

IV B.Tech II Semester Regular/Supplementary Examinations, July - 2021**SATELLITE COMMUNICATIONS
(Electronics and Communication Engineering)****Time: 3 hours****Max. Marks: 70***Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any FOUR questions from Part-B*

PART-A(14 Marks)

1. a) Explain the basic difference between an active and passive satellite. [2]
- b) What are the basic concepts needed to determine look angles and its ranges? [2]
- c) Write short notes on Geosynchronous orbit and Geostationary orbit. [3]
- d) What is TDMA? What are the advantages? [2]
- e) Define Earth segment. Explain about MATV system. [2]
- f) Write about Sun synchronous orbit? [3]

PART-B(4x14 = 56 Marks)

2. a) Draw a basic block diagram of satellite communication system and explain each block in detail. [7]
- b) State the Kepler's laws. Discuss its importance in satellite communications. [7]
3. a) What are the various approaches used to improve the reliability of the satellite? Explain any one. [7]
- b) Explain the attitude and orbit control system (AOCS) with necessary diagrams. [7]
4. a) Derive an expression for G/T ratio of an earth station receiver. [7]
- b) In a satellite link, the propagation loss is 200dB. Margins and other losses account for another 3dB. The receiver G/T is 11dBK⁻¹ and the EIRP is 5dBW. Calculate the received C/N in dB for a system BW of 36MHz. [7]
5. a) What is intermodulation in FDMA? Describe the calculation of C/N ratio with intermodulation. [7]
- b) Explain the frame structure of TDMA with a neat sketch. [7]
6. a) With the help of a neat block diagram, discuss the operation of earth station receiver. [7]
- b) Explain the general aspects of coverage and frequency consideration of low earth orbit. [7]
7. a) Explain the principle of a differential GPS with a neat diagram. [7]
- b) Write short notes on GPS codes. [7]