

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2020 COURSE)
B.Tech.Sem - IV Electronic & Communication : WINTER- 2022
SUBJECT : DIGITAL COMMUNICATION

Day : Thursday

Time : 02:30 PM-05:30 PM

Date : 24-11-2022

W-24601-2022

Max. Marks : 60

N.B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of **CALCULATOR** is allowed.

Q.1 What is aliasing explain in detail & methods to avoid it with suitable mathematical equation? (10)

OR

- a) Explain PPM transmitter with block diagram & waveforms. (05)
- b) Differentiate between PWM, PAM, PPM. (05)

Q.2 a) Compare DM, ADM, DCM. (05)

b) Explain Companding with suitable diagram along with equations. (05)

OR

An input signal applied to PCM has maximum frequency of 4 kHz & input is $-3.8V$ to $+3.8V$, input signal power is 30 mw, target output SNR = 20dB, Assume uniform quantization for PCM. Find number of bit required quantization levels, step size, bandwidth and bitrate. (10)

Q.3 Draw the diagram of QPSK modulator and explain the process of generating QPSK signals with waveforms with mathematical equations. (10)

OR

Draw the diagram of BFSK modulator & explain in detail with waveforms with mathematical equations. (10)

Q.4 Explain Multiplexing Hierarchy for Digital multiplexing for AT & T with diagram specifying bitrates at each stages. (10)

OR

Draw the following data formats for bitstream 1011010. (10)
Unipolar RZ, polar RZ, AMI, polar NRZ, Differential Manchester.

Q.5 Explain optimum filter in detail. (10)

OR

Explain the properties of Matched filter with equations in detail. (10)

Q.6 A DSSS system has a 1.2888 megachips per second code clock rate & 9.6 kilobits per second information rate. Calculate the processing gain, how much improvement in the information rate is achieved if code generation rate is changed to 5 megachips per second code clock rate and processing gain to 250? (10)

OR

Compare TDMA, CDMA & FDMA. (10)