Code No. : **6296**

FACULTY OF ENGINEERING
B.E. 3/4 (ECE) I Semester (Suppl.) Examination, July 2010
ANALOG COMMUNICATIONS

Time: 3 Hours] [Max. Marks: 75

*Note: 1) Answer **all** questions from Part – A.*
*2) Answer **any Five** questions from Part – **B**.*

PART – A **25**

1. 400 Hz, 600 Hz and 800 Hz three audio signals. AM modulates the carrier of 4000 KHz signal. What are the frequencies present in the output ? **3**

2. Draw the schematic diagram of VSB modulator. **2**

3. Compare Phasor diagrams of AM and NBFM. **3**

4. Differentiate tracking and alignment in radio receivers. **3**

5. Justify the need of modulation. **2**

6. The noise figure of an amplifier is 7dB. Calculate the output SNR when the input SNR is 35. **3**

7. What are the reasons for highest attention paid to the design of front end of radio receiver ? **2**

8. State sampling theorem for band pass signals. **2**

9. In a superheterodyne receiver with no RF selection the load "Q" of the antenna coupling circuit is found to 112. IF = 455 KHz. Calculate image frequency and its rejection ratio at 1200 KHz. **3**

10. Draw the wave forms of PAM, PPM and PWM signals for single tone modulating signal. **2**

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PART – B (5×10 = 50 Marks)

11. a) Discuss the generation of SSB signal using filter method. 5

    b) Explain how do you demodulate the AM by an envelop detector. Derive the relation between the time constant and modulation index. 5

12. a) Describe the indirect method of FM generation. 5

    b) A carrier is FM modulated by a single tone modulating signal of frequency 2 KHz, resulting in a frequency deviation of 5 KHz. What is the bandwidth occupied by the modulated wave ? The amplitude of modulating signal is increased three time and its frequency decreased to 1KHz. What is the new bandwidth ? 5

13. a) Draw the block schematic diagram of an AM transmitter (low level) and explain the function of each block. 5

    b) Discuss the sensitivity, selectivity, feidility and noise floor of the radio receiver. 5

14. a) Derive the figure of merit of an AM receiver. 5

    b) Determine the rms noise voltage at room temperature $(27^{\circ}C)$ across the capacitor of an RC circuit with R = 20Ω and C = 40 PF 5

15. a) With neat circuit diagram explain the generation and detection of PWM signal. 6

    b) Explain about various types of samplings. 4

16. a) Explain how FM signal is demodulated by a ratio detector. 6

    b) Discuss thresold and capture effects in FM. 4

17. Write short notes on

    a) FDM. 3

    b) AGC in radio receiving 4

    c) Aperture effect with reference to sampling. 3

600