

Roll No. 

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Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech.(ECE) (Sem.-8)**  
**SATELLITE COMMUNICATIONS**  
Subject Code : DE-3.3  
M.Code : 57551

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

**SECTION-A****1. Write briefly :**

- a) What is the difference between active and passive satellites?
- b) Why the uplink and downlink frequencies are different?
- c) What is the use of control bits in the data frame?
- d) What is the need of a predictor?
- e) What are CSSB systems?
- f) What do the terms perigee and apogee mean when used to describe the orbit of a satellite orbiting the earth?
- g) What is Geosynchronous Satellites?
- h) Distinguish between pre-assigned and demand-assigned TDMA satellite access.
- i) Give the formulae to compute the uplink carrier to noise ratio.
- j) What is beam hopping?

### SECTION-B

2. Derive Erlang's call congestion formula.
3. What are Kepler's three laws of planetary motion? Give the mathematical formulation of Kepler's third law of planetary motion.
4. Discuss in detail about the interference effects on complete link design.
5. Enumerate important applications of satellites.
6. Discuss in detail about the optical fibre CATV system.

### SECTION-C

7. Explain different modulation techniques used for satellite communication.
8. Explain the Earth Station Subsystems.
9. How does the system noise temperature affect the performance? Derive the expression for overall system noise temperature at the receiving earth station.

**NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC case against the Student.**