Unit IV

7. What is VSAT ? Briefly explain its architecture and various VSAT networks topologies in detail. **15**

8. (a) Describe the system requirements for RADAR and communication antennas. **7**

(b) Discuss about the various factors involved in array characterization of communication system. **8**

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BB-70

M. Tech. EXAMINATION, May 2018

(Second Semester)

(B. Scheme) (Main & Re-appear)

ECE/Industry Integrated

MTEC520B

ADVANCED SATELLITE COMMUNICATION

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) State Kepler's three laws of Planetary Motion. Illustrate in each case their relevance to artificial satellite orbiting the each. **10**

(b) For an eccentric satellite orbit with an apogee and perigee points at a distance of 50000 km and 8000 km respectively from the center of earth. Determine the semi-major axis, semi-minor axis and the orbit eccentricity. **5**

2. (a) Derive the general link design equations. Find out expression for C/N and G/T ratios. **12**

(b) What is TDMA Frame Efficiency ? **3**

Unit II

3. (a) Explain the message transmission by FDMA based on M/G/I queue. **8**

(b) A paraboloid dish antenna having a mouth diameter of 20 m and an aperture efficiency of 90% produces a radiated beam with a solid angle of 3×10^{-4} steradians. Determine the antenna's power gain in decibels and also the operational frequency. **7**

4. (a) With the help of neat block diagram, explain the working principle of GPS. How is data retrieved and analyzed ? **8**

(b) Differentiate Pure ALOHA and Slotted ALOHA. **7**

Unit III

5. What are GPS errors ? Briefly explain various GPS sources. **15**

6. What are various GPS orbital parameters ? Explain them. **15**