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BIELE-018

**B. TECH.-VIEP-ELECTRONICS AND
COMMUNICATION ENGINEERING
(BTECVI)**

Term-End Examination**June, 2019****BIELE-018 : SATELLITE AND TV ENGINEERING***Time : 3 Hours**Maximum Marks : 70*

Note : Attempt any seven questions. All questions carry equal marks. Missing data, if any, may be suitably assumed and mentioned. Use of scientific calculator is permitted.

1. (a) Define the following terms : 5
- (i) anomaly
 - (ii) true anomaly
 - (iii) apogee
 - (iv) perigee
 - (v) inclination

- (b) The earth subtends an angle of 17° when viewed from geostationary orbit. What are the dimensions and gain of the horn antenna that will provide global coverage at 4 GHz? 5
2. (a) Discuss the rain effects in KU-band in detail. 5
- (b) Write the steps involved in the satellite communication link design. Explain in detail. 5
3. (a) With the help of neat diagram, explain the rain induced cross polarization interference. 5
- (b) What is the first multiple access technique used in satellite communication systems? Explain in detail. 5
4. (a) Explain the working principle of the carrier recovery circuit with single tuned circuit having AFC. 5

- (b) What is meant by frequency reuse ? Explain the working principle of timing recovery circuits. 5
5. (a) Draw and explain the receiver subsystem for multicarrier earth station. 5
- (b) Discuss various modulation and multiplexing techniques used with satellite links. 5
6. (a) Write short notes on the following : 5
- (i) Aspect ratio
- (ii) Interlaced scanning
- (b) What is negative modulation ? Why is it preferred in TV transmission ? 5
7. (a) What is a composite video signal ? Draw and explain its various contents. 5
- (b) Explain the operation principle of plumbicon picture tube with neat diagram.

8. (a) Why is VSB transmission preferred for TV transmission ? Give the complete details of 7 MHz bandwidth in Indian system. 5
- (b) Explain the response characteristics of TV transmitter and receiver and the use of pre-emphasis and de-emphasis in TV systems. 5
9. (a) What is Kell factor ? How does it affect resolution ? Derive the resolution of Indian TV system for a Kell factor of 0.69. 5
- (b) Write a short note on Pincushion correction techniques. 5
10. (a) Explain the operation principle of HDTV transmission and reception. 5
- (b) Explain the concept of SECAM decoder. What is its use in TV ? 5