

(Subject Code and Roll No. to be filled in your Answer Book)

Roll No. 

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**M.Tech. – Digital Communication**

III SEM. THEORY EXAMINATION 2011-12

**SATELLITE COMMUNICATION**

*Time : 3 Hours*

*Total Marks : 100*

**Note :-** Attempt all questions.

1. Attempt any **two** parts of the following :- **(10×2=20)**
- (a) Explain classification of satellite orbits as GEO, MEO, LEO.
  - (b) Explain orbital elements. What is coverage angle and slant angle ?
  - (c) Write short notes on :
    - (i) Power combining
    - (ii) Up converter
    - (iii) Dual up conversion
    - (iv) Mixers
    - (v) Frequency synthesizer.

2. Attempt any **two** parts of the following :- (10×2=20)

(a) Explain in detail:

(i) TDMA

(ii) FDMA

(iii) CDMA.

(b) Explain Basic link analysis and derive its formula for C/N.

(c) Draw and explain the block diagram of antenna control.

3. Attempt any **two** parts of the following :- (10×2=20)

(a) Explain space craft subsystem, in detail.

(b) What is polarisation? Explain linear, circular and elliptical polarisation.

(c) For earth station :

Explain 1:1 redundancy configuration, explain 2:1 redundancy configuration. What is carrier combining?

4. Attempt any **two** parts of the following :- (10×2=20)

(a) Explain placement of satellite in Geostationary orbit.

(b) Explain radio wave propagation as propagation impairment, physical courses and prime importance.

(c) Draw and explain the block diagram of an earth station, also explain classification of earth station.

5. Attempt any **two** parts of the following :- (10×2=20)

- (a) Explain feeding mechanism, also explain the transmit chain.
- (b) Write a note on :
  - (i) Diode mixer
  - (ii) Dual up conversion
  - (iii) Intermodulation product
  - (iv) Power combining.
- (c) What is an Eclipse ? Explain summer solstice & winter solstice. Also explain polarisation loss factor and efficiency.