17438

21718

3 Hours / 100 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. (A) Attempt any SIX from the following : **12**

(a) State Bandwidth of AM and FM.

(b) List types of satellite orbits.

(c) State main function of physical layer and data link layer.

(d) List types of digital modulation techniques.

(e) State types of data encoding techniques.

(f) Define cell sectoring.

(g) Describe concept of WDM.

(h) State advantages of CDMA over TDMA and FDMA.

(B) Attempt any TWO from the following : **8**

(a) State and describe distortions observed in a delta modulation system.

(b) Write step by step procedure for mobile (cellular) to landline phone (PSTN) call.

(c) What is network topology ? List types of network topology.

2. Attempt any FOUR from the following : **16**

(a) Write frequency ranges of VHF, UHF, MF, HF bands.

(b) State sampling theorem and write down types of sampling.

(c) Draw RZ, NRZ format for data 11000010.

(d) Draw ASK, FSK, PSK signals for data 10100101.

(e) A 400 watt carrier is modulated to a depth of 75 percent. Calculate the total power in the modulated wave.

(f) Compare PWM and PPM on the basis of following parameters :
- (i) Definition
- (ii) Bandwidth
- (iii) Transmitted power
- (iv) Output waveform

3. Attempt any FOUR from following : **16**

(a) Describe generation of PPM with neat circuit diagram and waveform.

(b) Compare AM and FM on the basis of (i) Sidebands (ii) Modulation index (iii) Bandwidth (iv) noise immunity.

(c) Draw block diagram of mobile communication system and state function of each block.

(d) Draw neat block diagram of PCM transmitter and explain it's operation.

(e) Draw AM signal in time domain and frequency domain.

(f) State and explain two advantages and two disadvantages of telemedicine.

4. Attempt any FOUR from following : **16**

(a) Describe concept of frequency reuse scheme.

(b) What is hand-off ? State various hand-off techniques used in mobile communication.

(c) List network connecting devices, describe hub and router.

(d) Describe the term message integrity and message authentication related to network security.

(e) Draw neat block diagram of Biotelemetry system and describe briefly it's operation.

(f) Draw block diagram of telecardiology and describe function of each block.

5. Attempt any FOUR from following : **16**

(a) Compare WAN and MAN with respect to following points :

(i) Extend of geographic area

(ii) Basic structure diagram

(iii) Speed

(iv) Application

(b) What are different types of data transmission ? Compare serial and parallel transmission.

(c) Draw architecture of TCP/IP model, why TCP/IP is preferred in network systems ?

(d) Draw basic block diagram of communication satellite.

(e) Draw neat diagrams of Bus, Star, Ring and Mesh topology.

(f) Describe Ethical and legal of internet medical services.

6. Attempt any FOUR from following : **16**

(a) Describe the need of multiplexing. List types of multiplexing.

(b) Describe the generation of BFSK with block diagram.

(c) Compare BPSK and QPSK with respect to following :

(i) Variable characteristics of the carrier

(ii) Type of modulation

(iii) Bit rate/Baud rate

(iv) Application

(d) State advantages and disadvantages of FDMA.

(e) Define Azimuth angle and Elevation angle with diagram related to satellite communication.

(f) What is uplink and downlink ? Write uplink and downlink frequency ranges used for C-band and Ka-band.
