FACULTY OF INFORMATICS
B.E. 2/4 (IT) II Sem. (Old) Examination, May/June 2012
ELECTRONIC COMMUNICATION TECHNIQUES

Time: 3 Hours] [Max. Marks :75

Note : Answer **all** questions from Part **A**; answer **any five** questions from Part **B**.

PART – A	25 Marks

1. Briefly describe the significance of Hartley's law. 2

2. Describe the terms harmonic distortion, intermodulation distortion. 3

3. Describe amplitude modulation with suitable waveforms. 3

4. Compare AM SSBSC to conventional AM. 3

5. Define deviation sensitivity for a frequency modulator. 2

6. Describe FM thresholding. 2

7. List the advantages of digital transmission over analog transmission. 3

8. Define sampling theorem for low pass signals. 3

9. What is frequency shift keying ? 2

10. Define quantization error. 2

PART – B	50 Marks

11. a) Define equivalent noise temperature. Determine noise figure for an equivalent noise temperature of 75 k (use 290 k as reference temperature) and equivalent noise temperature for a noise figure of 6dB. 5

b) For an amplifier operating at a temperature of 27°C with a bandwidth of 20 KHz, determine the total noise power and rms noise voltage for a 50 Ω load resistor. 5

(This paper contains 2 pages) 1 **P.T.O.**

12. Draw the block diagram of superheterodyne receiver and describe receiver operation. **10**

13. a) Explain the operation of low-level AM DSBFC transmitter with block diagram. **7**

   b) State and explain the receiver parameters. **3**

14. a) Describe how pre-emphasis and de-emphasis network will produce uniform SNR throughout the frequency modulation spectrum. **5**

   b) Draw the schematic diagram of a single ended slope detector and describe its operation. **5**

15. a) Differentiate natural sampling and flat top sampling. **5**

   b) Explain signal recovery through holding. **5**

16. Describe the delta modulation transmitter and receiver with block diagram and distortion associated with it. **10**

17. a) Write short note on advantages of angle modulation over amplitude modulation. **5**

   b) For an FM modulator with peak deviation $\Delta f = 10$ KHz, a modulating signal frequency $f_m = 10$ KHz, $V_c = 10$ V and a 500 KHz carrier, determine approximate minimum bandwidth using Carson's rule. **5**

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