B.E.(with Credits)-Regular-Semester 2012 - Information Technology Sem IV

IT403 - Principles of Communication

P. Pages : 2 **GUG/W/16/3914**

Time : Three Hours * 4 0 2 9 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Find Fourier transform of **8**

i) $e^{-at} \cdot u(t)$

ii) $\sin \omega \circ t$

b) Explain in detail Ideal low pass filter. **8**

OR

2. a) State and explain sampling theorem in detail. **8**

b) Explain:- **8**

i) Frequency shifting property

ii) Time shifting property

iii) Scaling property

3. a) Explain the phase shift method for SSB generation. Also explain DSB-SC in short. **8**

b) Derive the equation for an amplitude modulated wave and explain the power relations. **8**

OR

4. a) Derive an expression for frequency modulated wave. **8**

b) Explain with block diagram the Armstrong method of F.M. generation. **8**

5. a) What are different types of Noises. Explain in detail. **8**

b) Explain the concept of Noise temperature. **8**

OR

6. a) Derive expressions for Noise in a two port network with suitable explanation. **8**

b) Derive an expression for power density spectrum of shot noise. **8**

7. a) Explain the terms PPM (Pulse position modulation) and PWM (Pulse width modulation). **8**

b) Write short note on companding. **4**

c) Compare TDM & FDM. What are advantages of each of them. **4**

OR

8. a) Explain DPCM (differential Pulse code modulation) in detail. **8**

b) Explain adaptive delta modulation and how it is Used to over come limitation of Delta modulation. **8**

9. a) Explain frequency shift keying. **6**

b) Explain QPSK with the help of block diagram and draw waveforms for explanation. **10**

OR

10. a) Plot the waveforms for the sequence **10**

i) 1 0 0 1 1 0 ii) 1 1 0 0 1 0 using

i) Polar NRZ.

ii) Unipolar RZ

iii) Split phase Manchester

iv) Gray code NRZ.

b) Explain phase shift keying. **6**

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