Registration No.: | | | | | | | | | | |

Total Number of Pages: 02 **Course: B.Tech**
Sub_Code: REE6C001

6th Semester Regular/Back Examination: 2024 - 2025
SUBJECT : COMMUNICATION ENGINEERING
BRANCH(S): AEIE, EEE, EIE, ELECTRICAL
Time: 3 Hours
Max Marks: 100
Q.Code: S165

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right hand margin indicate marks.

Part-I

Q1 **Answer the following questions :** **(2 x 10)**

a) State the correlation property of Fourier transform.
b) Compare between DSB and VSB modulation.
c) Unit ramp signal is an energy signal or power signal, why?
d) What are the advantages of FM?
e) Write the demerits of SSB modulation system.
f) Write the exponential form of Fourier Series and its use.
g) Find sampling frequency for the digitization of a low pass signal with cutoff frequency of 1250 KHz, sampled at Nyquist rate.
h) What is quantization noise, how it can be mitigated?
i) What is noise in DM system?
j) Distinguish between PCM and DPCM.

Part-II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 x 8)**

a) What is a communication channel? Classify it and explain their various applications.
b) State and prove the convolution property of Fourier transform.
c) What should be sampling frequency for a band pass signal of bandwidth 3B Hz, prove it with the help of spectrums.
d) What is an NBFM modulator? Explain with circuit diagram.
e) Define modulation index of an AM system; draw the modulated signal waveform for a triangular modulating signal.
f) What is Fourier transform and explain about its applications.
g) What is DSB-SC modulation? Mention its merits and demerits.
h) Explain about the noise in DM system.
i) In a binary PCM system, a sinusoidal signal with frequency 85 Hz, peak to peak voltage of 7 Volt, is sampled at Nyquist rate. The samples are processed by a uniform quantizer with step size of 0.5 Volt. Find the minimum data rate of the PCM system.

j) What is adaptive delta modulation? Discuss its applications.

k) Compare between DM and ADM system.

l) What is companding, how it can provide uniform quantization error?

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four) **(16 x 2)**

Q3 State and prove the various properties of Fourier transform. How is it used for analysis of a communication system? **(16)**

Q4 What is angle modulation? Mention its variants. Explain in detail about its modulator and demodulator circuits. Mention its merits and demerits with examples. **(16)**

Q5 Explain about PCM system in detail with noise analysis. What is DPCM, DM, and ADM modulation? **(16)**

Q6 What is PAM, PWM, and PPM? Explain its modulator and demodulators with its merits, demerits, and applications. **(16)**