22437

**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) 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) Define modulation. State the need of modulation.

(b) List advantages of TDM.

(c) List the different types of data transmission.

(d) State the necessity of sports physiology studies through telemetry.

(e) Draw the amplitude modulated waveform for given value of 'm'

(1) m = 100%

(2) m < 100%

(f) Draw the block diagram of data communication system.

(g) Write the advantages of biotelemetry (any four)

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

(a) Draw the ASK and FSK signal for 1100101001.

(b) Compare TDM and FDM (any four points).

(c) List different data encoding techniques.

(d) Describe the working of AM detector with neat sketch.

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

(a) State the concept of tele-surgery and tele-dermatology.

(b) Describe the strengths and limitations of PCM.

(c) Explain the concept of CDMA technology. State any two CDMA services.

(d) State electrical characteristics of RS 232 standards.

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

(a) State advantages and disadvantages of telemedicine (any four).

(b) Describe FM demodulation circuit using single balanced slope detector with neat sketch.

(c) Explain sampling theorem with neat diagram.

(d) Define FDM. Draw and explain block diagram of FDM transmitter.

(e) Write the ethical and legal aspect of internet medical services.

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

(a) Explain with sketches PAM, PWM, PPM.

(b) List limitations and applications of delta modulation, also draw the block diagram of delta modulation.

(c) Draw the following data format for bit stream 1011010

(1) Polar $R_Z$

(2) Unipolar $NR_Z$

(3) Differential Manchester

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

(a) Describe the working of super-heterodyne receiver with neat diagram.

(b) Explain the working principle of PCM with neat block diagram.

(c) Define the term data transmission. Identify type of data transmission mode for

(1) TV broadcasting

(2) Walky-talky

(3) FM broad casting

(4) Talking on mobile phone