

BT-1/D11

7520

Elements of Electronics Engineering (New)

Paper : EL-101 E

Time : Three Hours]

[Maximum Marks : 75

Note :- Attempt **FIVE** questions, selecting at least **ONE** from each Unit.
Question 9 is compulsory.

UNIT-I

1. (a) Explain the importance of PIV in rectifiers. 2
- (b) Draw the circuit of Bridge wave rectifier and explain its working with the help of waveforms. What are its advantages over centre tapped Rectifier ? 10
- (c) Discuss the operation of varactor diode. 3
2. (a) Explain the working of Zener diode as voltage regulator. 5
- (b) What do you understand by waveshaping circuits ? Discuss various waveshaping circuits used for clipping of signals ? 8
- (c) Define drift current and diffusion current in p-n junction. 2

UNIT-II

3. (a) Explain why transistor action cannot be achieved by connecting two diodes back to back ? 3
- (b) Sketch typical CB input and output characteristics of NPN transistor. Indicate all the operation regions and explain the characteristics qualitatively. 8
- (c) Differentiate between CE, CC and CB configurations in terms of their performance. 4

- (b) Differentiate between positive and negative feedback. What are the advantages of negative feedback in Amplifier ? Explain briefly. 10

UNIT-III

5. (a) Explain :

(i) CMRR

(ii) Input offset voltage

(iii) Slew rate

(iv) PSRR. 6

(b) Draw the equivalent circuit of op-amp. Explain its transfer characteristics. 5

(c) Write a short note on Transducers. 4

6. (a) Draw the circuit of differential Amplifier. Derive the relation between CMRR and V_{out} of op-amp. Under what conditions CMRR may be maximized ? 10

(b) Discuss how op-amp acts as differentiator. 5

UNIT-IV

7. (a) Explain the working of JFET as an amplifier in CS configuration. 6

(b) How UJT acts as relaxation Oscillator ? 5

(c) Define following with reference to JFET-

(i) Depletion region

(ii) Pinch off voltage

(iii) Source

(iv) Drain. 4

8. (a) Explain with help of Block Diagram, various functions of CRO.
Also discuss its various applications. 7½
- (b) Explain construction, working and characteristics of TRIAC. 7½

(Compulsory Question)

9. (i) Define current controlled and voltage controlled device.
- (ii) Differentiate between Zener and Avalanche breakdown.
- (iii) Draw Transfer Characteristics of MOSFET.
- (iv) Why FET is unipolar device ?
- (v) Define early effect.
- (vi) What are active and passive components ? Give few examples.
- (vii) Draw frequency response of RC coupled Amplifier.
- (viii) What is Barkhausen criterion in Oscillator ?
- (ix) Draw pin diagram of 741.
- (x) How does (LED) emit light ? 1.5×10=15