

B.E./B.TECH. Degree Examination, December 2020

Seventh Semester

**EC16008 - SATELLITE COMMUNICATION**

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. Rotation of a geosynchronous satellite means its
  - a) Drift from stationary position
  - b) Wobbling
  - b) Three axis stabilization
  - d) Three-dimensional stabilization
2. The process of manoeuvring a satellite within a preassigned window is called
  - a) Satellite keeping
  - b) Station controlling
  - c) Station keeping
  - d) Satellite controlling
3. To make antenna more directional, either its size must be increased or
  - a) The number of its feed horns must be increased
  - b) The frequency of its transmission must be increased
  - c) Its EIRP must be increased
  - d) Its footprint must be increased
4. Which of the following comes under methods of multiple access techniques?
  - a) FDMA & TDMA
  - b) SCPC & CDMA
  - c) CDMA & GSM
  - d) none of the above
5. Identify the purpose of station keeping
6. What is the need of thermal control segment for a spacecraft?
7. Differentiate FDMA and TDMA.
8. Calculate the number of transponders with 24 MHz can be accommodated for an available spectrum of 500 MHz.

**PART B - (4 X16 = 64 marks)**

09. (a) (i) Derive the suitable equations for look angles of the satellite. **(12)**  
 (ii) Calculate the apogee and perigee heights for orbital parameter with **(04)**  
 $e = 0.0011501$  and semi major axis  $a = 7192.335$  km
- (OR)**
- (b) (i) Analyze the conditions that are required for an orbit to be **(08)**  
 geostationary  
 (ii) Infer what you had understand by the sub satellite point? **(08)**

10. (a) Examine how the attitude and orbit control system is achieved through spin stabilization systems with necessary diagrams. **(16)**

**(OR)**

- (b) Identify the various types of system noise and discuss its impact in detail. **(16)**

11. (a) With necessary diagrams demonstrate how receive only TV systems establish its services with a help of satellites. **(16)**

**(OR)**

- (b) Analyze how the multiple access is achieved through spread spectrum in a CDMA system and identify its advantages and disadvantages. **(16)**

12. (a) Discuss how GSM and GPS deploying satellites have improved the mobility of the customers. **(16)**

**(OR)**

- (b) Identify how the specialized services like video conferencing, e-mail and internet have revolutionized the present day communication scenario along with their working principle respectively. **(16)**