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**Sixth Semester B.E. Degree Examination, Dec.2014/Jan.2015**  
**Satellite Communication**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer FIVE full questions, selecting at least TWO questions from each part.**  
**2. Missing data may be suitably assumed.**

**PART – A**

- 1 a. What is the satellite communication? List the applications and some of the services provided by satellites. (06 Marks)
- b. Define the following:
  - i) Subsatellite path
  - ii) Apogee
  - iii) Perigee
  - iv) Inclination. (04 Marks)
- c. State and explain the Kepler's laws of planetary motion with neat diagrams and necessary equations. (10 Marks)
- 2 a. Explain what is meant by apogee height and perigee height with suitable diagrams. (06 Marks)
- b. Explain briefly what is meant by sun transit outage. (06 Marks)
- c. Calculate the apogee and perigee heights for the case with eccentricity  $e = 0.0011501$  and  $a = 7192.3$  km. Assume the mean radius of earth as 6371 km. (08 Marks)
- 3 a. Explain what is meant by EIRP. (06 Marks)
- b. A satellite down link at 12 GHz operates with a transmit power of 6 W and antenna gain of 48.2 dB. Calculate the EIRP in dBW. (04 Marks)
- c. List the losses suffered in a satellite link. Explain each of them. (10 Marks)
- 4 a. Explain with the help of a block diagram of satellite transponder channels. (06 Marks)
- b. What is meant by satellite attitude, explain two terms of attitude control? (06 Marks)
- c. With a neat block diagram, explain TT and C subsystem. (08 Marks)

**PART – B**

- 5 a. Explain with the help of a block diagram showing a home terminal for DBS TV/FM reception. (08 Marks)
- b. Describe and compare the MATV and CATV system. (06 Marks)
- c. Explain with the help of block diagram interference between satellite circuits and Terrestrial station. (06 Marks)
- 6 a. Explain what is meant by FDMA and show how this differs from FDM. (08 Marks)
- b. Explain the frame and burst formats for a TDMA system. (12 Marks)
- 7 a. Explain briefly what is meant by satellite-switched TDMA. (06 Marks)
- b. What is back-off in FDMA? Explain. (04 Marks)
- c. Explain satellite mobile services. (10 Marks)
- 8 Write a short notes on:
  - a. GPS.
  - b. VSATs.
  - c. Radarsat.
  - d. Orbital communication. (20 Marks)

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