

22322

23124

3 Hours / 70 Marks

Seat No.

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- 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.
 - (8) Use of steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. Solve any FIVE :

(5 × 2 = 10)

- (a) Define the term Bandwidth.
- (b) State the types of guided media.
- (c) Compare FDM and TDM methods of multiplexing. (Any 2 points)
- (d) State the need for standards.
- (e) State the advantage of using shielding in cable.
- (f) Name two approaches used in variable size framing.
- (g) List applications of 4G mobile system.

2. Solve any THREE :

(3 × 4 = 12)

- (a) Explain circuit switching with neat diagram.
- (b) Draw a neat sketch showing the components of Data Communication System and explain them giving suitable examples.
- (c) Explain the stop-and-wait protocol with suitable diagram.
- (d) Compare IEEE 802.11a standard with IEEE 802.11n standard on the basis of :
 - (i) Technique used
 - (ii) Modulation type
 - (iii) Frequency band
 - (iv) Data rate



- 3. Solve any THREE :** **(3 × 4 = 12)**
- (a) List and describe various communication modes with suitable diagrams.
 - (b) Draw a neat sketch of the ASK and FSK waveforms to represent the following bit stream : 10110011
 - (c) Compare between Datagram Packet Switching and Virtual Circuit Packet Switching. (Any 4 points)
 - (d) Compare FHSS and DSSS. (Any 4 points)
- 4. Solve any THREE :** **(3 × 4 = 12)**
- (a) Draw block diagram for satellite communication system and explain.
 - (b) Explain the FHSS system with the help of suitable block diagram.
 - (c) Generate the CRC code for the data word of 11011001. The divisor is 11000.
 - (d) Describe the function of MAC sublayer in IEEE 802.11 standard with neat sketch.
 - (e) Draw a neat sketch of Piconet and Scatternet Bluetooth and explain.
- 5. Solve any TWO :** **(2 × 6 = 12)**
- (a) If the 7-bit Hamming code word received by a receiver is 0010100. Assuming the even parity, state whether the received code word is correct or wrong. If wrong, locate the bit in error.
 - (b) Compare Frequency Modulation and Amplitude Modulation. (Any 6 points)
 - (c) Explain ground wave propagation and sky wave propagation with respect to radio wave communication.
- 6. Solve any TWO :** **(2 × 6 = 12)**
- (a) Compare multimode graded index and multimode step index fibre. Show their propagation characteristics with suitable diagram.
 - (b) Describe frequency division multiplexing & demultiplexing operation with a neat sketch and suitable example.
 - (c) With the help of suitable diagram, explain the functions of different layers of OSI model.
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