

ET703M - Radar and Satellite Communication

P. Pages : 2

Time : Three Hours



GUG/W/24/14249

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) With neat block diagram explain Pulse Compression Radar. 8
- b) With neat block diagram explain CW Doppler Radar. 8

OR

2. a) Write a note on Circulator as Duplexer. 8
- b) Derive Radar range equation. 8
3. a) Write a note on Radiation patterns and feed arrangements for array antennas in a radar system. 8
- b) With a transmit (CW) frequency of 5GHz, calculate the Doppler frequency seen by a stationary radar when target radial velocity is 100 km/hr (62.5 mph). 8

OR

4. a) Which are two types of MTI Radars based on type of transmitter used? Explain any one in detail. 8
- b) An MTI Radar operates at a frequency of 6 GHz with a pulse repetition frequency of 1 kHz. Find the first, second and third Blind speeds of this Radar. 8
5. a) Explain the following terms of Earth station antenna. 8
 - i) Azimuth angle
 - ii) Elevation angle
- b) State Kepler's three laws of planetary motion. Illustrate in each case their relevance to artificial satellites orbiting the earth. 8

OR

6. a) Explain the orbital equations and derive for orbital velocity equation. 8
- b) Explain following Space Segment Subsystems. 8
- i) AOC subsystem
- ii) TTCC Subsystem
7. a) Write a short note on GPS codes and services. 8
- b) Explain briefly what is meant by sun transit outage? 8

OR

8. a) Explain what is meant by satellite altitude and briefly describe two forms of altitude control. 8
- b) List the multiple access methods used by satellites for receiving signals from earth stations. Explain any one method in detail. 8
9. a) Write a short note on GSM services. 8
- b) Write a short note on GPS receiver. 8

OR

10. a) Write a short note on Community Antenna TV (CATV) system. 8
- b) Write a short note on Home TV Receive Only (TVRO) systems. 8
