



R20 Regulation

Subject code: 3E8DD

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VIII Semester Regular Examinations, April 2024

RADAR ENGINEERING

(Electronics and Communication Engineering)

(Professional Elective)

Maximum Marks: 70

Date: 22.04.2024 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		CO	Bloom Tx
1	Write the basic elements of Radar system?	1	L1
2	Define Unambiguous range.	1	L1
3	Define beat frequency.	2	L1
4	What is Doppler frequency shift?	2	L1
5	Define blind speeds.	3	L1
6	What are Range Gated Doppler Filters?	3	L1
7	What is meant by sequential lobbing?	4	L1
8	Define scan and its importance in a Radar system.	4	L1
9	Define i) Noise figure ii) noise temperature.	5	L1
10	What is the usage of a Duplexer in the Radar system?	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	Draw the block diagram of a radar system and explain the operation of each block in it. [10]	1	L2
OR			
12	Explain about signal to noise ratio in terms of radar range equation. [10]	1	L2
13	Explain how the Doppler effect is used to determine velocity of targets in Radar Systems. [10]	2	L2
OR			
14	Draw and explain the operation of FMCW Radar? [10]	2	L2
15	Give block diagram of MTI radar and explain each block. [10]	3	L2
OR			
16	Describe the method of staggering pulse repetition frequency to reduce the effect of blind speeds in an MTI system. [10]	3	L3

17	Describe the conical scanning method. [10]	4	L3
	OR		
18	Explain Monopulse tracking in two angle coordinates. [10]	4	L2
19	A. Explain about the radar receiver with block diagram. [5] B. Discuss about matched filter with non-white noise. [5]	5	L2 L2
	OR		
20	A. Describe briefly various visual displays to view radar echo signals in radar systems and draw 10 display diagrams. [5] B. Explain In detail about phased array antenna radiation pattern and Beam steering. [5]	5	L3 L2