12185

21314

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) 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.

Marks

1. a) **Attempt any <u>THREE</u> of the following:** **12**

i) Draw the block diagram of communication system and explain.

ii) Explain ground wave propogation. State what is wave propogation.

iii) Draw waveforms for ideal natural and flat top sampling and compare them.

iv) Define quantization noise. Show how it depends on the step size.

Marks

b) **Attempt any <u>ONE</u> of the following:** **06**

i) Draw and describe the block diagram of Armstrong (indirect) FM transmitter.

ii) Draw neat block diagram of satellite communication system. State function of up converter.

2. Attempt any <u>FOUR</u> of the following: **16**

a) Draw neat block diagram of adaptive delta modulator. State its advantages.

b) What is line coding. Give the classification of line coding.

c) Draw uplink model and downlink model of satellite communication system.

d) Explain in short analog hierarchy and digital hierarchy.

e) Explain the concept of frequency reuse.

f) What is fading ? Explain.

3. Attempt any <u>FOUR</u> of the following: **16**

a) What is hand off ? Explain handoff procedure.

b) Convert the bit stream 10100110 into:

i) NRZ

ii) RZ formats.

c) Compare PAM and PWM (any 4 points).

d) Describe working principle of hornfeed and parabolic dish antenna.

e) Compare TDMA and FDMA.

Marks

4. a) **Attempt any <u>THREE</u> of the following:** **12**

i) Draw neat waveform of AM signal with m = 1, m < 1, where m = modulation index of AM.

ii) Define:

1) Elevation angle

2) Azimuth angle

3) MTSO

4) Base station

iii) Draw the block diagram of ASK transmitter and explain.

iv) Describe sky wave propogation.

b) **Attempt any <u>ONE</u> of the following:** **06**

i) Explain DPSK transmitter with neat diagram.

ii) Explain about frequency band in satellite communication, and state functions of satellite communication (any four)

5. **Attempt any <u>FOUR</u> of the following:** **16**

a) Draw the waveforms of ASK and FSK for the data 101101.

b) State the advantages and disadvantages of analog communication.

c) State the sampling theorem. Define Nyquist rate.

d) Draw the block diagram of AM transmitter and receiver and state function of each block.

e) Draw the block diagram of PCM transmitter and explain.

f) Define the following terms:

i) Date rate

ii) Baud rate

iii) Bit rate

iv) Channel capacity.

Marks

6. Attempt any <u>FOUR</u> of the following: 16

a) Explain BPSK generation. Draw waveform of BPSK modulation.

b) Explain the switched services of digital carrier system.

c) Draw the waveform for 0101110 using Manchester and differential Manchester encoding.

d) Define the following terms:

i) Critical frequency

ii) Maximum usable frequency,

iii) Skip distance and fading.

e) Explain digital subscriber line.

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