23242

3 Hours / 70 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 FIVE of the following : **10**

(a) Draw the symbol of resistor and inductor.

(b) List any two advantages of JFET.

(c) Write two applications of Zener diode.

(d) Define transducers and name two passive transducers.

(e) State two advantages of Integrated Circuits.

(f) Draw the symbol of N & P channel MOSFET.

(g) Draw symbol of LED and Zener diode.

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

(a) Determine the value of resistance with following colour code :

(i) Red, Black, Brown, Gold

(ii) Brown, Red, Black, Silver

(b) Draw and explain forward biased V-I characteristic of P-N Junction diode.

(c) Draw circuit diagram of transistor as switch and describe its working.

(d) A JFET has a drain current of 5 mA. If I_{DSS} = 10 mA and $V_{GS\ (OFF)}$ = – 6V. Find value of (i) V_{GS} (ii) VP

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

(a) Draw the circuit diagram and describe the working of transistor as an amplifier.

(b) Draw neat and labelled DC load line of transistor. Mention importance of Q point if it is at center and at cutoff.

(c) Define rectification. List types of rectifiers.

(d) Draw a sketch and describe the working of potentiometer as a resistive transducer.

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

(a) In CE configuration if β =100, leakage current I_{CEO} = 100 μA, base current is 0.2 mA, determine collector current I_C and emitter current I_E.

(b) Draw block diagram of regulated power supply. Draw the waveforms at the output of each block.

(c) Draw the constructional details of n-channel JFET and describe the working principle.

(d) State any four selection criteria of transducer.

(e) Draw circuit diagram of bridge full wave rectifier and describe its working.

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

(a) Draw output characteristic of CE configuration. Define α and β of transistor.

(b) List types of filter. Draw the circuit diagram of C filter and describe its working.

(c) (i) List types of signal.

(ii) In the waveform shown in Fig. (1), state its (i) peak amplitude (ii) frequency.

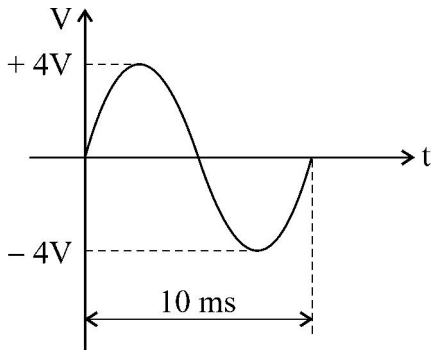

Fig. (1)

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

(a) (i) Differentiate BJT and JFET (any three points).

(ii) Differentiate JFET and MOSFET (any three points).

(b) Draw the drain characteristic and transfer characteristic of JFET.

(c) Draw construction of photo diode and phototransistor. State any two difference between them.

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