Total No. of Questions : 6]

SEAT No :

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TE/INSEM./OCT.-122
T.E. (E&TC)
DIGITAL COMMUNICATION
(Semester - I) (2015 Course)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.***
2) ***Figures to the ritght side indicate full marks.***
3) ***Use of electronic pocket calculator is allowed.***
4) ***Assume suitable data, if necessary.***

Q1) a) Draw block diagram of PCM receiver and explain its working. **[6]**

b) A DM transmitter is designed to operate at 4 times Nyquist rate for a signal with 3 kHz bandwidth. Find the maximum amplitude of 1kHz sinusoid to avoid slope overload if step size is 0.5V. **[4]**

OR

Q2) a) Draw block diagram of DM transmitter and explain its working. **[6]**

b) Find the nyquist rate for following signals. **[4]**

i) $g(t) = 10 \sin (100 \pi t) + 20 \cos(100 \pi t)$

ii) $g(t) = \sin c(2t)$

Q3) a) What is bit synchronisation? Why it is required? **[6]**

b) Draw the block diagram of AT&T hierarchy. **[4]**

OR

Q4) a) What is ISI ? What are its causes? **[6]**

b) There are number of data formats. Write the parameters on the basis of which they are analysed or compared. **[4]**

P.T.O.

Q5) a) What is wide-sense or weakly stationary process? Explain. **[4]**

b) Write the expressions to find time averages-mean and autocorrelation of a random process X(t). **[6]**

OR

Q6) a) What is ergodic process? Explain. **[6]**

b) Explain following terms with reference to random process. **[4]**

i) Sample function

ii) Ensemble.