

Roll No. ....

**22143**

**M. E. 1<sup>st</sup> Semester Electronics &  
Communication Engg.  
Examination – January, 2012**

**SATELLITE & SPACE COMMUNICATION**

**Paper : MEEC- 503**

***Time : Three hours ]***

***[ Maximum Marks : 100***

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt any *five* questions. All questions carry equal marks.

1. (a) Draw the block diagram and explain the structure of satellite communication system and also discuss and explain the advantages of satellite communication system over LOS communication systems. 10
- (b) Discuss and explain C/N, S/N, and G/T ratio for satellite communication systems. 10

2. (a) What are the factors that determine earth coverage and range of geostationary satellite ? Explain these using suitable block diagram. 10
- (b) Explain the various multiple access techniques and give their differences. 10
3. (a) Explain the effects of rain attenuation and free space path loss in satellite communication. 10
- (b) Explain and prove using suitable diagrams that three geostationary communication satellites are sufficient to cover the complete globe. 10
4. (a) What are the subsystems that are required for the design of an earth station and discuss the technical requirements of each subsystem. 10
- (b) Explain as to why LNA amplifier in a receive system is placed at the antenna end at the feeder cable ? 10
5. (a) Draw and explain the block diagram of QPSK. And draw the wave forms and calculate the bit error rate in QPSK. 10
- (b) Discuss and explain various space craft antennas used in satellite communication. 10

6. (a) Describe the general operating principle of a TDMA network. Show how the bit rate of transmission is related to the input bit rate. 10

(b) Discuss and explain the tracking, telemetry and telecommand systems used in space communication systems. 10

7. (a) Derive an expression for a digital satellite link and explain as to how is it dependent on system band width? 10

(b) Explain the difference between MODEM and CODEC. 10

8. Write short notes on any *two* of the followings :

10 + 10

(i) LANDSAT

(ii) Free space path losses.

(iii) DTH system.