

2053

B.E. (Electronics and Communication Engineering)  
Sixth Semester  
EC-605: Satellite Communications

Time allowed: 3 Hours

Max. Marks: 50

*NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section. Use of scientific calculator is allowed.*

x-x-x

Q.1 Attempt all questions: -

- (a) What are the conditions required for an orbit to be Geostationary? (2)
- (b) Define Sun Transit outage. (2)
- (c) Define backoff in a power amplifier? (2)
- (d) List out the frequency bands used for satellite services. (2)
- (e) Write the applications of INSAT. (2)

**Section- A**

- Q. 2(a) State Kepler's three laws of planetary motion. Explain their relevance to artificial Satellites orbiting the earth. (5)
- (b) Define Universal time and sidereal time. (5)
- Q.3 (a) Explain how satellite positions are estimated using sub-satellite. (5)
- (b) What are look angles and derive the expressions for azimuth and elevation? (5)
- Q.4 (a) Explain the altitude and orbit control system (AOCS) with necessary diagrams. (5)
- (b) Describe the functions of satellite communication subsystem. (5)

**Section-B**

- Q.5 (a) Explain in detail GPS Position Location principles. (5)
- (b) Compare GPS and differential GPS. (5)
- Q.6 (a) Derive the power received from the satellite at the earth station from the basic Transmission theory. (5)
- (b) Write notes on Delay & Throughput considerations for a geo stationary satellite. (5)
- Q.7 (a) Explain the delay considerations of LEO, MEO and GEO satellites. (5)
- (b) Discuss the operation of SPADE communication system. (5)

x-x-x