

17438

16117

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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following:** **12**
- (i) Define signal to noise ratio and noise factor.
- (ii) Define quantization noise.
- (iii) State difference between NRZ and RZ type of data encoding technique. (Any four points)
- (iv) List advantages and applications of TDM (Two each)
- (v) State why a communication satellite is called as geostationary satellite.
- (vi) List different frequency bands used in satellite. (Any four)
- (vii) State the meaning of hand off mechanism related to mobile communication.
- (viii) State the meaning of message authentication related to network security.

P.T.O.

- b) **Attempt any TWO of the following:** **8**
- (i) Explain working principle of Amplitude shift keying with block diagram and waveforms.
 - (ii) Draw and explain working of cellular mobile unit.
 - (iii) State the meaning of network topology. Describe star topology.
2. **Attempt any FOUR of the following:** **16**
- a) Draw and explain block diagram of communication system.
 - b) State different types of amplitude modulation circuits. Draw and explain any one of it.
 - c) Define frequency deviation. In FM if maximum deviation is 10 KHz and modulatory frequency is 2 KHz, calculate modulation index.
 - d) Define sampling theorem and Nyquist rate. Differentiate between natural sampling and flat top sampling.
 - e) State types of multiplexing techniques. Draw and explain FDM.
 - f) State necessity of encoding in digital communication. Represent the data 10101101 using following formats with neat waveforms.
 - (i) Polar RZ
 - (ii) AMI
3. **Attempt any FOUR of the following:** **16**
- a) Describe the generation process of PAM with waveforms and state its applications (Any two)
 - b) Define modulation index for AM. Draw waveforms of AM if $m > 1$, $m = 1$ and $m < 1$.
 - c) State the need of modulation. Classify different modulation technique.
 - d) Draw block diagram, input and output waveforms of PCM system. Explain function of each block.

- e) Explain cellular telephone call processing from land line to mobile and vice versa.
- f) Draw and explain block diagram of single channel biotelemetry system.

4. Attempt any FOUR of the following: 16

- a) Explain cell splitting and frequency reuse.
- b) Explain adjacent channel and co-channel interference.
- c) Draw architecture of OSI model. State functions of any two layers.
- d) State functions of following connecting devices
 - (i) Repeater
 - (ii) Bridge
- e) Explain telemedicine in India.
- f) Draw and explain block diagram of telecardiology.

5. Attempt any FOUR of the following: 16

- a) Draw the block diagram of satellite communication system and explain how it works.
- b) State different types of data transmission. Which method is used for short distance and long distance communication ?
- c) Compare LAN and WAN. (Any four points)
- d) Explain operation and use of router and gateway.
- e) Draw architecture of TCP/IP model and state function of physical layer and data link layer.
- f) Explain internet based medical services. State legal aspects of it.

6. Attempt any FOUR of the following:**16**

- a) Draw and explain WDM. State it's applications. (Any 2)
 - b) State advantages of DM over PCM. Explain delta modulation technique.
 - c) Draw the block diagram of generation of FSK and explain it's working along with waveforms. State it's applications. (Any 2)
 - d) Draw the block diagram of satellite transponder and explain it's working.
 - e) State meaning of multiple access. Draw and explain working principle of TDMA.
 - f) Explain station keeping and altitude control related to satellite.
-