Code: 13A04708

R13

B.Tech IV Year I Semester (R13) Regular Examinations November/December 2016

SATELLITE COMMUNICATION

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) Write down frequency allocations for fixed service satellites and Broadcasting satellites.

(b) A Satellite is orbiting in a geosynchronous orbit of radius 41,500 km. Find the velocity and time of the orbit. If g_o = 398600.5 km^3/sec^2.

(c) Give the reasons for the uplink frequency to be always higher than the downlink frequency in a satellite communication system.

(d) Define and explain the terms roll, pitch and yaw.

(e) What is the significance of G/T ratio?

(f) What is meant by multiple access of a satellite?

(g) List the major factors that govern the design of earth station antennas for satellite communication.

(h) Explain in brief about Differential GPS.

(i) Give the block diagram of signal generation in a GPS satellite.

(j) List out major sources of error in GPS.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 List the various advantages and disadvantages of satellite communication. Explain the various reasons for preferring satellites than optical fibers which are providing very high bandwidth.

OR

3 (a) What are the different types of satellite orbits? Discuss their merits and demerits.

(b) Describe the steps involved in launching a satellite.

UNIT – II

4 Describe the tracking telemetry and command facilities of a satellite communication system. Explain how attitude and orbit control is achieved from an earth station.

OR

5 Suggest a schematic of satellite power system giving its important features.

UNIT – III

6 Discuss about System noise temperature and G/T ratio for earth station

OR

7 What is spread spectrum technique? Why do we need it? In which multiple access techniques it is used? How the secured communication will be provided by this technique? Explain it with suitable example.

UNIT – IV

8 With a simplified block diagram explain the working of an earth station communication sub system.

OR

9 Write in detail about delay and throughput considerations.

UNIT – V

10 Discuss in detail the process of Satellite signal Acquisition.

OR

11 Discuss in detail about the GPS navigation and Observation data formats

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