22225

12425

3 Hours / 70 Marks Seat No. | | | | | | | | |

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) 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) Draw symbol of Inductor and Capacitor. State unit of both.

(b) Draw symbol of JFET. State why it is called unipolar device.

(c) State seebeck and Peltier effect.

(d) Define Transducer. Name two passive transducers.

(e) Write the classification of Electronic components.

(f) Draw the V-I characteristic of Zener diode.

(g) Define (i) Current gain (ii) Voltage gain for CE amplifier.

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

(a) Draw a neat diagram of Half-Wave Rectifier. Also draw input & output wave-form.

(b) Describe working of NPN transistor along with constructional diagram.

(c) Explain N-Channel JFFT with suitable diagram.

(d) Sketch block diagram of Regulated power supply & explain it's working.

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

(a) Compare Active Transducer & Passive Transducer with example.

(b) Draw and explain the circuit diagram of the Two stage RC coupled CE amplifier with waveform.

(c) Write the colour codes of following resistor :

(i) 560 k, ± 2% (ii) 23.4 k, ± 10%

(d) Define α & β. Derive the relation between α & β.

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

(a) Explain the working of Thermocouple with suitable diagram.

(b) Sketch input & output V-I characteristic of CB & label the various regions.

(c) Draw the neat labelled constructional diagram of LED & describe its working.

(d) Give symbol, construction and working of P-channel JFET.

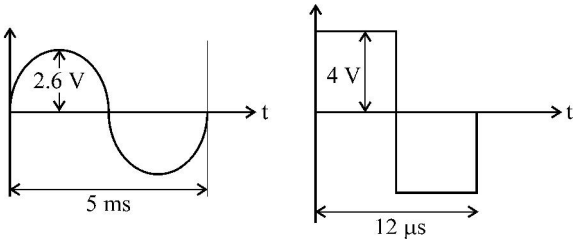
5. Attempt any TWO of the following : **12**

(a) (i) Differentiate between CE, CB, CC w.r.t.

1. Current gain
2. Voltage gain
3. Input Resistance
4. Output Resistance

(ii) Define operating point of the Transistor.

(b) Calculate peak to peak amplitude, frequency & wavelengths of waveform shown in fig. (a) & (b).



(a) (b)

(c) (i) Draw and explain the working of Bridge Rectifier with it's waveform.

(ii) Give Ripple factor and efficiency of Bridge Rectifier.

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

(a) (i) If α of transistor is 0.9, calculate β.

(ii) If β is 100, Calculate α

(iii) If $\gamma_i = 40\ \Omega$, $\Delta I_E = 5$ mA

Calculate ΔV_{EB}

(b) Draw the Drain characteristics of JFET.

Define :

(i) Amplification factor

(ii) Transconductance

(iii) AC Drain Resistance

(iv) DC Drain Resistance

(c) Explain Inductive proximity sensor with constructional diagram & working.