17535

15162

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 three** : **12**

1) State advantages of digital communication.
2) What is meant by Quantization error ? Describe quantization process in brief.
3) Write any four specification of T-carrier system.
4) List out application of spread spectrum systems.

b) Attempt **any one** : **6**

1) Draw and explain PCM transmitter Block diagram.
2) Compare between FDMA, TDMA and CDMA system (any six point).

2. Attempt **any two** : **16**

1) Draw and explain block diagram of Delta Modulation.
2) List out different digital modulation technique and explain amplitude shift keying with suitable circuit diagram and waveforms.
3) Explain North American digital Multiplexing hierarchy with neat diagram.

3. Attempt **any four** : **16**

1) Compare Analog and Digital Communication (any four point).
2) State sampling theorem. Describe different types of sampling techniques.
3) List different types of errors and their causes.
4) Explain M-ary Encoding Technique.
5) State WDM technique and write its two advantage.

P.T.O.

Marks

4. a) Attempt **any three** : **12**

1) Explain DPCM transmitter with neat block diagram.
2) What is constellation diagram and draw constellation diagram for 16-QAM modulator ?
3) Explain CDM technique with its block diagram.
4) Why pseudo-noise sequence is used in spread spectrum modulation ?

b) Attempt **any one** : **6**

1) Draw unipolar RZ, NRZ, Manchestor and Alternate Mark inversion Line code waveform for data stream 100011100.
2) Draw the block diagram of DPSK transmitter and explain its working.

5. Attempt **any two** : **16**

1) Explain Hamming code with suitable example. Find the Hamming weight of the code vector X = 11010100.
2) Draw QPSK Modulator block diagram. Explain with constellation diagram and phasor diagram.
3) Define FDM and explain frequency division multiplexing with block diagram.

6. Attempt **any four** : **16**

1) State Shannon's Hartley theorem. What is Shannon's information rate theoretically ?
2) Compare between QAM and QPSK (any four point).
3) Draw and explain PSK receiver block diagram.
4) Explain basic principle involved in CDMA technology.
5) List out advantages and disadvantages of FHSS system.

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