

Code No: **R42043****R10****Set No. 1****IV B.Tech II Semester Regular/Supplementary Examinations, April - 2015****SATELLITE COMMUNICATIONS****(Electronics and Communication Engineering)****Time: 3 hours****Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

- 1 a) Explain the various applications of satellite communications. [8]
b) Describe the future trends of satellite communications. [7]
- 2 a) List and explain the different orbital effects in satellite communication system performance. [8]
b) A satellite is in an elliptical orbit with a perigee of 1000km and an apogee of 4000km. find the period of the orbit and eccentricity of the orbit. [7]
- 3 a) Draw the block diagram of a typical attitude control system for a spinner satellite and explain its operation. [8]
b) Write short notes on equipment reliability in a satellite system. [7]
- 4 a) Derive the expression for system noise temperature in a satellite receiver. [8]
b) A 12GHz earth station receiving system has an antenna with a noise temperature of 50K, a LNA with a noise temperature of 100K and a gain of 40dB, and a mixer with a noise temperature of 1000K. Find the system noise temperature. [7]
- 5 a) Explain the spreading and de-spreading process in CDMA with an example. [8]
b) Describe the basic principle of DAMA. [7]
- 6 a) With the help of a neat block diagram describe the various functions of an earth station receiver. [8]
b) List the different types of high power amplifiers used at earth station? Explain any one. [7]
- 7 a) What are the various types of low earth orbit satellites? Explain. [8]
b) Compare LEO and GEO satellites. [7]
- 8 a) Explain the principle of a differential GPS with a neat diagram. [8]
b) Compare GPS and differential GPS. [7]

Code No: **R42043****R10****Set No. 2****IV B.Tech II Semester Regular/Supplementary Examinations, April - 2015****SATELLITE COMMUNICATIONS****(Electronics and Communication Engineering)****Time: 3 hours****Max. Marks: 75**

Answer any FIVE Questions
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- 1 a) Explain the brief history of Satellite communications. [8]
b) List and explain the various frequency band allocations used for satellite services. [7]
- 2 a) Define elevation angle and derive the expression for it. [8]
b) Write short notes on orbital perturbations. [7]
- 3 a) With the help of a neat diagram, explain the functions of TTC&M system. [8]
b) Explain how housekeeping is maintained in a satellite system in the orbit. [7]
- 4 a) Derive the expression for G/T ratio of a satellite link. [8]
b) The path length from an earth station to the GEO satellite is 38500km. calculate the path loss in dB for the following uplink frequencies:
i) 1.6GHz ii) 6.2GHz iii) 14.2GHz iv) 30GHz [7]
- 5 a) What is intermodulation in FDMA? Describe the calculation of C/N ratio with intermodulation. [8]
b) The uplink and downlink C/N of a satellite system is 30dB and 28dB respectively. If the transponder introduces intermodulation products with C/N of 24dB. Determine the overall C/N ratio. [7]
- 6 a) With the help of a neat block diagram explain the functions of earth station transmitter. [8]
b) Describe the various functions of earth station tracking system. [7]
- 7 a) Explain the delay and throughput considerations of MEO satellites. [8]
b) Compare GEO and MEO satellites. [7]
- 8 a) Explain the generation of GPS signals with a neat sketch. [8]
b) Describe the applications of GPS. [7]

Set No. 3

SATELLITE COMMUNICATIONS

(Electronics and Communication Engineering)

Max. Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

Set No. 4

SATELLITE COMMUNICATIONS

(Electronics and Communication Engineering)

Max. Marks: 75

Answer any FIVE Questions
All Questions carry equal marks
