USN | | | | | | | | | |

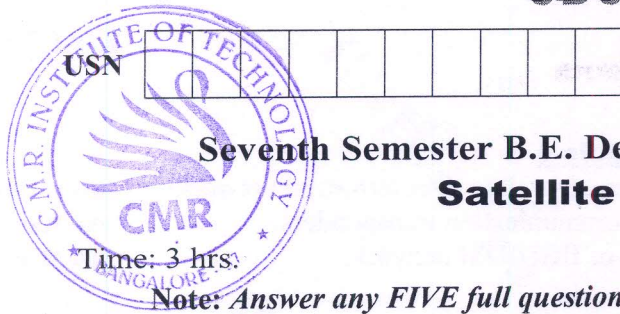### Seventh Semester B.E. Degree Examination, Feb./Mar. 2022
Satellite Communication

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. With neat sketches, explain injection velocity and its resulting trajectories. **(08 Marks)**
    b. Discuss three empirical expressions that explained planetary motion with neat pictorial representation. **(06 Marks)**
    c. Explain the piece of information required to determine Antenna look angle. A Geostationary satellite is located at 90ºW. Calculate the Azimuth angle and elevation angle for an Earth station antenna at latitude 35ºW and longitude 100ºW, where R = 6371Km, a_{GSO} = 42164Km. **(06 Marks)**

OR

2   a. With a neat sketch, explain the satellite stabilization techniques and compare them. **(08 Marks)**
    b. What is Antenna look angles? Explain the Geometry involved to determine the look angles for Geostationary orbits. **(06 Marks)**
    c. With neat sketches classify satellite orbits. **(06 Marks)**

Module-2

3   a. Explain the role and function of power supply in satellite subsystem. **(08 Marks)**
    b. Explain the function of attitude control and TT & C subsystem. **(06 Marks)**
    c. With neat sketch, explain the operation of solar cell. **(06 Marks)**

OR

4   a. Discuss the major components of an Earth station, Architecture. **(08 Marks)**
    b. With neat sketches, explain the hardware categorized for Earth station. **(06 Marks)**
    c. Discuss the tracking Techniques used in satellite communication. **(06 Marks)**

Module-3

5   a. Explain the basic concept of TDMA and explain its typical frame structure. **(08 Marks)**
    b. Explain the operation of SDMA is conjunction with other types of Multiple Access Techniques. **(06 Marks)**
    c. Compare FDMA and TDMA techniques. **(06 Marks)**

OR

6   a. Derive a suitable expression for transmission equation in SATELLITE LINK DESIGN. **(08 Marks)**
    b. Discuss significant bearing propagation considered during SATELLITE LINK DESIGN. **(06 Marks)**
    c. Classify and explain various satellite services offered by satellite communication. **(06 Marks)**

Module-4

7 a. Discuss the advantages and disadvantages of satellite over terrestrial networks. (08 Marks)
   b. With neat sketches broadly classify the communication transponders. (06 Marks)
   c. Explain the typical satellite constellation of IRIDIUM network. (06 Marks)

OR

8 a. With neat sketch, explain VSAT typical networks and its topologies. (08 Marks)
   b. Describe the functional blocks of two types of DTH services. (06 Marks)
   c. Explain basic blocks of satellite telephone networks. (06 Marks)

Module-5

9 a. Compare Ariel and satellite Remote sensing satellite in weather forecasting satellites. (08 Marks)
   b. Classify sensors for remote sensing satellite payload. (06 Marks)
   c. Classify Remote securing satellite system and explain them. (06 Marks)

OR

10 a. Explain the types of Images and its classification for remote sensing satellites. (08 Marks)
   b. Write a note on Images formed by weather forecasting satellites. (06 Marks)
   c. Describe the working principles of GPS. With its neat diagram. (06 Marks)

* * * * *