

Code No: 128EK

**R15**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech IV Year II Semester Examinations, May - 2019**

**SATELLITE COMMUNICATIONS**

**(Common to ECE, ETM)**

**Time: 3 hours**

**Max. Marks: 75**

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A**

**(25 Marks)**

- 1.a) Define ascending node and argument of perigee. [2]
- b) List various frequency ranges used for satellite communication. [3]
- c) An amplifier has a quoted noise figure of 3 dB. What is its equivalent noise temperature? [2]
- d) What are the advantages of GPS system? [3]
- e) What is satellite packet switching? [2]
- f) Compare TDMA and FDMA. [3]
- g) What are the various signals transmitted by GPS satellites? [2]
- h) What are the features of GPS? [3]
- i) List out the advantages and disadvantages in positioning satellite in lower orbit. [2]
- j) Describe the Pure ALOHA scheme. [3]

**PART - B**

**(50 Marks)**

2. Explain various reasons for orbital perturbation which effects the satellite communication. [10]

**OR**

- 3.a) Describe Geostationary Transfer Orbit and AKM with neat diagrams.
- b) Describe Geostationary Transfer Orbit with slow orbit raising with neat diagrams. [5+5]

4. Explain about Attitude and Orbit Control System in detail. [10]

**OR**

5. Explain system noise temperature and G/T ratio in detail. [10]

6. Explain various phenomena that leads to signal loss on transmission through the earth's atmosphere. [10]

**OR**

- 7.a) Explain TDMA and its frame structure with neat diagrams.
- b) What are the different types of demand assignment multiple Access characteristics? [5+5]

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8. Draw the transmitter and receiver block diagrams of an earth station and explain its Working. [10]

OR

9. What is GPS? Describe the principle of GPS to find the position of a user. [10]

- 10.a) Define Packet and explain in detail about Packet Reservation.  
b) Discuss message transmission by FDMA. [5+5]

OR

11. Write short notes on:  
a) Message transmission by TDMA.  
b) Tree algorithm. [5+5]

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