

Total No. of Questions : 4]

SEAT No. :

PB19

[6268]-213

[Total No. of Pages : 2

S.E. (Electronics / E & TC/Electronics & Computer Engg.) (Insem)

PRINCIPLES OF COMMUNICATION SYSTEMS

(2019 Pattern) (Semester - IV) (204193)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4.
- 2) Neat diagrams must be drawn whenever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

Q1) a) Define fourier transform. Obtain the fourier transform of the following signals. **[5]**

i) $X(t) = \text{Cos } \omega_c t \cdot u(t)$

ii) $X(t) = e^{-5t} \cdot u(t)$

b) With a neat block diagram explain the working of an electronic communication system. **[5]**

c) Define energy signal. Find the energy of the following signal, $X(t) = 2e^{-10t} \cdot u(t)$. **[5]**

OR

Q2) a) Explain the following signals with an example **[5]**

i) Discrete time signal

ii) Periodic signal

iii) Digital signal

iv) Odd signal, and

v) Deterministic signal

b) Define power signal. Find the power of the following signal, $X(t) = A \cos (\omega_0 t + \theta)$ **[5]**

c) Define fourier transform. State and explain any two properties of the Fourier transform. **[5]**

P.T.O.

- Q3)** a) Compare DSB-FC AM and SSB-SC AM with respect to any five parameters. [5]
- b) An AM transmitter has carrier of 500W, which is modulated up to a depth of 40%. Find the total power in the transmitted wave and also the power efficiency in the following cases,
- i) Standard AM (DSBFC)
- ii) SSB-SC AM [5]
- c) Explain the working of the super heterodyne AM receiver with the help of neat block diagram. [5]

OR

- Q4)** a) Explain the working of envelope detector for detection of amplitude modulated signal with the help of neat waveforms and circuit diagram. [5]
- b) Explain vestigial sideband modulation. [5]
- c) Calculate the percentage power saving for a DSB-SC signal for the percent modulation of
- i) 100% and
- ii) 50% [5]

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