

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

**Term-End Examination
December, 2015**

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. Draw the frame format and explain the operation of TDMA system. 10

2. A satellite at a distance of 40,000 km from a point on the Earth's surface radiates a power of 10 W from an antenna with a gain of 17 dB in the direction of the observer. Find the flux density at the receiving point, and the power received by an antenna at this point with an effective area of 10 m^2 . 10

3. (a) Explain how cross-polarization interference is produced due to rain in the satellite systems. 5

- (b) Explain the various performance measures of the satellite link. 5

4. Explain how carrier is recovered for MPSK system with a suitable block diagram, waveforms and expressions. 10
5. (a) Why is scanning necessary in TV transmission ? Why is it carried out at a fast rate ? 5
- (b) Why is FM preferred to AM for sound signal transmission ? What is a raster and how is it produced on the picture tube screen ? 5
6. What is meant by vertical and horizontal resolution ? Derive an expression for the highest modulating frequency in a TV system and show that it is nearly 5 MHz in the 625-B monochrome system. 10
7. (a) What do you understand by dark current in vidicon ? 5
- (b) Compare the construction and characteristics of image orthicon and vidicon camera tubes with the help of neat sketches. 5
8. (a) What is VSB transmission and why is it used for transmission of TV picture signal ? 5
- (b) Explain the significance and the process of alignment of TV receivers. 5

9. (a) Describe the functions of saturation and hue controls in NTSC colour TV receiver. 5
- (b) What are the limitations of NTSC system? Discuss the merits and demerits of SECAM system. 5
10. Write short notes on any *two* of the following : $2 \times 5 = 10$
- (a) Carrier recovery with narrow band pass filter
- (b) Satellite Packet Switching
- (c) I.F. Demodulation
- (d) Plasma Screen
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