

30th May 2007

Communication system

Con. 2546-07.

[REVISED COURSE]

ND-545

(3 Hours)

[Total Marks : 100]

- N.B. :** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** question from the remaining **six** questions.
 (3) Assume **suitable** data whenever **necessary**.

1. Answer any **four** from the following :- 20
 - (a) Explain the term Dipole. Prove that the resonant length of a dipole is half wavelength.
 - (b) Justify the need for a blanking period corresponding to 20 complete lines after each active field of scanning.
 - (c) Explain how the Y and colour difference signals are generated from the output of Camera tube.
 - (d) What is the Doppler effect ? What are its Radar application ?
 - (e) Explain with suitable block diagram the role and function of Transponders in satellite communication.

2. (a) Find the gain, beam width and capture area for a parabolic antenna with a 6 meters diameter dish and dipole feed at a frequency of 10 GHz. 8
 (b) Sketch the geometry of Parabolic antenna with a cassegrain feed and explain the working. What is the advantage ? 8
 (c) Explain the end-fire array antenna. 4

3. (a) Explain what is meant by the term blind speed in MTI Radar. What is a method of overcoming the problem of blind speed in analog Radar ? 8
 (b) Derive an expression for the maximum range of a pulsed radar. What are the factors influencing the max. range of Radar ? 8
 (c) Explain Radar Beacons and its application. 4

4. (a) Describe briefly the factors that influenced the choice of picture IF = 38.9 and sound IF = 33.4 MHz in the 625-B television system. 5
 (b) Show that a total channel bandwidth of 7 MHz is necessary for successful transmission of both picture and sound signals in the 625 line T.V. system. 5
 (c) Draw the neat block diagram of B/W TV Receiver with waveform with the help of block diagram explain the following :- 10
 - (i) Vertical Sync. Detector
 - (ii) Horizontal Sync. Detector
 - (iii) Video detector.

5. (a) Explain the term frequency interleaving with respect to colour T.V. system. 5
 (b) Compare between NTSC, SECAM and PAL colour T.V. system. 5
 (c) Write the advantages of digital TV. Explain with the help of suitable block diagram the Encoder and Decoder of High Definition Television (HDTV) 10

6. (a) What is Geostationary orbit ? Prove that as per Kepler's Law Satellite Orbit is an ellipsis. 6
 (b) With a neat sketch explain the working of a Telemetry, Tracking and Command system of satellite. 6
 (c) Explain with neat block diagram C-band satellite receiver also give the importance of 6/4 GHz band. 8

7. Write short notes (any **four**) :-

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- (a) Antenna Tracking
 - (b) LEO and MEO Satellite
 - (c) Cable T.V.
 - (d) Interlaced Scanning
 - (e) MTI Radar (Moving Target Indicator).
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