

22322

11920

3 Hours / 70 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.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

	Marks
1. Attempt any FIVE :	10
(a) Define Protocol. Why it is needed ?	2
(b) List types of Wireless Media.	2
(c) Define the term Communication medium.	2
(d) Define Multiplexing. List its types.	2
(e) Define (i) FHSS, (ii) DSSS.	2
(f) Draw OSI model.	2
(g) List features of 4G and Volte.	2

- 2. Attempt any THREE :** **12**
- (a) Compare analog signal and digital signal. (any four points) 4
 - (b) Explain half duplex system and full duplex system with diagram. 4
 - (c) Explain satellite communication with diagram. 4
 - (d) Explain working of circuit switching. 4
- 3. Attempt any THREE :** **12**
- (a) Calculate the baud rate for the given bit rate and type of modulation :
 - (i) 4000 bps, FSK
 - (ii) 6000 bps, ASK 4
 - (b) Draw and explain Coaxial cable. 4
 - (c) Draw and explain WDM. 4
 - (d) Explain the process of Cyclic Redundancy Check (CRC) with suitable example. 4
- 4. Attempt any THREE :** **12**
- (a) Draw and explain PSK with waveforms. 4
 - (b) Draw and explain fiber optic cable. 4
 - (c) Calculate minimum number of bits in a PN sequence if we use FHSS with a channel bandwidth of $B = 5\text{KHz}$ and $B_{SS} = 120\text{KHz}$. 4
 - (d) Explain selective reject ARQ. 4
 - (e) Draw Bluetooth architecture. Explain function of various layers. 4

- 5. Attempt any TWO :** **12**
- (a) Differentiate coaxial, twisted pair and fiber optic cables. (any six points) **6**
 - (b) Explain LRC and VRC for error detection with suitable example. **6**
 - (c) Explain WLAN with diagram. Also state its advantages and disadvantages. **6**
- 6. Attempt any TWO :** **12**
- (a) Two channels one with a bit rate of 150 kbps and another with a bit rate of 140 kbps are to be multiplexed using pulse stuffing TDM with no synchronization bits. Answer the following questions.
 - (i) What is the size of a frame in bits ?
 - (ii) What is the frame rate ?
 - (iii) What is the duration of frame ? **6**
 - (b) Explain stop and wait ARQ with example. **6**
 - (c) In a digital medium with a data rate of 12 mbps. How many 64 kbps voice channels can be carried if DSSS is used with Barker sequence ? **6**
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