22213

12526

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 answer 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 FIVE of the following: **10**

a) Draw the symbol of :–

i) Zener diode

ii) Photo diode.

b) List any two applications of P-N junction diode.

c) State different types of rectifiers.

d) Draw common base configuration of transistor.

e) Define :–

i) Line regulation

ii) Load regulation.

f) State the IC number to provide fixed output voltage of +5V and –12V.

g) Draw the logic symbol and truth table of Ex-NOR gate.

P.T.O.

Marks

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

a) With neat diagram describe the working principle of LASER diode.

b) Sketch Input and Output waveforms of centre tapped fullwave rectifier.

c) Draw and explain output characteristics of CE configuration of transistor.

d) Draw block diagram of DC regulated power supply. State the function of each block.

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

a) Compare Half wave and Full wave rectifier on the following basis :–

i) PIV

ii) Ripple factor

iii) Efficiency

iv) TUF.

b) Describe the working of NPN transistor.

c) List the features of IC 723 voltage regulator. (Any eight)

d) Compare LC and RC oscillators. (Any four points)

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

a) Differentiate between LED and Photo diode. (Any four points)

b) Describe with neat circuit diagram working of LC filter with bridge rectifier.

c) Define filter list the types of filter.

d) Explain how transistor works as a switch?

e) Draw a neat circuit diagram of crystal oscillator. For a crystal oscillator circuit L = 0.01 H and C = 10 PF. Find the frequency of oscillation.

Marks

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

a) Compare CB, CE and CC configurations of transistor on the following basis :–

i) Input resistance

ii) Output resistance

iii) Voltage gain

iv) Current gain

v) Phase shift

vi) Application.

b) Sketch functional block diagram of IC 723 and explain each block.

c) Implement all basic gates using NAND gate.

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

a) Define α and β of transistor. Derive relation between α and β.

b) Sketch and describe working of colpitt's oscillator. List any two applications of colpitt's oscillator.

c) State and prove De-Morgan's first and second theorem.
