

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

00203

**Term-End Examination**

**June, 2018**

**BIELE-018 : SATELLITE AND TV ENGINEERING**

*Time : 3 hours*

*Maximum Marks : 70*

---

*Note : Attempt any seven questions. All questions carry equal marks. Any missing data, may be suitably assumed. Use of scientific calculator is permitted.*

---

1. (a) What are the methods of multiple access techniques ? Explain. 5
- (b) Explain the frequency bands used for satellite communication. 3
- (c) What is Satellite ? Also define satellite communication. 2
2. (a) Name different satellite services available.  $2\frac{1}{2}$
- (b) Explain working purpose of Earth stations.  $2\frac{1}{2}$

- (c) What are the types of demand assignments in satellite communication systems ?  $2\frac{1}{2}$
- (d) Explain the limitations of FDMA satellite access.  $2\frac{1}{2}$
3. (a) Explain the operation principle of a transponder with neat diagram. 5
- (b) What is RF-RF translation ? Explain. 3
- (c) What do you mean by IF demodulation ? Explain. 2
4. (a) Explain how attenuation and cross-polarization interference is induced by rain in satellite communication systems. 5
- (b) A satellite downlink at 12 GHz operates with a transmit power of 6 W and an antenna gain of 48.2 dB. Calculate the Equivalent Isotropic Radiated Power (EIRP) in dBW. 3
- (c) How is carrier recovery done for MPSK systems ? 2
5. (a) Draw the block diagram of Phase Locked Loop (PLL) and explain its operation principle. 5

- (b) The range between a ground station and a satellite is 42000 km. Calculate the free space loss at a frequency of 6 GHz. 3
- (c) What is the use of timing recovery circuit in satellite communication ? 2
6. (a) What are the various types of scanning in a TV system ? 4
- (b) What is blanking synchronization ? Explain its use in TV systems. 3
- (c) Differentiate between interlacing and resolution. 3
7. (a) Draw the block diagram of a transmitter and receiver of a TV system. 5
- (b) Differentiate between image orthicon, vidicon and plumbicon. 5
8. (a) Explain the modulation system used in TV signal transmission for both sound and picture. 3
- (b) What is the use of vestigial sideband in TV signal transmission ? 3

- (c) Explain the following colour TV terms : 4
- (i) Hue
  - (ii) Saturation
  - (iii) Luminance
  - (iv) Bit-rates for digital TV
9. (a) Explain the operation principle of a colour TV emphasizing on colour signal generation and colour picture tube. 5
- (b) Differentiate between NTSC, PAL and SECAM system. 5
10. Write short notes on any *two* of the following :  $2 \times 5 = 10$
- (a) HDTV
  - (b) Plasma TV
  - (c) VCR
  - (d) Satellite packet switching
-