

(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID : 131751

Roll No.

B.Tech.

(SEM. VII) THEORY EXAMINATION, 2015-16

SATELLITE COMMUNICATION

[Time:3 hours]

[Total Marks:100]

Section-A

1. Attempt all parts. All parts carry **equal** marks. Write answer of each part in **short**. (2x10=20)
 - (a) Write:
 - i. Exact height of Geostationary earth orbit
 - ii. Radius of earth
 - (b) Write down the disadvantages of geostationary satellites.
 - (c) List the sub-systems of satellite communication.
 - (d) What do you mean by station keeping of satellite?

- (e) Explain Ionospheric Scintillation.
- (f) Write down the features of VSAT system.
- (g) Explain the position determination principle of GPS.
- (h) What is EDUSAT
- (i) Give classification of low-gain omnidirectional antennas.
- (j) Explain antenna beamwidth.

Section-B

Note: Attempt any **five** questions from this section.(10x5=50)

- 2. List the orbital elements required to determine the coordinates of a satellite. Explain in brief.
- 3. An earth station is located at 30 degree West longitude and 60 degree North latitude. Determine the earth station azimuth and elevation angles with respect to GEO satellite located at 50 degree West longitude. Assume orbital radius= 42164 km and earth's radius = 6360 km.

- 4. Explain significance of G/T of an earth station. Write the values of G/T for standard earth stations.
- 5. Write short note on propagation impairment countermeasures.
- 6. Write short notes on-
 - (i) LEO satellite system
 - (ii) Non-GEO system
- 7. Explain DBS-TV Receiver with help of a block diagram.
- 8. What are the mechanical and electrical requirements of mobile satellite antennas?
- 9. Discuss array antennas in brief.

Section-C

Note: Attempt any **two** questions from this section.(15x2=30)

- 10. What do you understand by system noise temperature? Derive the relation for equivalent system noise temperature.
- 11. State and explain the different segments of GPS. What is meant by satellite signal acquisition in GPS?

12. Write short notes on-

- (a) Write Quadrifilar Helical Antenna (WQHA)
- (b) Atmospheric Losses
- (c) Van Allen belts

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