

**B.TECH. IN ELECTRONICS AND
COMMUNICATION ENGINEERING (BTECVI)**

Term-End Examination

December, 2013

BIELE-018 : SATELLITE AND TV ENGINEERING

Time : 3 hours

Maximum Marks : 70

Note : Attempt any seven questions. All questions carry equal marks.

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1. (a) Define TDMA, FDMA and CDMA. Discuss their receiver merits and demerits. 6
 - (b) Determine the escape velocity for an object which is launched from surface of earth to a point where the radius of earth is 6360km $G = 6.67 \times 10^{-11} \text{Nm}^2/\text{kg}^2$, $m = 5.98 \times 10^{24} \text{kg}$. 4

 2. In a satellite communication, the output power of a satellite transponder is 20 W with O/P back off is -1.0 dB . The gain of satellite antenna and earth station antennas are 30.0 dB and 59.2 dB . Give the free loss at 4 GHz is 195.0 dB , beam loss is 2.0 dB , clear air atmosphere is 0.2 dB and other losses are 0.4 dB . Calculate the power received at earth station. 10

 3. (a) Explain the various factors which affect the design of uplink and downlink ? 5
 - (b) What are various interferences that may affect the satellite link performance ? 5

4. (a) What do you mean by blanking ? Draw horizontal blanking pulse showing the width of various section of this pulse ? 5
- (b) Explain how the horizontal and vertical sync pulses are separated and shaped at the receiver ? 5
5. (a) Explain the working of a plumbicon camera tube ? How halo is formed ? How is it eliminated ? 7
- (b) What do you understand by ghost affect ? How it is being eliminated ? 3
6. Draw the block diagram of a television receiver. Sketch the signal waveform at various points and indicate the function of each state briefly. 10
7. Explain the delay line method of separating U and V signals in a PAL-D receiver. How is it superior to PAL simple method of detection? 10
8. Write short notes (**any two**) : 10
- (a) VCR
- (b) PLL
- (c) Rain Induced Attenuation
9. What do you mean by image multiplication and signal multiplication in an image orthicon camera tube ? Why is an electron multiplier preferred ? 10
10. (a) What is the need to modulate the picture and sound signals before transmission ? 5
- (b) Draw the ideal response of a TV transmitter and receiver ? 5
