

ET703M - Radar and Satellite Communication

P. Pages : 2



Time : Three Hours

GUG/S/25/14249

Max. Marks : 80

Notes : 1. All questions carry marks as indicated.
2. Assume suitable data wherever necessary.
3. Illustrate your answers wherever necessary with the help of neat sketches.

1. A) Write a note on Circulator as Duplexer. 8

B) Find the maximum Detectable range of Radar for the specifications given below : 8

Radar Cross-sectional area of target, = 20 sq. m

Operating frequency = 12 GHz

Capture area of receiving antenna, = 4 sq. m

Peak pulse transmitted Power = 500 kW

Minimum detectable Power of signal = 10^{-10} W

OR

- 2.** A) Explain the following Radar terms:
i) Range
ii) Minimum Range

B) With neat block diagram explain Pulse Compression Radar. 8

3. A) Define following MTI Radar terms:
i) Clutter detectability factor.
ii) Clutter attenuation (CA)
iii) Inter clutter visibility (ICV)
iv) Filter mismatch loss.

B) Write a note on construction and working of parabolic reflector antenna with Gregorian feed used in Radar systems. 8

OR

B) Explain the orbital equations and derive for orbital velocity equation.

8

OR

6. A) Explain what is meant by the geostationary orbit. How do the Geostationary orbit and Geosynchronous orbit differ?

8

B) State Kepler's three laws of planetary motion. Illustrate in each case their relevance to artificial satellites orbiting the earth.

8

7. A) Write a note on FDMA in satellite Communication.

8

B) Explain what is meant by satellite altitude and briefly describe two forms of altitude control.

8

OR

8. A) Explain briefly what is meant by sun transit outage?

8

B) Explain the ionospheric effects on signal travelling between earth station and satellite.

8

9. A) Write a short note on GSM services.

8

B) With neat block diagram explain working principle of DBS TV receiving system.

8

OR

10. A) Write a short note on Community Antenna TV (CATV) system.

8

B) Explain operation of any two types of transponders with block diagram.

8
