

Total No. of Questions : 4]

SEAT No. :

PD20

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[6409]-213

**S.E. (Electronics / E & TC / Electronics & Computer Engg.) /  
Electronics Engg. (VLSI Design & Technology) (Insem)  
PRINCIPLES OF COMMUNICATION SYSTEMS  
(2019 Pattern) (Semester - IV) (204193)**

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

- Q1)** a) Differentiate between baseband signal and band pass signal. [5]  
b) Obtain the Fourier Transform of rectangular pulse with time duration T and amplitude A. [5]  
c) What is modulation? Explain the need of modulation in communication systems. [5]

OR

- Q2)** a) Explain the regenerative repeaters and the use of regenerative repeaters. [5]  
b) State and explain the following properties of Fourier transform [5]  
i) Frequency Shifting  
ii) Time Shifting  
c) Classify the different types of signal used in communication system. [5]

- Q3)** a) A 12 kW carrier wave is amplitude modulated at 80% depth of modulation by a sinusoidal modulating signal. Calculate the sideband power, total power and the transmission efficiency of the AM wave. [5]  
b) Explain the phase shift method for generating SSB-SC using block diagram. [5]  
c) Explain the generation of DSB-SC using balanced modulator. [5]

OR

- Q4)** a) A modulating signal  $20 \sin(2\pi \times 10^3 t)$  is used to modulate a carrier signal  $40 \sin(2\pi \times 10^4 t)$  calculate: [5]  
i) Modulation Index  
ii) Efficiency  
iii) Sideband frequencies and their amplitudes  
iv) Bandwidth of AM wave  
v) Draw the frequency spectrum  
b) Draw the spectrum of DSBFC, DSBSC and SSB. [5]  
c) Draw & Explain the block diagram of AM super heterodyne receiver. [5]

