

Roll No. ....

**OLE-24441**  
**B. Tech. 7th Sem. (ECE)**  
**Examination – April, 2021**  
**SATELLITE COMMUNICATION**  
**Paper : ECE-403-F**

*Time : Three hours ]*

*[ Maximum Marks : 100*

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*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.*

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**Note :** Attempt *five* questions in total. All questions carry equal marks. Question No. **1** is **compulsory**. Attempt *one* question from each unit.

- 1.** Write short notes on the following :  $4 \times 5 = 20$
- (a) Explain working of CODEC.
  - (b) What do you mean by station keeping ?
  - (c) Explain synchronous orbit.
  - (d) What do you mean by slant range ?
  - (e) Difference between VSAT and MSAT.

## UNIT – I

2. (a) What is the difference between geostationary satellite and a low altitude satellite ? Can a low altitude satellite be used for communication purpose ? Justify your answer. 10
- (b) Enumerate advantages of satellite communication. How satellite communication has an edge over optical fiber communication system ? 10
3. Derive general link equations. Also find out expression for C/N and G/T ratios. Explain importance of these ratios on satellite link design. 20

## UNIT – II

4. (a) Explain analog TV transmission through satellite. Write the expressions for S/N ratio calculation for satellite TV links. 10
- (b) Compare the performance of fm/fdm SCPC and CSSB systems. 10
5. (a) Why TDM is the only option for digital satellite link. Also explain as to why inter-modulation effects are not prevalent in TDM. 10
- (b) What is meant by error rate ? What is the optimum acceptable value for digital satellite communication ? 10

### UNIT – III

6. (a) What is guard time ? Give its numerical value for TDMA system and also explain its importance in TDMA frame efficiency. 10
- (b) How CDMA is used in satellite communication ? 10
7. (a) What are the orbital parameter required to determine a satellite's orbit ? 10
- (b) Explain the mechanism, how the solar eclipse affects the working of communication satellite with suitable diagram. 10

### UNIT – IV

8. (a) Explain basic difference between the optical satellite communication and RF satellite communication link. Also give out advantages and disadvantages of each. 10
- (b) Explain optical satellite cross link. How do different noises affect the working of satellite link ? 10
9. Write short notes on : 7, 7, 6
- (a) INTELSAT
- (b) LEOs.
- (c) MSAT.