B. Tech.
(SEM. VIII) EXAMINATION, 2006-07
T.V. & SATELLITE COMMUNICATION

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions. For Q. 3(c), relevant curves available.

1 Attempt any two of the following : 10×2
(a) How VSB signal are received ? List the details of video and audio signal standards for 625 B monochrome Indian TV.
(b) (i) Why scanning is necessary to transmit an image in a camera-tube ? Justify the choice of 625 lines.
(ii) Why negative picture transmission is preferred ?
(c) Explain the basic principle of trinicon camera tube. Is plumbicon better to vidicon ?

2 Attempt any four of the following : 5×4
(a) How a PAL colour TV decoder and decoder works ?
(b) Explain the technology of simultaneous colour TV and sequential colour TV systems, which one of these two is better ?
(c) How an LCD TV works ? What had been the problems in evolution of HDTV ?
(d) What is DTH system ? Is it a cheaper alternative to a cable TV operator ?
(e) Discuss importance of switching technologies in 'Video on Demand' service.
(f) Write 200 words on video-streaming and IP TV.

VB-3050] 1 [Contd...
3 Attempt any two of the following:

(a) Using neat sketches, explain:
   (i) satellite orbits: circular and elliptical
   (ii) satellite orbital terms like different axis, perigee and apogee.
   (iii) Angle of inclination, descending node, ascending node.

(b) Find the orbital velocity, round trip time-delay and height above mean sea level of a geosynchronous satellite to earth.

(c) Certain earth-station has a longitude of 95.5°W and a latitude of 29.5°N. The referred satellite is at a longitude of 135°W. Determine (the curves-sheet provided may be used) the azimuth angle and elevation angle for earth station.
4 Attempt any two of the following: \(10 \times 2\)

(a) (i) Define the figure of merit for the quality of a satellite or an earth station receiver.

(ii) For a satellite transponder with a receiver antenna gain of 12 dB, an LNA gain of 10 dB and an equivalent noise-temperature of 26 dBK, determine the figure of merit. Prove the relations used.
(b) Write down the uplink and downlink equations for the satellite links commenting briefly on every term of these equations.

(c) Discuss the TTQC subsystem of a satellite communication system, why the outer surface of a communication satellite does not have very critical thermal insulation compared to space-crafts?

5 Attempt any two of following: 

(a) Why multiple access is essential in satellite communications?

(b) Explain use of CDMA in satellite communications. Draw and explain CDMA encoder and decoder blocks in detail.

(c) Describe satellite Radio Navigation with an additional note on GPS.