

Con. 2967-06.

TV-8472

(REVISED COURSE)

(3 Hours)

[Total Marks : 100

N.B. (1) Question No. 1 is **compulsory**.(2) Attempt in **all five** questions including Question No. 1.(3) Assume **suitable** data if **necessary**.

1. (a) Find the length of a half wave dipole at 30 MHz, 300 MHz and 3000 MHz. 4
- (b) Define Directivity, Antenna gain, polarisation of antenna. 3
- (c) What do you mean by compatibility in TV system ? 4
- (d) How does a radar determine the range ? 3
- (e) What is doppler's effect ? 2
- (f) State and explain Keppler's law. 4

2. (a) Draw block diagram of colour TV receiver and explain function of each block. 8
- (b) What is the principle of Digital television ? Hence draw block diagram. 6
- (c) Explain in brief Yagi antenna design steps. 6

3. (a) Draw the block diagram of Satellite Earth station and discuss function of various blocks in it. 8
- (b) A satellite is moving in a near earth circular orbit at a distance of 640 km. Determine its orbital period. Assume $R = 6360$ km. 6
- (c) Derive an expression to show that a satellite launched into a circular orbit at a height (H) meters from the surface of earth, moving with a velocity v . 8

4. (a) Draw a block diagram of a pulsed MTI radar system and explain its operation. 8
- (b) Derive an expression for maximum possible range of radar. 8
- (c) Determine the first three blind speeds for a 3 cm MTI emitting at a pulse repetition rate of 1000 pps. 4

5. (a) State the reasons of following :— 10
 - (i) Odd number lines are used in Television standards.
 - (ii) In TV system, use e/m deflection and e/s focussing system.
- (b) Explain the construction and principle of operation of vidicon camera tube. 6
- (c) Explain the meaning interleaving of signals in TV systems. 4

6. (a) Draw the composite video signal giving all necessary details on it.
- (b) Calculate the luminance value (Y), I signal and Q signal amplitude for 80% saturated yellow. Also calculate the phase angle of this colour signal with (B - Y) signal.
- (c) Draw I_H , I_V deflection currents for television.

7. Write short notes on the following (any **four**) :—
 - (a) Antenna reciprocity
 - (b) Tuner of TV
 - (c) DBS satellites
 - (d) Surveillance radar
 - (e) IEEE frequency band
 - (f) Propagation of waves.