

- N.B. :** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** questions out of remaining **six** questions.
 (3) Assume any **suitable** data wherever required but justify the same.

1. Answer in **four** questions :—

- (a) Explain the term Dipole. Prove that the resonant length of dipole is half wave length. 5
 (b) What is Doppler effect ? How is it made use of in radar ? 5
 (c) Explain what is equatorial, polar and inclined orbits. 5
 (d) Differentiate between beamwidth and bandwidth of antenna system. 5
 (e) Explain the importance of pre and post equalizing pulses in the composite video signal of T.V. System. 5
2. (a) Explain the generation of 'Y' signal and colour difference signals from camera output. Why is the (G-Y) signal is not suited for transmission in TV system ? 8
 (b) Explain briefly how sync pulses are separated from the composite video signal. 6
 (c) Compare and contrast Negative picture modulation with Positive picture modulation. 6
3. (a) Define the terms :— 8
 (i) Apogee (ii) Perigee (iii) Ascending Node (iv) Descending Node.
 (b) With the help of neat block diagram explain satellite earth stations, discuss the functions of various blocks in it. Also derive the expression to show that a satellite launched into a circular orbit at a height (H) meters from the surface of the earth moving with a velocity (V). 12
4. (a) Explain with suitable block diagram the interlaced scanning. 10
 (b) What is digital television system ? Explain the function of a colour killer circuit in the receiver. 10
5. (a) Explain Yagi Uda antenna and log periodic antenna with respect to their radiation pattern dipole spacing, dipole lengths and applications along with the sketch. 12
 (b) Distinguish between the resonant and non-resonant antennas. 4
 (c) Discuss the broad side array and its radiation pattern. 4
6. (a) Derive an expression for maximum possible range of radar. 8
 (b) What is pulsed radar system ? Explain basic pulse radar system with the neat sketch. 8
 (c) Explain what is meant by term blind speed in MIT Radar. 4
7. (a) What is half line discrepancy in TV System ? How is it overcome ? 6
 (b) Compare the advantages, disadvantages and application of GEO, MEO and LEO. 8
 (c) Explain in brief-satellite launching. 6