

312314

25226

3 Hours / 70 Marks

Seat No.

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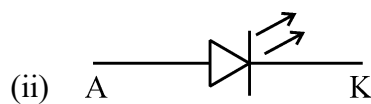
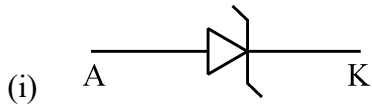
- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (7) 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 line and load regulation.
- (b) State the types of BJT amplifier coupling.
- (c) Draw the symbol of NPN and PNP transistor.
- (d) In multistage amplifier, if the gain of first amplifier is 50, gain of second amplifier is 75. Calculate the total gain of this multistage amplifier.
- (e) State different methods of biasing of FET.
- (f) Write two applications of light emitting diode.
- (g) Identify the name of the diodes of following symbols :



**2. Attempt any THREE of the following :****12**

- (a) Compare CB, CE and CC configuration of a transistor (any 4 points).
- (b) State the values of following parameters for half wave and full wave rectifiers :
  - (i) Number of diode used in circuit
  - (ii) Rectification efficiency ( $\eta$ )
  - (iii) Transfer Utilization Factor (TUF)
  - (iv) Ripple factor
- (c) Describe the voltage divider bias with neat circuit diagram.
- (d) Explain the circuit diagram and waveform of single stage CE amplifier.

**3. Attempt any THREE of the following :****12**

- (a) Draw and explain zener diode as voltage regulator.
- (b) Draw the transformer coupled amplifier and its frequency response.
- (c) Explain the working of P-N junction diode in forward bias with suitable diagram. Draw its V-I characteristics.
- (d) Describe the working principle of n-channel JFET.

**4. Attempt any THREE of the following :****12**

- (a) Draw and explain the block diagram of DC regulated power supply.
- (b) Draw the circuit diagram and input-output waveforms of full wave bridge rectifier with  $\pi$  filter.
- (c) Explain working of transistor as a switch with waveform.
- (d) Compare BJT and FET.
- (e) Derive the relation between alpha, beta, gamma in BJT.

**5. Attempt any TWO of the following :****12**

- (a) State the need of SMPS. Explain block diagram of SMPS.
- (b) Draw the circuit diagram of direct coupled two stage amplifier and explain its working with its frequency response and write its two advantages, disadvantages and applications.
- (c) With neat construction diagram explain the operation of depletion type N-channel MOSFET.

**6. Attempt any TWO of the following :****12**

- (a) Define Q point and explain thermal runaway of transistor.
  - (b) Explain drain characteristics of JFET with ohmic region, saturation region, cut-off region and break down region.
  - (c) Describe the circuit of center tapped rectifier with waveforms.
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