

17213

**11920**

**3 Hours / 100 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) Assume suitable data, if necessary.
  - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any TEN of the following :**

**2 × 10 = 20**

- (a) How the material is classified ?
- (b) What is electronics ?
- (c) What are active and passive components ?
- (d) Define doping in semiconductor.
- (e) Define pinch off voltage.
- (f) State applications of MOSFET.
- (g) State the applications of Transistor.
- (h) Give the types of multivibrator.
- (i) Give disadvantages of transformer coupled amplifier.

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**P.T.O.**

- (j) State different types of coupling used in multistage amplifier.
- (k) Define voltage gain and current gain.
- (l) Differentiate linear and non-linear IC.

**2. Attempt any FOUR of the following :**

**4 × 4 = 16**

- (a) Define Resistor. Write its unit and draw a symbol with applications.
- (b) State applications of inductor & capacitor.
- (c) Differentiate PN junction and Zener diode. (any four points)
- (d) Explain mechanism of avalanche effect.
- (e) Compare LC and  $\pi$  filter.
- (f) Draw a circuit diagram of full wave rectifier with  $\pi$  filter and input/output waveforms.

**3. Attempt any FOUR of the following :**

**4 × 4 = 16**

- (a) Draw the experimental setup to study V-I characteristics of PN junction diode and explain.
- (b) Explain V-I characteristics of Zener diode.
- (c) State four reasons why bridge rectifier is better than center tapped FWR.
- (d) Draw and explain working of C filter.
- (e) Compare JFET & MOSFET.
- (f) Explain characteristics of MOSFET.

**4. Attempt any FOUR of the following :****4 × 4 = 16**

- (a) State the applications of Tunnel diode. (4 points)
- (b) Explain operating principle of varactor diode with diagram.
- (c) Differentiate Half wave and Full wave rectifier.
- (d) What is the need of DC power supply ? Draw the block diagram of DC power supply.
- (e) What are the advantages of JFET ?
- (f) Describe the operation of P-Channel FET.

**5. Attempt any FOUR of the following :****4 × 4 = 16**

- (a) Compare PN junction diode and LED.
- (b) Explain working of Schottky diode.
- (c) Compare BJT and JFET.
- (d) Explain working principle of n-channel enhancement type MOSFET.
- (e) Explain the terms :
  - (i) Gain
  - (ii) Frequency response
  - (iii) Bandwidth
  - (iv) Amplifier
- (f) Explain frequency response of RC coupled amplifier.

**P.T.O.**

6. Attempt any FOUR of the following :

4 × 4 = 16

- (a) Draw and explain emitter bias circuit.
  - (b) Explain CE configuration in detail.
  - (c) Explain direct coupled amplifier with circuit diagram.
  - (d) Explain switching action of transistor.
  - (e) Draw labelled circuit diagram of transformer coupled amplifier. List any two advantages.
  - (f) Classify ICs on the basis of
    - (i) Packaging
    - (ii) Signals processed.
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