

Year & Sem: IV-B.Tech & II-Sem

## UNIT –I NATURE OF THE RADAR AND RADAR EQUATION

1	a)	Explain modified radar range equation.	[L2] [CO1]	[8M]
	b)	List out the applications of radar system.	[L2] [CO1]	[4M]
2	a)	Explain the operation of radar with neat block diagram.	[L2] [CO1]	[6M]
	b)	Explain the radar applications in military applications and air traffic control.	[L2] [CO1]	[6M]
3	a)	Explain the frequency bands of radar.	[L2] [CO1]	[6M]
	b)	What is minimum detectable signal and explain how is it used in radar system.	[L1] [CO1]	[6M]
4	a)	Briefly explain few applications of Radar.	[L2] [CO1]	[6M]
	b)	Derive the receiver noise of the radar system.	[L2] [CO1]	[6M]
5	a)	Derive the radar equation in terms of minimum detectable power and	[L3] [CO1]	[6M]
		transmitting and receiving antenna gains.		
	b)	Give the three different forms of the radar equation.	[L1] [CO1]	[6M]
6	a)	Write short notes on uniform and exponential probability density functions in	[L1] [CO1]	[6M]
		detail?		
	b)	Describe the Gaussian and Rayleigh probability density functions in detail?	[L1] [CO1]	[6M]
7	a)	Explain in detail about system losses and propagation effects.	[L2] [CO1]	[6M]
	b)	Explain in detail the Gaussian and Rayleigh probability density functions	[L2] [CO1]	[6M]
8	a)	Explain about the radar cross section of simple targets.	[L2] [CO1]	[4M]
	b)	Explain the limiting losses and beam shape losses in radar system.	[L2] [CO1]	[8M]
9	a)	Write short notes on radar cross section fluctuations.	[L1] [CO1]	[6M]
	b)	Write short notes on radar transmitter power	[L1] [CO1]	[6M]
10	a)	Explain minimum detectable signal & receiver noise.	[L2] [CO1]	[6M]
	b)	Explain modified radar range equation.	[L2] [CO1]	[6M]



## UNIT –II RADAR COMPONENTS

1	a)	Write short notes on RF amplifier in detail?	[L1] [CO2]	[6M]
	b)	List out the radar components and explain any one in detail.	[L1] [CO2]	[6M]
2	a)	Explain the operation of travelling wave tubes with neat block diagram.	[L2] [CO2]	[8M]
	b)	Define conversion loss and Noise figure.	[L1] [CO2]	[4M]
3	a)	Explain the cross field amplifier with neat sketch.	[L1] [CO2]	[6M]
	b)	Give the importance of the mixer circuit in Radar system.	[L2] [CO2]	[6M]
4	a)	Describe the two Radar modulators for high power transmission.	[L1] [CO2]	[6M]
	b)	What is the solid state duplexer and explain its operation?	[L1] [CO2]	[6M]
5	a)	Write short notes on i) balanced mixer ii) Image recover mixer?	[L1] [CO2]	[8M]
	b)	Give the importance of noise figure in Radar system.	[L1] [CO2]	[4M]
6	a)	Write short notes on various types of duplexers?	[L1] [CO2]	[6M]
	b)	Give the importance of conversion loss in Radar system.	[L1] [CO2]	[6M]
7	a)	Explain about conversion loss and noise figure in detail.	[L2] [CO2]	[6M]
	b)	Write short notes on balanced mixer	[L1] [CO2]	[6M]
8	a)	Explain in detail about limiters.	[L2] [CO2]	[6M]
	b)	Write short notes on PPI and PHI.	[L1] [CO2]	[6M]
9	a)	Explain about the various types of displays.	[L2] [CO2]	[6M]
	b)	Write short notes on balanced mixer	[L1] [CO2]	[6M]
10	a)	Write short notes on Balanced type duplexers	[L1] [CO2]	[6M]
	b)	Write short notes on Branch type duplexers	[L1] [CO2]	[6M]





## UNIT –III RADAR SYSTEMS

1	a)	Draw and explain about simple CW radar.	[L2] [CO3]	[8M]
	b)	Give the applications of CW radar.	[L1] [CO3]	[6M]
2	a)	Explain with a block diagram of FM CW altimeter.	[L2] [CO3]	[6M]
	b)	Give the importance of the matched filter detection in radar system	[L1] [CO3]	[6M]
3	a)	Explain in detail about FM CW radar with a block diagram.	[L1] [CO3]	[8M]
	b)	Differentiate the MTI Radar and CW Radar system.	[L1] [CO3]	[4M]
4	a)	Explain MTI radar with a neat block diagram.	[L1] [CO3]	[6M]
	b)	Give the advantages of double delay line cancellers.	[L1] [CO3]	[6M]
5	a)	Write short notes on delay line cancellers?	[L1] [CO3]	[6M]
	b)	Explain with a neat diagram about sequential lobbing.	[L2] [CO3]	[6M]
6	a)	Explain in detail about pulse repetition frequencies.	[L2] [CO3]	[6M]
	b)	Give the advantages of delay line cancellers.	[L1] [CO3]	[6M]
7	a)	Explain with a block diagram range gated Doppler filters.	[L1] [CO3]	[6M]
	b)	Explain in detail about pulse repetition frequencies.	[L2] [CO3]	[6M]
8	a)	Write short notes on range and angle tracking?	[L1] [CO3]	[6M]
	b)	Explain MTI radar with a neat block diagram.	[L2] [CO3]	[6M]
9	a)	Explain with a neat diagram about sequential lobbing.	[L1] [CO3]	[6M]
	b)	Write short notes on delay line cancellers?	[L1] [CO3]	[6M]
10	a)	Explain with a neat block diagram of conical scan tracking radar.	[L2] [CO3]	[6M]
	b)	List the applications of CW radar.	[L1] [CO3]	[6M]



## UNIT –IV RADIO DIRECTION FINDINGS AND RADIO RANGES

1	a)	Write short notes on radio detection finding and radio ranges?	[L1] [CO4]	[4M]
	b)	List out the errors in direction findings.	[L2] [CO4]	[8M]
2	a)	Explain about the loop antenna with suitable expression.	[L1] [CO4]	[6M]
	b)	Explain the polarization errors in direction findings.	[L1] [CO4]	[6M]
3	a)	Explain how the goniometer is used in the RADAR Navigation.	[L2] [CO4]	[6M]
	b)	Explain the site and instrumental errors in direction findings.	[L1] [CO4]	[6M]
4	a)	Explain the errors arising in direction finders.	[L1] [CO4]	[6M]
	b)	What is the role of goniometer and give its working principle.	[L1] [CO4]	[6M]
5	a)	Explain about the VOR receiving equipment.	[L1] [CO4]	[6M]
	b)	Explain the polarization errors in direction findings.	[L1] [CO4]	[6M]
6	a)	Briefly discuss about the VHF Omni Directional Range (VOR).	[L1] [CO4]	[6M]
	b)	Describe in briefly the LF four course radio ranges are used to detect	[L1] [CO4]	[6M]
		the errors in the RADAR?		
7	a)	Explain the four course radio ranges in determining the errors in the	[L1] [CO4]	[6M]
		Navigation.		
	b)	What is the role of goniometer and give its working principle	[L1] [CO4]	[6M]
8	a)	How the MF four course radio ranges are used to detect the errors in the	[L2] [CO4]	[6M]
		radar?		
	b)	Write short notes on the polarization errors in direction findings.	[L1] [CO4]	[6M]
9	a)	How the LF four course radio ranges are used to detect the errors in the	[L2] [CO4]	[6M]
		radar?		
	b)	Explain the site and instrumental errors in direction findings.	[L1] [CO4]	[6M]
10	a)	Explain the in detail about Goniometer.	[L1] [CO4]	[6M]
	b)	Explain the in detail about Loop Antenna.	[L1] [CO4]	[6M]



UNIT –V
HYPERBOLIC SYSTEMS OF NAVIGATION & DME

1	a)	Explain hyperbolic system of navigation.	[L2] [CO5]	[6M]
	b)	Give the importance of the DECCA navigation systems.	[L2] [CO5]	[6M]
2	a)	Write short notes on distance measuring equipment?	[L1] [CO5]	[6M]
	b)	Give the importance of Loran – A and Loran – B system.	[L1] [CO5]	[6M]
3	a)	Explain about the TACAN in detail with suitable diagram.	[L1] [CO5]	[6M]
	b)	What is hyperbolic system of navigation and give its working principle.	[L2] [CO5]	[6M]
4	a)	Write short notes on Loran-A system?	[L1] [CO5]	[6M]
	b)	Explain the working principle of DECCA navigation systems.	[L1] [CO5]	[6M]
5	a)	Write short notes on Loran-B system?	[L1] [CO5]	[6M]
	b)	Explain the working principle of DMA navigation systems.	[L1] [CO5]	[6M]
6	a)	Explain about the DECCA navigation system.	[L1] [CO5]	[6M]
	b)	Explain the working principle of DMA navigation systems.	[L1] [CO5]	[6M]
7	a)	Explain about DECCA receivers with suitable diagram.	[L1] [CO5]	[6M]
	b)	Explain the working principle of DME navigation systems.	[L1] [CO5]	[6M]
8	a)	How the TACAN STACAN equipment used to navigate the RADAR?	[L3] [CO5]	[6M]
	b)	Define the hyperbolic system of navigation and give its working	[L2] [CO5]	[6M]
		principle.		
9	a)	What is meant by DME and how it is operated in the navigation?	[L1] [CO5]	[6M]
	b)	Give the importance of Loran – A and Loran – B system	[L2] [CO5]	[6M]
10	a)	Explain the following in detail about DECCA operation	[L2] [CO5]	[6M]
	b)	Explain the following in detail about DME operation	[L2] [CO5]	[6M]

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