER** necessary.

Q. 1 Define Intrinsic semiconductor. Draw atomic structure of Intrinsic semiconductor with energy band diagram Also describe the effect of increase in temperature on Intrinsic semiconductor. (10)

OR

Describe the N-type extrinsic semiconductors in detail. Draw the atomic structure and Fermi energy levels for the same. (10)

Q. 2 Draw the circuit diagram of Bridge Rectifier. Explain its operation with the help of waveforms. Also define the efficiency of Bridge Rectifier. (10)

OR

Explain forward and reverse biasing of P-N junction diode with the help of circuit diagram and waveforms. Also show knee voltage for Silicon and Germanium diode on characteristic graph. (10)

Q. 3 Describe the need of biasing circuits in transistor. Explain the operation of fixed bias circuit with input and output equations and state advantages and disadvantages of same circuit. (10)

OR

Draw the circuit diagram of Common Emitter Configuration and explain input, output and transfer characteristics graph. Define current amplification factor for CE configuration. (10)

Q. 4 Draw and explain operation of n-channel depletion type MOSFET with Drain and Transfer characteristic graph. (10)

OR

- a) Explain the construction of n-channel JEET. (06)
- b) Compare BJT and FET. (04)

Q. 5 Describe following applications of operational amplifier with suitable diagram (10)
i) Integrator
ii) Differentiator

OR

Describe the operation of any one type of oscillator with circuit diagram and waveform and state the condition of oscillation. (10)

Q. 6 a) Describe the operation of S-R clocked flip-flop with the help of Truth table. (06)
b) Describe 1:2 De-multiplexer with suitable diagram (04)

OR

- a) Reduce the expression using K-map, (06)
 $F(A,B,C,D) = \sum m (0,1,3,4,5,6,7,13,15)$
- b) Explain Half adder and Half subtractor. (04)

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