22220

22223

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 FIVE of the following: **10**

a) Give classification of Resistors.

b) Define the term passive components.

c) Give classification of capacitor.

d) State Lenz's law.

e) List application of Tunnel diode and Laser diode. (one each)

f) List the types of rectifier.

g) Draw V-I characteristics of P-N junction diode.

Marks

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

a) Distinguish between active and passive components. (any four points)

b) List materials used for construction of electrolytic capacitor.

c) Explain working of PVC gang capacitor.

d) Define the term Filter. List it's types.

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

a) State Faraday's law of electromagnetic induction and write its equation.

b) Describe different types of magnetic materials and their B-H curves.

c) Draw the symbol of following diode's.

i) Zenner diode

ii) Photo diode

iii) Light emitting diode

iv) Tunnel diode

d) Compare Half wave and Full wave rectifier. (any four points)

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

a) Sketch labelled waveform of ECG and EMG signal.

b) Define the term

i) Bioacoustic signal

ii) Biooptical signal

c) Explain the construction of LDR with neat sketch.

d) Following capacitors are abailable

i) 10,000 μF electrolytic capacitor

ii) 100 μF electrolytic capacitor

iii) Trimmer (range between 10 to 100 μF)

iv) Trimmer (range between 100 to 10,000 μF)

Select the value of capacitor to design 20 V DC power supply.

e) Sketch the resistor with colour band of 1000 Ω resistance with 10% tolerance.

Marks

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

a) Explain the construction of tunnel diode with neat sketch.

b) Distinguish between intrinsic and extrinsic semiconductor. (any six points)

c) Draw basic medical instrumentation system.

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

a) Explain working of center tapped full wave rectifier with neat circuit diagram.

b) Give the primary signal characteristics of EMG and ERG.

c) Explain with neat diagram ferrite core inductor. Draw the symbol of fixed indicator and variable inductor.