



SF-7081

B. E. III (Sem. VI) (ECC) Examination

May / June - 2011

Satellite Communication

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दशांशके निशानीवाणी विगतो उत्तरवडी पर अवश्य क्षभवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. 3 (Sem. 6) (ECC)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Satellite Communication"/>	<input type="text"/>
Subject Code No. : <input type="text" value="7"/> <input type="text" value="0"/> <input type="text" value="8"/> <input type="text" value="1"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="1&2"/>	<input type="text"/>
	Student's Signature

- (2) Draw figure whenever it is necessary.
- (3) Write both the sections in separate answer sheet.
- (4) Attempt all the questions.
- (5) Figures to the right indicate marks.
- (6) All symbols and abbreviations have their usual meaning.
- (7) Assume suitable data, wherever required.

SECTION I

- 1 (a) Find out true/false : 5
- (i) The major advantage of satellite communication is that the satellite costs are independent of the distance.
 - (ii) Geostationary orbit has the advantage of large area coverage, synchronous satellite rotation to earth and less system complexity.
 - (iii) Ascending node is a point where the orbit crosses the equatorial plane going from north to south.
 - (iv) In the satellite communication system that use frequency reuse techniques, cross polarization interference doesn't arises.
 - (v) Efficiency of a satellite communication can be increased by multiple access technique.

- (b) (i) The process of maintenance of satellite altitude against the factors that can cause drift with time is known as_____.
- (ii) Satellite may reuse the same frequency in the same area by
- having many small antennas
 - overlapping radiation zones
 - TDMA
- (iii) The satellite in which the antennas are mounted on a despun platform is the
- geostationary satellite
 - sun synchronous satellite
 - spin stabilized satellite
 - 3-axis body stabilized satellite
- (iv) The satellite in which the solar cells are mounted on panels external to the space craft body, allowing them to be oriented towards the sun is the
- communication satellite
 - direct broad cast satellite
 - 3-axis body stabilized satellite
 - spin stabilized satellite
- (v) The quality of an earth station is specified by _____ ratio and it is known as figure of merit.
- (c) Explain Kepler's Second Law. 5
- (d) Define following terms : 5
- Perigee
 - Apogee.
- 2** Give answer to any **two** of the following : **15**
- Draw and explain TT &C subsystem used by Canadian Telesat for its satellite.
 - Draw and explain basic TDMA concept using a reference station for burst synchronization.
 - Draw and explain attitude control of a satellite with three different axis.
- 3** Write short notes on any three : **15**
- Sun-Synchronous orbit.
 - Three-axis stabilization.
 - Free-space transmission loss.
 - Spade System.

SECTION - II

- 4 (a) Do as directed : (two marks each) 10
- (i) The GPS system is one way transmission or two way transmission ? Why ?
 - (ii) Define hamming distance and give its example.
 - (iii) Define code efficiency and redundancy.
 - (iv) Discuss multi destination carriers
 - (v) List out shortcomings of present day VSAT systems.
- (b) Discuss unique word miss and false alarm system. 5
- (c) With the aid of block schematic, briefly explain the functioning of the indoor receiving unit of a satellite TV receiving system intended for home reception. 5
- 5 (a) What is meant by redundant receiver in connection with communication satellite ? Explain the satellite wideband receiver in brief. 7
- (b) A zero memory source emits six messages with probabilities 0.3, 0.25, 0.15, 0.12, 0.1 and 0.08. Find the 4-ary (quaternary) Huffman code. Determine its average word length, the efficiency and the redundancy. 7
- OR**
- 5 (a) Explain BPSK system in detail. 7
- (b) Explain encoding of linear block codes in detail. 7
- 6 Attempt any two : 16
- (a) CATV
 - (b) Different services offered by MSAT
 - (c) Encoding of cyclic codes
 - (d) Direct Broadcast services (DBS).
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