Total No. of printed pages = 3

ECE-3204/T&SC/6th Sem/2013/M

TELEMATICS AND SATELLITE COMMUNICATION

Full Marks – 100

Pass Marks – 30

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) Explain the principle of crossbar switching. 7

   (b) Which of the transmission line available today has minimum attenuation and why ? 7

   (c) What is the difference between packet switching and circuit switching ? 6

2. (a) What is a PCM signal ? How it can be generated from analog signals ? 8

   (b) State M-law and A-law of companding. 4

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(c) What are the different types of digital modulation schemes ? Explain the basic digital modulation schemes. 8

3. (a) What is time division switching ? Explain. 8

(b) Explain the principle of TDMA. 8

(c) If in a PCM system the number of quantization level is 256, then find

(i) number of bits per sample

(ii) signal to noise ratio in dB. 4

4. (a) Explain the basic satellite communication system. 5

(b) If for a geo-stationary satellite time period of one revolution around the earth is 24 hours and earth's radius is approximately 6400 km, then find the height of the satellite from earth surface. 5

(c) State Kepler's laws of planetary motion and derive the equation of orbit of a satellite. 10

5. (a) Explain with the block diagram of a basic transponder system. 8

(b) Explain telemetry, tracking, command and monitoring subsystem of a satellite. 12

6. (a) How azimuth and elevation angle of a satellite can be calculated ? 10

(b) Explain the antenna subsystem of a satellite. 10

7. (a) Explain the basic transmission theory in satellite communication. 10

(b) Explain the concept of up-link and down-link design of a satellite communication system. 10