

*** UNIT-WISE *v*IMPORTANT* QUESTIONS SATELLITE TECHNOLOGY ***

*** UNIT-1: ***

- 1* Tabulate the differences between LEO, MEO and GEO satellites.
- 2* Mention the merits and demerits of satellite communications.
- 3* Illustrate the general structure of satellite communication system with neat diagram.
- 4* Summarize various important missions of India.
- 5* Draw and explain the general structure of satellite communication system.
- 6* List the applications of a satellite and discuss them in brief.
- 7* Discuss the Satellite bus system and their functions.
- 8* Explain the need for space communication in detail.
- 9* How a satellite can be launched in geostationary orbit, show with aid of neat diagram?
- 10* Draw and explain the general structure of satellite communication system.

*** UNIT-2: ***

- 1* Describe the architecture of GPS with a neat sketch and explain its applications. (14M)
- 2* State Kepler's laws of planetary motion with suitable diagrams and derive the relation between orbital period and semi-major axis.
- 3* State Kepler's first law of planetary motion and derive the expression for velocity of a satellite in a circular orbit.
- 4* Summarize the following terms: (14M)
(i) Apogee (ii) Perigee (iii) line of nodes (iv) Station keeping
- 5* Illustrate the working principle of GPS with the help of diagrams.
- 6* SUMS from the TB Satellite Technology Principles & Applications 3rd edition;
Pg.no:51 □ *2.10, *2.3, *2.5, *2.14, *2.2

***UNIT-3: ***

- 1* Mention the materials are commonly used for solar cell design?
- 2* List out the microwave frequency bands used in satellite communications and discuss their important applications.
- 3* Compare Si based solar cells and Ga As based solar cells with respect to power generation, capacity and efficiency.
- 4* Discuss about the microwave frequency bands used in satellite communications.

- 5* Differentiate various types of Space batteries based on characteristics and efficiency parameters.
- 6* Describe the working principle of Solar cell with a neat sketch.
- 7* Outline the power subsystem of a satellite segment with block diagram.
- 8* Describe about the parameters most commonly monitored in telemetry, tracking and command system.

*** UNIT-4: ***

- 1* Describe about different methods of station keeping maneuvering in satellite control.
- 2* Discuss the necessity of AOCS (Altitude and orbital control system) in a Satellite Vehicle?
- 3* Describe the different methods of station keeping maneuvers in satellite control design.
- 4* Discuss in detail about the following sensors.
(i) Gyroscopic Sensors (ii) Magnetic torque sensors
- 5* Differentiate Mass expulsion and momentum exchange control system.
- 6* Paraphrase the following: (i) Inertial Sensors (ii) Star and Sun Sensors
(iii) Earth sensors
- 7* Discuss various sensors commonly employed in satellite control design.
- 8* Compare active attitude control and passive attitude control methods.

*** UNIT-5: ***

- 1* Illustrate the design and analysis of satellite structures with its structural materials. (14M)
- 2* Discuss the factors to be considered in the design of a satellite structure and the materials used.
- 3* Paraphrase the following: (i) Satellite mobile services (ii) RADARSAT
- 4* Illustrate the design and analysis of satellite structures with its structural materials. (14M)
- 5* Elucidate the operation of a home receiver outdoor unit using appropriate figures.
- 6* Discuss the factors to be considered in the design of a satellite structure and the materials used.