

Con/5044-07.

(REVISED COURSE)

CD-6483

(3 Hours)

[Total Marks : 100]

- N.B. : (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** questions from Q. Nos. 2 to 7.
 (3) Draw **neat sketches/diagrams**, wherever **necessary**.
 (4) Make **suitable** assumptions wherever **necessary** and justify.
 (5) **Figures** to the right indicate **full** marks.

1. (a) Prove that the lowest inclination possible on initial launch of satellite is equal to the latitude of the launch site. 20
 (b) Discuss the frequencies used by C-band satellite. Why is the uplink frequency different from the downlink frequency?
 (c) Define :
 (i) Processing gain
 (ii) EIRP
 (d) Define : Prograde and Retrograde orbits.
2. (a) What do you understand by reliability and space Qualification ? Explain the significance of bath tub curve. 10
 (b) Explain spin stabilization and three axis stabilization method. Mention their merits and demerits. 10
3. (a) State and explain Kepler's Laws. 10
 (b) What is the effect of nonspherical earth on Keplerian orbit ? 10
4. (a) Explain what is meant by satellite attitude and briefly describe two forms of attitude control. Support your answer with neat sketches. 10
 (b) Explain in detail single conversion and double conversion satellite transponder. 10
5. (a) Explain single-conversion and double-conversion satellite transponder. 10
 (b) Define the traffic distribution, coverage, capacity, quality of services and spectrum availability for LEO and GEO satellite. 10
6. Determine the TDMA capacity of a 4 GHz link with the following characteristics – 20

Satellite EIRP	=	22.5 dBW
Path loss	=	197 dB
G/T of earth station	=	30 dB/K
Total link margin	=	5 dB
Required downlink E_b/N_0	=	8.5 dB.
7. Write short notes on any **three** : 20
 - (a) VSAT
 - (b) Link Budget Calculations
 - (c) Transponders
 - (d) Feed system in Earth Stations.