PB19

[6268]-213

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) $X(t) = \cos \omega_c t \cdot u(t)$

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

b) With a neat block diagram explain the working of an eletronic 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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