B.Tech. SEM -V Electronics Engg.) 2014 Course (CBCS) : WINTER - 2018

SUBJECT : DIGITAL COMMUNICATION SYSTEMS

Day : - Tuesday
Date : 27/11/2018

W-2018-2409

Time : 02.30 PM TO 05.30 PM
Max. Marks : 60

N. B. :

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labeled diagram **WHEREVER** necessary.
4) Assume suitable data, if necessary.

Q. 1 Define following terms related to probability **(10)**

i) Sample space
ii) Event
iii) Sure event
iv) Union of events
v) Mutually exclusive events

OR

Q. 1 A three digit message is transmitted over a noisy channel having a probability of error $P(E) = \frac{2}{5}$ per digit. Find out corresponding CDF. **(10)**

Q. 2 State the sampling theorem. Compare ideal sampling with flat top sampling and natural sampling. **(10)**

OR

Q. 2 Describe the adaptive delta modulation technique using neat diagram. What are the advantages of this technique over delta modulation technique? **(10)**

Q. 3 Encode the following binary data stream into polar RZ, Unipolar NRZ, AMI, Split phase Manchester and polar quaternary NRZ codes. **(10)**
Data stream: 10110111

OR

Q. 3 Derive the expression for impulse response of a matched filter. **(10)**

Q. 4 With suitable block diagram, describe generation and reception of FSK signal in digital CW modulation system with necessary waveforms. **(10)**

OR

Q. 4 Discuss with block diagram, the generation and reception of DPSK signal. State merits and demerits of DPSK system over PSK system. **(10)**

P. T. O.

Q. 5 Find out generator matrix for a systematic $(7, 4)$ cyclic code if $G(P) = P^3 + P + 1$. Also find parity check matrix. **(10)**

OR

Q. 5 What is mean by error? Describe error detection types: **(10)**

i) Parity checking

ii) Cyclic redundancy check

iii) Longitudinal redundancy check

Q. 6 Describe processing gain and antijam characteristics for spread spectrum. **(10)**

OR

Q. 6 a) Compare CDMA, TDMA and FDMA **(06)**

b) State the properties of maximum length sequence. **(04)**

* * * * *