Reg. No. :

Duration: Three hours   Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

(Answer all Questions)

1.   Radar is a contraction of the words   CO1- R

   (a)Receiver detection and ranging   (b)Radio detection and ranging

   (c)Radio detection and receiver   (d)Radio demodulation and ranging

2.   An example of probability Density function is   CO1- R

   (a) Gaussian   (b) Gamma   (c) kuroda   (d) Laplace

3.   The formula for Doppler frequency shift f_r is   CO2- R

   (a) $=2 v_r / \lambda$; v_r relative velocity λ wavelength

   (b) $=4 v_r / \lambda$; v_r relative velocity λ wavelength

   (c) $=6 v_r / \lambda$; v_r relative velocity λ wavelength

   (d) $=8 v_r / \lambda$; v_r relative velocity λ wavelength

4.   For Moving Target Indication (MTI) signal processing a   CO2- R

   (a) Bessel filter is used   (b) Butterworth filter is used

   (c) Elliptic filter is used   (d) Transversal filter is used

5. One of the following is used as oscillator in RADAR transmitter   CO3- R

   (a) travelling wave tube   (b) magnetron   (c) klystron   (d) triode

6. The method of scanning the sky without rotating or turning the antenna   CO3- R
   mechanically

   (a) steering using log periodic array antennas   (b) steering using Binomial array antennas

   (c) steered phased array antennas   (d) steering using parasitic array antennas

7. Very high frequency Omni directional Range operates at   CO4- R

   (a)108-136 MHz   (b) 108-136 KHz   (c) 108-136 GHz   (d) 108-136 THz

8. Adcock Direction finders eliminates   CO4- R

   (a) polarization Errors   (b) abnormal propagation

   (c) site errors   (d) phase angle errors

9. The abbreviation name TACAN is   CO5- R

   (a) Tactical air navigation   (b) Tactical atmosphere navigation

   (c) Troposphere air navigation   (d) Troposphere atmosphere navigation

10. One of the component of Inertial Navigation system is   CO5- R

   (a) goniometer   (b)microphone   (c)loud speaker   (d)Accelerometer

PART – B (5 x 2= 10Marks)

11. Define minimum detectable signal.   CO1- R

12. What is meant by staggered-prf-MTI   CO2- R

13. Differentiate false alarm and missed detection.   CO3- R

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14. What are various errors in Direction Finding. CO4- R

15. Explain the method of transit system used in Satellite based navigation CO5- R

PART – C (5 x 16= 80Marks)

16. (a) (i) What are the different range of frequencies that a radar can operate and give their applications? CO1- App (10)

(ii) Draw the block diagram of RADAR and explain the basic building blocks CO1- U (6)

Or

(b) Explain how the system losses will affect on the Radar range CO1- App (16)

17. (a) Explain in detail digital MTI Processing CO2- App (16)

Or

(b) Describe in detail about the conical scan and sequential lobing CO2- U (16)

18. (a) Explain in detail about Parabolic reflector antennas .Analyze f/D ratio of the same . CO3- Ana (16)

Or

(b) Discuss in detail about Linear Beam Power tube (klystron Amplifier). CO3- U (16)

19. (a) (i) Explain and analyse the principle of Loop antenna with suitable equations. CO4- Ana (10)

(ii) Explain in detail about VOR receiving equipment CO4- U (6)

Or

(b) (i) With equations explain the principle of Hyperbolic system of Navigation. CO4- Ana (10)

(ii) Describe the operation of LORAN with diagrams indicating frequencies used. CO4- U (6)

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20. (a) Explain how distance measuring equipment works. Describe the CO5- U (16)
set up and operation of DME.

Or

(b) (i) Describe in detail an Instrument Landing system. CO5- U (10)

(ii) Briefly explain a ground controlled approach system. CO5- U (6)