



17519

15116

3 Hours / 100 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) *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

I. A) Answer **any three** of the following :

(3×4=12)

- i) Draw the basic block diagram of an electronic communication system and state the function of each block.
- ii) State the principle of baseband transmission and passband transmission.
- iii) Describe the working principle of CDMA.
- iv) The carrier input to AM modulator is a 500 KHz₀ with 20 V amplitude. The modulating input is a 10 KHz signal with 7.5 V amplitude.
Determine :
 - a) Upper and lower side frequencies
 - b) Modulation index and percentage modulation.

B) Answer **any one** :

(1×6=6)

- i) Draw the block diagram of AM superheterodyne receiver and state the function of each block.
- ii) Draw the block diagram to generate ASK. Describe its working. Draw the related waveforms.

II. Answer **any four** :

(4×4=16)

- a) With the help of block diagram, describe a method to generate PAM wave. Draw the waveforms of modulating signal, Pulse and PAM on the same time scale.
- b) Compare AM and FM on the basis of
 - i) Definition
 - ii) Waveforms
 - iii) Bandwidth requirement
 - iv) Modulation index.

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- c) Draw the waveforms of QPSK with a suitable example.
- d) Classify the various methods of digital-digital encoding. With a suitable example, encode using any two methods.
- e) Draw the basic block diagram of a Satellite Communication and describe its working principle.
- f) State four applications of Satellite Communication System.

III. Answer any four :**(4×4=16)**

- a) Define sampling theorem. Compare Natural sampling and Flat top sampling (2 points).
- b) Draw the block diagram of Delta modulator and describe its working with suitable waveforms.
- c) State two advantages of FSK over ASK and PSK.
- d) For the bit stream 11001010, encode using RZ and AMI encoding methods.
- e) Define multiplexing w.r. to communication. Describe FDM with a neat block diagram.

IV. A) Attempt any three :**(3×4=12)**

- i) With the help of neat sketch, describe ground wave propagation.
- ii) Compare unipolar RZ and unipolar NRZ encoding scheme for four points.
- iii) State two applications of ASK and PSK.
- iv) Describe the principle of cell splitting with a neat sketch.

B) Attempt any one :**(1×6=6)**

- i) Draw the block diagram of a PCM transmitter and state the function of each block.
- ii) Draw the block diagram of a telephone system and describe the various blocks.

V. Attempt any four :**(4×4=16)**

- a) Compare PPM and PWM w.r. to
 - i) Bandwidth
 - ii) Transmitted power
 - iii) Output waveform
 - iv) Definition.
- b) State the need for modulation (any 4 points).
- c) State the bandwidth requirement for QPSK, BPSK, ASK and FSK.
- d) Compare AM and ASK.



e) Observe fig. (1) (a) and (b). Identify the encoding technique.

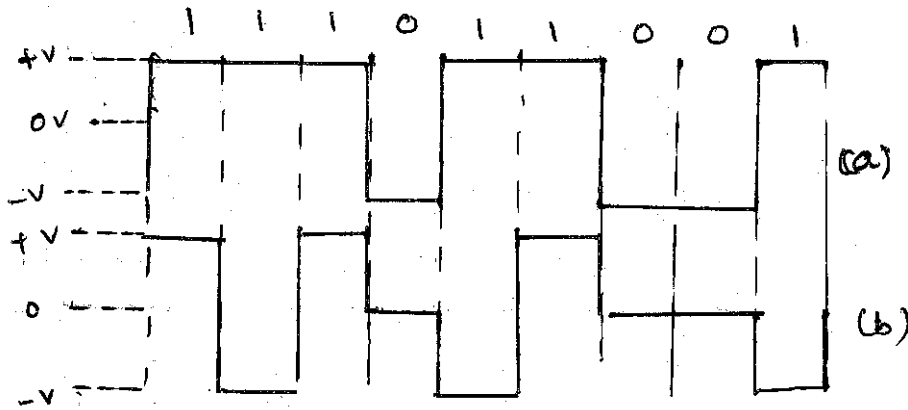


Fig. (1)

State advantages of the encoding techniques used.

f) Describe the sequential procedure for operation of handset to handset call.

VI. Answer any four :

(4×4=16)

- State two applications each of PAM and PPM.
- Describe sky wave propagation with diagrams.
- State advantages of ADM over DM.
- Describe the concept of frequency reuse in mobile communication.
- Draw the schematic representation of WDM and describe its principle of working.