

28/11/17

Q.P. Code :10799

[Time: Three Hours]

[Marks:80]

- Please check whether you have got the right question paper.
- N.B:**
1. Question no. 1 is compulsory; attempt any 3 questions out of remaining 5 questions.
 2. Figures to right indicate full marks.
 3. Assume suitable data wherever necessary and state it clearly.

Q.1] Attempt the following questions (Total – 20 Marks)

- A. What are the advantages and disadvantages of polar and inclined orbits? (05 Marks)
- B. Explain the design considerations for a satellite. (05 Marks)
- C. Discuss the role of Mission and Network Management Centre in a satellite network. (05 Marks)
- D. How are TV broadcast signals relayed to earth stations by satellite. (05 Marks)

Q.2] Attempt the following questions (Total – 20 Marks)

- A. Explain three axis method of stabilization of a satellite. (10 Marks)
- B. For a satellite downlink, the saturation EIRP is 22.5 dBW, FSL is 195 dB, other losses and margins amount to 1.5 dB, earth-station [G/T] is 37.5 dB/K. Calculate the [C/No] at the earth station. Assuming an output BO of 6dB applied, what is the new value of [C/No]. (10 Marks)

Q.3] Attempt the following questions (Total – 20 Marks)

- A. Discuss the different ways in which the satellite resources are connected on-board. (10 Marks)
- B. Derive an expression for the daily average duration of a satellite in eclipse. (10 Marks)

Q.4 Attempt the following questions (Total – 20 Marks)

- A. Explain in detail the IRIDIUM network. (10 Marks)
- B. How images of moon taken by satellite help in detection of minerals in moon soil? (05 Marks)
- C. Explain ISDN over satellite. (05 Marks)

Q.5 Attempt the following questions (Total – 20 Marks)

- A. Explain satellite laser beam acquisition techniques with diagram. (10 Marks)
- B. Which components of a satellite are most likely to fail? How the expected lifetime of a satellite can be increased? (05 Marks)
- C. Determine the maximum possible longitudinal separation which can exist between a geostationary satellite and an earth station while maintaining line of sight communications, assuming the minimum angle of elevation of the earth station antenna is 5° . State also the latitude of the earth station. (05 Marks)

Q.6 Attempt the following questions (Total – 20 Marks)

- A. Write a short note on DTH service provided by satellites. (05 Marks)
- B. Differentiate between single hop and multi hop satellite connections. (05 Marks)
- C. Explain various earth observation applications using satellites. (05 Marks)
- D. Write a short note TT&C unit of satellite. (05 Marks)