

22216

11920

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:** **10**
- a) Define : Intrinsic semiconductor and Extrinsic semiconductor.
 - b) State any two applications of FET.
 - c) Draw symbol of NPN and PNP transistor.
 - d) Sketch the drain characteristics of N-channel MOSFET.
 - e) Define : Load regulation and Line regulation.
 - f) Draw basic block diagram of a DC regulated power supply.
 - g) Identify the components of following symbol.

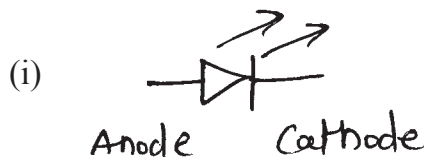


Fig. No. 1

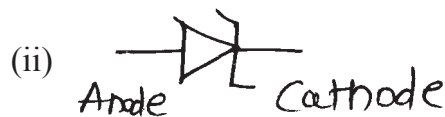


Fig. No. 2

P.T.O.

2. Attempt any THREE of the following: 12

- a) Compare P-N junction diode and zener diode on following parameters:
- (i) Symbol
 - (ii) Doping Level
 - (iii) Breakdown Voltage
 - (iv) Applications.
- b) Sketch input and output characteristics of CE configuration. Label various regions on characteristics.
- c) Sketch circuit diagram of transistorized series voltage regulator and explain its working.
- d) Derive the relationship between α and β of a transistor.

3. Attempt any THREE of the following: 12

- a) Define following parameter of rectifier :
- (i) Ripple factor
 - (ii) Efficiency
 - (iii) Peak Inverse Voltage
 - (iv) Transformer utilization factor
- b) Sketch circuit diagram of positive biased clipper using diode and explain its working.
- c) Define with respect to FET :-
- (i) Static drain resistance
 - (ii) Dynamic resistance
 - (iii) Trans conductance
 - (iv) Pinch-OFF voltage
- d) State any four applications of regulated D.C. power-supply.

- 4. Attempt any THREE of the following:** **12**
- a) Compare half wave rectifier and full wave bridge rectifier with following parameters.
 - (i) No of diodes used
 - (ii) Efficiency
 - (iii) Peak inverse voltage
 - (iv) Ripple frequency
 - b) Sketch the experimental setup for CB transistor configuration.
 - c) If α of a transistor is 0.9; Calculate β .
 - d) State advantages of MOSFET over JFET.
 - e) Sketch block diagram of an unregulated power supply and explain function of each block.
- 5. Attempt any TWO of the following:** **12**
- a) Sketch construction of N-channel JFET and explain it's operating principle.
 - b) Draw circuit diagram for π filter and explain it's working with waveforms.
 - c) Sketch constructional diagram of LED and state it's three applications.
- 6. Attempt any TWO of the following:** **12**
- a) Describe classification of solids on the basis of energy band diagram.
 - b) Sketch the circuit diagram of centre tap rectifier and explain it's working with input and output waveforms.
 - c) Explain with circuit diagram, voltage divider biasing method and state it's two advantages.
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