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GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, December – 2020

(Eighth Semester)

BEIPE8011 / BECPE8011 – SATELLITE COMMUNICATIONS

(AEI and ECE)

Time: 2 Hrs

Maximum: 50 Marks

Answer ALL Questions**The figures in the right hand margin indicate marks.****PART – A: (Multiple Choice Questions)****(1 x 10 = 10 Marks)****Q.1. Answer ALL questions**

- | | [CO#] | [PO#] |
|--|-------|-------|
| a. Frequency allocation was governed by | [CO1] | PO 1 |
| (i) UTI | | |
| (ii) TIU | | |
| (iii) IUT | | |
| (iv) ITU | | |
| b. One of the following is an important transformation needed for inclined orbit | [CO1] | PO 1 |
| (i) Satellite Position | | |
| (ii) Satellite height | | |
| (iii) Satellite cost | | |
| (iv) Satellite launching country | | |
| c. Kepler's I law states that | [CO1] | PO 1 |
| (i) The path followed by a satellite around the primary will be an ellipse | | |
| (ii) The path followed by a satellite around the primary will be an circle | | |
| (iii) The path followed by a satellite around the primary will be an sphere | | |
| (iv) The path followed by a satellite around the primary will be an square | | |
| d. With reference to satellite communication, the anti jamming technique preferred is, | [CO2] | PO 1 |
| (i) Key leverage | | |
| (ii) Frequency hopping | | |
| (iii) Once-only key | | |
| (iv) Frequency spectrum modulation | | |
| e. PCM system is used in satellite communication for the transmission of | [CO2] | PO 1 |
| (i) TV signal | | |
| (ii) Telegraph signal | | |
| (iii) Speech signal | | |
| (iv) Noise signal | | |
| f. What happens to the satellite signals as the density of the ionosphere is high | [CO3] | PO 1 |
| (i) Velocity increases | | |
| (ii) Velocity decreases | | |
| (iii) Signal strength increases | | |
| (iv) Frequency reduces | | |
| g. Which of the following is true with respect to ionospheric scintillation effects | [CO3] | PO 1 |
| (i) Signal fading | | |
| (ii) Occurs at the equatorial and polar regions | | |
| (iii) Occurs mostly at day | | |
| (iv) Occurs when high solar activity is present | | |
| h. TV signal can be routed to the earth station via | [CO3] | PO 1 |
| (i) Low power transmitter | | |
| (ii) Microwave links | | |
| (iii) TV relay stations | | |
| (iv) Microwave repeater stations | | |
| i. A satellite earth station has | [CO4] | PO 1 |
| (i) Receiver and transmitter facility | | |
| (ii) Diplexer | | |
| (iii) Attenuator | | |
| (iv) Duplexer | | |
| j. Primary component of uplink section of satellite is | [CO4] | PO 1 |

- | | |
|---------------------------------|--------------------------------|
| (i) Transformer | (ii) Transistor |
| (iii) Earth station transmitter | (iv) Power station transmitter |

PART – B: (Short Answer Questions)

(2 x 5 = 10 Marks)

Q.2. Answer ALL questions

[CO#] [PO#]

- | | | |
|---|-------|------|
| a. What is an Orbit? | [CO1] | PO 1 |
| b. What is the need for using helical antenna? | [CO1] | PO 1 |
| c. What is the importance of guard time? | [CO2] | PO 1 |
| d. What is the function of earth station? | [CO3] | PO 1 |
| e. How the ground station location is governed? | [CO4] | PO 1 |

PART – C: (Long Answer Questions)

(6 x 5 = 30 Marks)

Answer ANY FIVE questions

Marks [CO#] [PO#]

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|--|-----|-------|------|
| 3. Discuss in detail about attitude control and orbit control. | (6) | [CO1] | PO 1 |
| 4. Describe in detail about satellite uplink and downlink analysis and design. | (6) | [CO1] | PO 1 |
| 5. State some of the applications of satellite and explain. | (6) | [CO2] | PO 1 |
| 6. Discuss in detail about VSAT with neat sketch. | (6) | [CO2] | PO 1 |
| 7. Describe about ionospheric effects in detail. | (6) | [CO3] | PO 1 |
| 8. Explain about rain and ice effects in detail. | (6) | [CO3] | PO 1 |
| 9. Discuss in detail about antenna reflector. | (6) | [CO4] | PO 1 |
| 10. Describe in detail about earth station tracking system. | (6) | [CO4] | PO 1 |

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