17535

21415

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****.*

MARKS

1. a) Attempt **any three** : **12**
   1) Define sampling theorem and state Nyquist rate.
   2) List different types of errors and their causes.
   3) State need of multiplexing in communication.
   4) List advantages of Spread Spectrum (SS) modulation over other.

   b) Attempt **any one** : **6**
   1) Draw block diagram of digital communication system and explain in detail.
   2) Explain Shannon Hartleys theorem with suitable example.

2. Attempt **any two** : **16**
   1) Draw and explain PCM transmitter and state any two advantages and 2 disadvantages.
   2) List different digital modulation techniques and explain amplitude shift keying modulation in detail.
   3) Draw and explain block diagram of Time Division Multiplexing (TDM) and state its advantages (min. 4).

3. Attempt **any four** : **16**
   1) Explain basic working principle of code division multiple access technology.
   2) Draw the block diagram of DPSK transmitter and explain.
   3) State the necessity of adaptive delta modulation technique.
   4) Compare digital pulse modulation with analog modulation.
   5) Explain M-ary encoding technique.

P.T.O.

MARKS

4. a) Attempt **any three** : **12**
   1) State historical perspective of digital communication.
   2) List advantages and disadvantages of Delta modulation techniques.
   3) Explain Alternate Mark Inversion (AMI) coding with suitable example.
   4) List and explain different types of frequency hopping.

   b) Attempt **any one** : **6**
   1) Generate CRC code for data word 110101011 the divisor is 01011.
   2) Explain PN sequence generation in detail.

5. Attempt **any two** : **16**
   1) Explain principle of frequency division multiplexing and compare FDM and CDM techniques.
   2) Draw block diagram of QAM generation system and explain with waveforms.
   3) Describe the direct sequence spread spectrum techniques with the help of block diagram. State advantages also.

6. Attempt **any four** : **16**
   1) Explain slope overload and Granular noise with respect to Delta modulation.
   2) Draw RZ, NRZ Manchester and differential Manchester line code waveform for data stream 10100110.
   3) Compare ASK with FSK modulation.
   4) List different advantages of PSK modulation.
   5) Write any four specification of T carrier system.

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