

17438

15162

3 Hours / 100 Marks

Seat No.

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- Instructions :** (1) All Questions are *compulsory*.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data, if necessary.
(5) Use of Non-Programmable Electronic Pocket Calculator is permissible.

Marks

1. (A) Attempt any SIX :

12

- State the sources of noise (any four).
- Define foot print and station keeping.
- Define WAN & MAN.
- State the difference between ASK & FSK (any four).
- Draw a block diagram of satellite communication.
- State the concept of cell pattern.
- Draw waveform for the code 10110100 in ASK & FSK modulation.
- State the advantages of Geostationary satellite (any two).

(B) Attempt any TWO of the following :

8

- State the working principle of BPSK generator with the help of block diagram. Draw suitable waveform.
- Draw the block diagram and explain the working of mobile communication.
- Draw suitable diagram of MESH, STAR, BUS & RING topology with advantages, disadvantages and application of each.

- 2. Attempt any FOUR of the following :** **16**
- (a) State the difference between AM & FM. (4 points)
 - (b) State and explain sampling theorem.
 - (c) Draw a block diagram of PCM and state two advantages of it.
 - (d) State the need of data encoding technique. Classify it.
 - (e) Give advantages of pulse modulation over amplitude modulation.
 - (f) If the carrier frequency is 50 KHz & modulating voltage of 12 V with modulating frequency 3 KHz. Calculate the modulation index for FM. Also state total frequency deviation.
- 3. Attempt any FOUR of the following :** **16**
- (a) Draw a circuit for varactor diode modulator and explain it.
 - (b) Define the term :
 - (i) Noise factor
 - (ii) Noise voltage
 - (iii) Noise figure
 - (iv) Noise temperature
 - (c) Explain call processing from mobile to mobile
 - (d) State the difference between PWM & PPM.
 - (e) Draw waveform for digital data 11011011 in unipolar NRZ, polar RZ, manchester & AMI.
 - (f) State the basic concept of (i) Tele dermatology (ii) Telesurgery
- 4. Attempt any FOUR of the following :** **16**
- (a) Describe the concept of frequency reuse.
 - (b) Explain interference due to co-channel and adjacent channel in mobile communication.
 - (c) State the concept of (i) Message confidentiality (ii) Message integrity (iii) Message authentication (iv) Digital signature.
 - (d) Explain the working of bridges and routers in the network security.
 - (e) With the help of block diagram, explain the working of telecardiology.
 - (f) State the advantages and disadvantages of telemedicine.

5. Attempt any FOUR of the following : 16

- (a) With the help of suitable example differentiate between synchronous and asynchronous transmission.
- (b) Explain the architecture of OSI model.
- (c) Draw the block diagram of multichannel biotelemetry system for ECG.
- (d) State the advantages and disadvantages of TDMA, FDMA & CDMA.
- (e) Explain serial and parallel mode of data transmission. Give two applications of each.
- (f) Explain the concept of telepsychiatry and telesurgery.

6. Attempt any FOUR of the following : 16

- (a) Draw a schematic diagram of TDM & FDM system. Also state two applications of each.
 - (b) Draw a block diagram of delta modulation and explain its working with suitable waveform.
 - (c) State two advantages and applications of QPSK and DPSK.
 - (d) How global communication is achieved with geostationary satellite explain using suitable diagram.
 - (e) Write the band name with its uplink and downlink frequency range used in satellite communication.
 - (f) Draw basic block diagram of transponder and explain the function of each block.
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