Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

MEMT-205

M.E./M.Tech., II Semester

Examination, June 2017

Advance Communication Systems

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) What is a constellation diagram, and how is it used with PSK?
   b) Explain the relationship between the minimum bandwidth required for a 16-QAM system and the bit rate.

2. a) Explain demand assigned multiple access.
   b) Explain the differences between absolute PSK and differential PSK.

3. a) With an example explain how multiplexed PCM channels are transmitted using T1 carrier system.
   b) What are optimum and matched filters? Find there transfer function.

4. a) Explain in detail about white and filtered noise.
   b) Prove that the maximum SNR for the matched filter is found to be

$$\left(\frac{S}{N}\right)_{o\max} = \frac{\alpha E}{N_o}$$

5. a) Discuss digital transmission through an Additive White Gaussian Noise (AWGN) channel.
   b) Explain signal constellation.

6. Write short note on:
   a) Orthogonal signals
   b) M-array transmission

7. a) Explain handoff process in cellular networks.
   b) Discuss ad hoc routing protocols.

8. a) How is multiuser detection done in CDMA?
   b) Which one is the least efficient among the three multiple access techniques, FDMA, TDMA and CDMA? State the reasons with reference to a 30 kHz bandwidth channel.

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