

22322

23242

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.

**Marks**

**1. Attempt any FIVE of the following :**

**10**

- (a) State the components of data communication.
- (b) List types of guided transmission media.
- (c) State any two advantages of Multiplexing.
- (d) Give the long form of OSI & ARQ.
- (e) List different flow and error control techniques.
- (f) Enlist generations of mobile telephone system.
- (g) List IEEE wireless standards only.

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

**12**

- (a) Explain phase modulation in detail.
- (b) Draw a labelled diagram of fiber optic cable and state its advantages.
- (c) Differentiate between circuit switching and packet switching (any four points).
- (d) Explain the process of CRC – Cyclic Redundancy Check with example.



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

- (a) Differentiate analog signal and digital signal (any four points).
- (b) Differentiate twisted pair and co-axial cable. (any four points only)
- (c) Compare DSSS with FSSS. (any four points only)
- (d) Calculate CRC for following stream :  
 $G(x) = 110010$  &  
 $M(x) = 101$
- (e) Differentiate between Pico-net and Scatter-net.

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

- (a) Explain the following terms :
  - (i) Bit rate
  - (ii) Baud rate
- (b) Explain any four features of 4G.
- (c) Define standard. Explain any one of IEEE standard.
- (d) Assume even parity technique and find the parity bit for following frames :
  - (i) 0000010
  - (ii) 1111000
  - (iii) 1010101
  - (iv) 1011011
- (e) Explain Bluetooth architecture in brief.

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

- (a) Explain modes of communication in detail.
- (b) Explain line of sight transmission in detail.
- (c) Explain circuit-switched network.

- (d) Assuming even parity technique, find the parity bit for following frames :
- (i) 0000010
  - (ii) 0101011
  - (iii) 11001100
  - (iv) 1000001
- (e) Compare first, second, third and fourth generation mobile telephone systems (any 3 points).

**6. Attempt any THREE of the following :**

**12**

- (a) Compare amplitude modulation and frequency modulation (any 4 points).
  - (b) Draw and explain block-diagram of satellite communication.
  - (c) Explain the following multiplexing techniques with block diagram :
    - (i) TDM
    - (ii) FDM
  - (d) Explain the following flow and error control techniques :
    - (i) Stop and wait
    - (ii) Go back N ARQ
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