



17213

21314

3 Hours/100 Marks

Seat No.

--	--	--	--	--	--	--	--	--	--

-
- Instructions:** (1) **All** questions are **compulsory**.
(2) Illustrate your answers with **neat** sketches **wherever** necessary.
(3) Figures to the **right** indicate **full** marks.
(4) Assume suitable data, if **necessary**.
-

MARKS

1. Attempt **any ten** :

20

- a) From the following list, identify the active components –
Resistor, FET, Switch, Capacitor, Diode, Relay.
- b) Draw the symbol of N-channel and P-channel JFET.
- c) Draw the symbol of Tunnel diode and write one application of it.
- d) List the types of coupling used in amplifiers.
- e) List the specifications of P-N junction diode. (any 2)
- f) Write advantages of IC. (any 2)
- g) Draw the circuit diagram of C and LC filter.
- h) Write the typical values of amplification factor and trans conductance of FET.
- i) Draw the V-I characteristics of LED.
- j) Give the classification of ICs.
- k) Define knee voltage and PIV.
- l) Draw the symbol of LDR and TDR.

P.T.O.

2. Attempt **any four** :

16

- a) Write one application of electronics in any four different fields.
- b) Explain the working of Schottky diode.
- c) Draw the circuit diagram of CE configuration and draw its Input and Output characteristics.
- d) Define voltage gain, current gain and power gain. State the need for multistage amplifiers.
- e) Draw the V-I characteristics of Zener diode and Tunnel diode.
- f) Draw the circuit diagram of crystal oscillator. State its two applications.

3. Attempt **any four** :

16

- a) Draw the construction diagram of carbon composition resistor and wire wound resistor. Write two applications of wire wound resistor.
- b) Explain the Zener diode as a voltage regulator.
- c) Draw the transfer characteristics of N-channel FET. Define AC Drain resistance.
- d) What is the need for biasing a transistor ? List the types of biasing.
- e) In NPN transistor, $I_{CEO} = 100 \mu A$, $\beta = 50$, $I_B = 10 \mu A$. Find I_C and I_E .
- f) Define oscillator. State the criterion/conditions for sustained oscillations.



4. Attempt **any four** :

16

- a) Define static and dynamic resistance of diode with the help of V-I characteristics of diode.
- b) Compare HWR and FWR on the basis of
 - 1) circuit diagram
 - 2) output waveform
 - 3) PIV
 - 4) ripple factor
- c) What is α and β ? Derive the relationship between them.
- d) Draw the single stage CE amplifier. Write the function of each component.
- e) State the need of filter. Identify the suitability of C, L, LC, π filter for light load and heavy load application.
- f) Draw the RC coupled two stage amplifier circuit. Write the advantage and disadvantage of it. (any 2)

5. Attempt **any four** :

16

- a) Compare ideal diode and practical diode.
- b) Draw the block diagram of regulated power supply along with waveform at each block.
- c) Draw the circuit diagram of Astable multivibrator. Write two applications of it.
- d) Explain the formation of depletion Region in P-N junction diode.
- e) Draw the frequency response of RC coupled amplifier. State the reasons for decreasing gain on both sides of frequency Range.
- f) Compare Zener diode and PN junction diode.



6. Attempt **any four** :

16

a) Define :

- 1) Max. forward voltage
- 2) Breakdown voltage.

Does the breakdown always damage the diode ?

- b) Draw the circuit diagram of bridge rectifier. Write its 2 advantages of it over full wave rectifier.
 - c) What is load line ? What is Q-point ?
 - d) Explain the working of transistor as a switch.
 - e) Draw and explain the construction diagram of P-channel FET. State two applications of FET.
 - f) The I/P AC power to HWR is 140 watts and DC power output obtained is 60 watts. Calculate the efficiency of rectification.
-