D 42501

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Name................................

Reg. No.............................

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2007

EC 04 705 (D)—SATELLITE COMMUNICATION SYSTEMS

Time : Three Hours

Maximum : 100 Marks

Answer **all** *questions.*

Part A

1. (a) Explain what is Apogee and Perigee heights.

   (b) Explain what is meant by geostationary orbit.

   (c) What is meant by Payload ? Explain.

   (d) Explain why operation near the saturation point of a TWTA is to be avoided when multiple carriers are being amplified simultaneously.

   (e) List various frequency bands being used in satellite communication.

   (f) Explain what is meant by antenna noise temperature.

   (g) What is TDMA superframe ? Explain its structures.

   (h) What is ALOHA system ? Explain.

   (8 × 5 = 40 marks)

Part B

2. (a) Explain transfer of satellite from parking orbit to operational orbit in detail.   (15 marks)

   Or

   (b) (i) What are the orbital parameters required to determine a satellites orbit ? Name and explain them.

   (9 marks)

   (ii) Explain what is meant by mean anamoly and ascending node.   (6 marks)

3. (a) (i) What are the attitude and orbit control subsystems ? Explain how these perform their functions.

   (8 marks)

   (ii) Draw the block diagram of a satellite repeater and explain.   (7 marks)

   Or

   (b) (i) Explain with suitable diagram the working of various antenna systems to be used in earth station.

   (9 marks)

   (ii) Explain what is meant by thermal control system.   (6 marks)

Turn over

4. (a) Derive general link equations. Find out expressions for C/N and G/T ratios. Explain the importance of these on satellite link design.

(18 marks)

Or

(b) (i) Write short note on VSAT.   (8 marks)

(ii) Explain what is meant by EIRP.   (7 marks)

5. (a) (i) Explain what is meant by frequency-dision multiple access, and show how this differs from frequency-dision multiplexing.

(9 marks)

(ii) Explain the need for a reference burst in a TDMA system.   (6 marks)

Or

(b) Draw the block diagram of CDMA system and explain.   (15 marks)

(4 × 15 = 60 marks)