22213

24225

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) 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 <u>FIVE</u> of the following :**   **10**

a) Draw the symbol of

   i)   Zener Diode

   ii)   LED

b) Name the circuit to obtain D.C. signal from A.C. signal.

c) Draw the symbol of PNP and NPN transistor.

d) Draw the pin configuration of IC7810.

e) Define oscillator and its types.

f) List the different number system in digital Electronics.

g) State the application of Laser Diode.

Marks

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

   a) Sketch circuit diagram and input output waveform of full wave rectifier. State its efficiency.

   b) Compare CB, CE and CC configuration (Any four points).

   c) Sketch the block diagram of D.C. regulated power supply. State the function of each block.

   d) Sketch circuit diagram of Hartely Oscillator. State expression for frequency of oscillation.

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

   a) Draw block diagram of T and D Flip-Flop with truth table.

   b) Sketch reverse biased characteristic of zener diode and PN junction diode. Write comment on these characteristics.

   c) Sketch circuit diagram and input output waveform of bridge wave rectifier.

   d) Describe the working of NPN transistor.

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

   a) Draw input output characteristics of CE configuration.

   b) Sketch circuit diagram of crystal oscillator. State its any two advantages.

   c) Draw OR gate and AND gate using Universal Gates.

   d) Explain the working of PN junction diode in forward and reverse biased mode.

   e) Explain with circuit diagram operation of zener diode as a voltage regulator.

Marks

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

a) In full wave bridge rectifier Vm = 10 V, RL = 10 KΩ. Find out VDC, IDC, ripple factor and PIV.

b) In a common base connection, current amplification factor α is 0.9. If the emitter current is 1 MA, determine the value of base current and collector current.

c) Sketch functional block diagram of IC723 and explain each block in detail.

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

a) Sketch circuit diagram of RC phase shift oscillator if the value of capacitor C = C1 = C2 = C3 = 5 P.F. and frequency of the oscillation is 800 Hz.
Calculate the value of resistor R $(R = R_1 = R_2 = R_3)$.

b) Convert :

i) $(384)_8 = (?)_2$

ii) $(513)_{10} = (?)_2$

iii) $(225)_{10} = (?)_{16}$

c) Define α, β and γ of transistor and give the relation between α, β and γ transistor.

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