BIELE-018

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

00166   **Term-End Examination**
December, 2014

BIELE-018 : SATELLITE AND TV ENGINEERING

Time : 3 hours   *Maximum Marks : 70*

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

1. (a)   Explain why communication satellites are set to orbit at a distance close to 35887 kms in the sky from the surface of the Earth. What limits the life of a satellite when placed in the orbit ?   *5*

    (b)   Briefly discuss the main advantages offered by satellite communication.   *5*

2. (a)   Explain the multiple access techniques used in satellite communication.   *5*

    (b)   Describe the effect of rain on the design of satellite links.   *5*

3. With the help of a functional block diagram, explain the carrier recovery with a narrow band pass filter.   *10*

4. (a) What is the function of AFC loop in the carrier recovery system ?   *5*

    (b) What do you understand by active and blanking periods in horizontal and vertical scanning ?   *5*

5. Draw and explain the block diagram of TV transmitter.   *10*

6. What is meant by deflection angle of the picture tube ? What is the advantage of providing a large deflection yoke ? Explain the use of ring magnets mounted at the back of yoke.   *4+3+3*

7. (a) Explain the image conversion principle in video cameras.   *5*

    (b) Describe the meaning of luminance, hue and saturation as applied to colour pictures.   *5*

8. Explain why FM is preferred for sound signal transmission. Describe how the use of pre-emphasis circuit at the transmitting end improves signal to noise ratio of the sound signal. Why is it necessary to employ a de-emphasis circuit in the receiver ?   *3+4+3*

9. Why is the helical scan method of video recording preferred in VCRs ? Draw the format of VHS tape and indicate track paths, control track, sound track and guard bands. Explain how the heads are skewed in azimuth to get rid of the guard bands in order to gain extra track space. *3+4+3*

10. Write short notes on any *two* of the following : *2×5=10*

    (i)   Satellite link design

    (ii)   N.T.S.C.

    (iii)   RF-RF Translation

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