

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1 EXAMINATION-FEB-2023

B.Tech-VIII Semester

COURSE CODE (CREDITS): 18B1WEC845(3)

MAX. MARKS: 15

COURSE NAME: Satellite Communication

COURSE INSTRUCTOR: Dr. Salman Raju Talluri

MAX. TIME: 1 Hours.

Note: All questions are compulsory. Each question carries three marks. Assume any missing data

1. The orbit for an earth-orbiting satellite has an eccentricity of 0.15 and a semimajor axis of 9500 km. Determine (a) its periodic time; (b) the apogee height; (c) the semiminor axis. Assume a mean value of 6370 km for the earth's radius. [CO-1]
2. State Kepler's three laws of planetary motion. Illustrate in each case their relevance to artificial satellites orbiting the earth. [CO-1]
3. If a ground station is transmitting a power of 100 Watts through an isotropic antenna, what is the power density at the geostationary orbiting satellite? If pathloss is considered, what is the power density at the same satellite? Assume the link frequency to be 10 GHz. [CO-2]
4. With the aid of a neat sketch, explain what is meant by each of the angles: *inclination*; *argument of perigee*; *right ascension of the ascending node*. Which of these angles would you expect, in general, to change with time? [CO-2]
5. Explain following terms briefly. [CO-1 and CO-2]
 - a. Repeater versus Transponder
 - b. Attitude versus Orbital Control
 - c. Spin stabilization versus Three axis stabilization