

B.Tech IV Year I Semester (R13) Supplementary Examinations June 2018

**SATELLITE COMMUNICATION**

(Electronics &amp; 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) Name few applications of satellite communications.
- (b) State Kepler's second law.
- (c) What is meant by spot beam antenna?
- (d) What is meant by transponder?
- (e) What is the need for reference burst in TDMA?
- (f) An antenna has a noise temperature of 35K and it is matched into a receiver which has a noise temperature of 100 K. Calculate the noise power density and the noise power for a bandwidth of 36 MHz?
- (g) State the features of LEO.
- (h) What are the basic requirements of an earth station antenna?
- (i) State any two applications of GPS.
- (j) Explain the position location principles of GPS.

**PART – B**

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

**UNIT – I**

2 Determine the look angles and the range for the situation given below, latitude of the earth station (IE)=-20 deg, Longitude of earth station (fE)=-30 deg, Longitude of sub satellite point fs=+30 deg; height = 35,786 km radius of earth = 6378.14 km.

**OR**

3 Determine the limits of visibility for an earth station situated at mean sea level, at latitude 48.42 degree north and longitude 89.26 degrees west. Assume a minimum angle of elevation of 5 degrees.

**UNIT – II**

4 Explain how attitude control is established through various satellite stabilization techniques.

**OR**

5 Explain the operation of Telemetry, tracking and command subsystem.

**UNIT – III**

6 Explain about different spread spectrum systems.

**OR**

7 List and explain the factors governing the design of satellite links.

**UNIT – IV**

8 Discuss on earth station antenna feed, reflectors and mount.

**OR**

9 Compare and contrast LEO and GEO satellites.

**UNIT – V**

10 Explain the principle of differential GPS with a neat diagram.

**OR**

11 With short notes on GPS receiver and GPS codes, explain the satellite signal acquisition operation.

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