DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE COVERAGE SUMMARY

&

QUESTION BANK

FOR

IV B.TECH II SEMESTER
(2016 – 17)

MALLA REDDY COLLEGE OF ENGINEERING &TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

(Affiliated to JNTU, Hyderabad, Approved by AICTE - Accredited by NBA & NAAC – 'A' Grade, ISO 9001:2008 Certified)

Maisammaguda, Dhulapally, Secunderabad – 500100.

2016-17

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1	SATELLITE COMMUNICATIONS
2	RADAR SYSTEMS
3	WIRELESS COMMUNICATIONS & NETWORKS

COURSE COVERAGE SUMMARY

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1	SATELLITE COMMUNICATION	I	Satellite Communications Timothy Pratt	1,2
		II		3,4
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		IV	a)Satellite Communications **Timothy Pratt** b)Satellite Comminication Systems **M.Richharia**	9,10,11,12 10
		V	Satellite Communications Timothy Pratt	9
2	RADAR SYSTEMS	I	Introduction to Radar Systems Merrill I Skolnik, TMH Special Indian Edition, 2nd edition	1,2
		II		3
		III		4
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		V		9,10
3	WIRELESS COMMUNICATIONS AND NETWORKS	I	Theodore S. Rappaport . "Wireless Communications Principles and Practice" Second Edition,PHI-2002.	3
		II		4
		III		5
		IV		7
		V	Willam Stallings,"Wireless Communication and Networking"PHI-2003.	13,14

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IV B.Tech Regular Examination,2016

SATELLITE COMMUNICATIONS

(Electronics & Communication Engineering)

MODEL PAPER -1

PART-A

1. Describe briefly the main advantages offered by satellite communication? [2M]
2. Explain briefly, what is meant by *sun transist outage?* [3M]
3. Write short notes on transponder [2M]
4. Write the equations of link-power budget [3M]
5. What is atmospheric absorption? [2M]
6. What is CDMA? And its types? [3M]
7. What are the components of earth stations? [2M]
8. What is satellite navigation and GPS [3M]
9. What is pure aloha? [2M]
10. What is packet reservation? [3M]

PART-B

11.a)What are Kepler's three laws of planetory motion?Give the mathematical formulation of Kepler's third law of planetary motion.

b)What do the term perigee and apogee mean when used to describe the orbit of a satellite orbitting the earth?

OR

12. a) What is the difference between geosynchronous satellite and a goestationary satellite orbit?

b) A satellite in an elliptical orbit around the earth has an apogee of 39,152km and a perigee of 500 km.What is the orbital period of this satellite.Assume radius of earth is 6378.137km and Kepler's constant has the value $3.98 * 10^5$ km^3/s^2 .

13.a) Explain the AOCS with the help of neat labelled diagram.

b) Explain satellite antennas in detail.

OR

14.a)What is basic transmission theory.A satellite at a distance of 40000km from a point on the earth's surface radiates a power of 10W from an antenna with a gain of 17dB

in the direction of the observer.Find the flux density at the receiving point and the power received by an antenna at this point with an effective area of $10m^2$.

b) What is system noise temperature,with relations.Explain DBS-TV.

15.a) Define intermodulation with example.
b) What is multiple access and explain FDMA in detail.

OR

16.a)What is the significance of reference burst in TDMA frame structure.
b)Explain Satellte switched TDMA with onboard processing.Brief about DAMA.
17.a)Explain Rain attenuations and all factors related to it.
b)Explain VSAT earth station engineering.

OR

18.a)What are the radiation effect in satellite orbit.
b)Demonstrate GPS position location principles.

19.a)Explain the term-ALOHA.
b)What is Tree algorithm.

OR

20.a)What is packet reservation ? Explain about packet data transmission using FDMA.
b) Briefly explain M/G/1.

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IV B.Tech Regular Examination,2016

SATELLITE COMMUNICATIONS

(Electronics & Communication Engineering)

MODEL PAPER -2

PART-A

1. What are various satellite services allocated depends on frequency bands? How to classify satellite services? [2M]
2. Describe antenna look angles and How are they calculated? [3M]
3. What is meant by spot beam antenna [2M]
4. What is system noise? [3M]
5. What is cloud attenuation? [2M]
6. What are the limitations of FDMA satellite access? [3M]
7. What are the basic requirements of an earth station antenna? [2M]
8. Explain the services provided by GPS? [3M]
9. What is slotted aloha? [2M]
10. What is satellite packet switching? [3M]

PART-B

1 a) Discuss the history of satellite communication. [7]

b) Draw the block diagram for satellite communication system. Explain the function of each block. [8]

OR

2 a) Describe the orbit and explain how the satellite is located with respect to the earth. [7]

b) Draw the geometry of a geostationary link showing elevation, azimuth and range. [8]

3 a) Draw the block diagram of typical onboard control system for a spinner satellite

and explain its operation. [7]

b)Write a short note on Telemetry and Tracking.

OR [8]

4 a) Derive the equation for the power received by an earth station from a satellite transmitter. [7]

b) Discuss about the noise temperature. [8]

5 a) Explain the frequency division multiple access of satellite system with one example. [7]

b)Derive the overall carrier to noise ratio in FDMA.

OR [8]

6 a) Draw the simplified diagram of large earth station equipment using FDM/FM/FDMA technology and explain each block in detail. [7]

b) What are the different types of antenna mounts? [8]

7 a) Explain the orbital consideration and constellation size of NGSO. [7]

b) Explain the general aspects of coverage and frequency consideration of low earth orbit.

OR [8]

8 a) Explain in detail about GPS position location. [7]

b) Explain about signal processing techniques used in GPS receiver. [8]

9. Elaborate and explain in detail about ALOHA and its types.

OR

10.What is tree algorithm and give details about packet reservation.

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SATELLITE COMMUNICATIONS

(Electronics & Communication Engineering)

MODEL PAPER -3

PART-A

1. Explain brief history of satellite communication [2M]
2. What is orbital elements [3M]
3. Explain telemetry tracking and command system [2M]
4. What is down link? [3M]
5. What is meant by intermodulation distortion? [2M]
6. What is low angle fading? [3M]
7. Explain low orbit consideration? [2M]
8. What is code accuracy? And explain C/A code accuracy [3M]
9. What is tree algorithm? [2M]
10. What is frames fetcher and burst fetcher [3M]

PART-B

1 a) Explain clearly about GEO satellite systems [8]

b) Write about the future trends of satellite communications [7]

2 a) Derive expression for the radius of geosynchronous orbit [8]

b) Write about the orbital effects in communication system performance [7]

3 a) What are two approaches used for equipment reliability in the event of failure of communication capacity of the satellite? Explain [8]

b) Draw and explain the simplified single conversion transponder (bent pipe) for 6/4 GHz band [7]

4 a) Illustrate the procedure for *ku* band down link design [7]

b) Consider a 4GHz receiver with the following gains and noise temperatures: T_{in}=25K, T_{RF}=50K, T_{IF}=1000K, T_m=500K, G_{RF}=23 db, G_{IF}=30db. Calculate the system noise temperature assuming that the mixer has a gain G_m=0db. Recalculate the system noise temperature when the mixer has a 10db loss. [8]

5 a) Discuss various modulation and multiplexing techniques used with satellite links [8]

b) Draw the frame structure and explain TDMA [7]

6 a) Horn antennas are commonly used as primary radiators in reflector systems, Justify? [8]

b) Draw the block diagram of TWTA transmitter required for multiple transmitter chains and explain. [7]

7 a) What are the four important factors that influence the design of any satellite communication system? Explain [8]

b) Discuss in detail about Molniya and Elliptical orbits [7]

8 a) Discuss in detail the process of satellite signal acquisition [8]

b) What are the major sources of error in GPS receiver? Discuss in detail [7]

9. Short notes on: a)Packet data transmission using TDMA b) Slotted Aloha [8]

OR

11. How is tree algorithm useful in packet data transmission. [7]

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SATELLITE COMMUNICATIONS

(Electronics & Communication Engineering)

MODEL PAPER-4

PART-A

1. Explain various orbital effects in communication system performance [2M]
2. What is orbital period and velocity [3M]
3. What is communication sub system and write main blocks in communication sub system[2M]
4. What is interference analysis [3M]
5. What is rain induced attenuation [2M]
6. What is DAMA and its types [3M]
7. What is terrestrial interface [2M]
8. What is differential GPS [3M]
9. What is satellite packet communication [2M]
10. What is TDMA and explain briefly [3M]

PART-B

1 a) Write an account of the evolution and growth of communication satellites [8]
b)What are the applications of satellites? Explain

OR

[7]

2 a) What are look angles? How do you determine? Explain with the help of neat diagrams [8]
b) What are orbital parameters required to determine a satellite's orbit? Name and explain them. [7]

3 a) The earth subtends an angle of 17^0 when viewed from geostationary orbit. What are the dimensions and gain of the horn antenna that will provide global coverage at 4 GHz. [8]
b) Draw the bathtub curve for the probability of failure and explain clearly the concepts of equipment reliability, space qualification of communication Satellites

OR

[7]

4 a) Illustrate the ku band uplink design [8]

b) An earth station antenna has a diameter of 30 m, has an overall efficiency of 68%, and is used to receive a signal at 4150 MHz. at this frequency the system noise temperature is 79K when the antenna points at the satellite at an elevation angle of 28^0. What is the earth station G/T ratio under these conditions? [7]

5 a) What is the basic principle of a direct sequence spread spectrum system and explain [8]

b) Explain about FDMA and draw the frequency plan for two C-band transponders using FDMA [7]

OR

6 a) Draw the block diagram of a general earth station and explain [8]

b) Draw and explain the receiver subsystem for multicarrier earth station [7]

7 a) Discuss in detail the delay and throughput considerations of satellite communication link [8]

b)What are different satellite constellation designs? Explain any two of them [7]

OR

8 a) What is the technique used to increase the accuracy of GPS measurements? Discuss in detail [8]

b) Write short notes on GPS Receiver Operation [7]

9. What is rain attenuation ,depolarization in detail with its types.

OR

10.Explain tree algorithm and how it is helpful in satellite packet data transmission.

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SATELLITE COMMUNICATIONS

(Electronics & Communication Engineering)

MODEL PAPER -5

PART-A

1. a) State Kepler's second law?

b) Differentiate ascendind node from descending node.

c) Which parameter decide the system reliability.

d) Define single access and multiple access.

e) What is the need of reference burst in TDMA?

f) What is the difference between DBSTV and conventional TV.

g) What are the features of LEO?

h) A Satellite downlink at 12GHz operates with a transmit power of 6W and an antenna gain of 48.2dB.Calculate the EIRP in dBW.

i) Explain pure ALOHA.

PART-B

1 a) Explain about LEO and MEO satellite systems [8]

b) Explain the general and technical characteristics of a satellite communication System

OR [7]

2 a) Define Kepler's laws of planetary motion with relevant mathematical expressions [8]

b) An earth station has a longitude of 99.5^{υ} west and latitude of 29.5^{υ} north. The satellite has a longitude of 143^{0} west. Find the azimuth and elevation angle. [7]

3 a) Draw and explain the simplified double conversion transponder (bent pipe) for 6/4 GHz band [8]

b) Draw a diagram to show different forces on a synchronous satellite and explain about attitude control system

OR [7]

4 a) Discuss in detail about rain effects in *ku* band [8]

b) An earth station antenna has a diameter of 35 m, has an overall efficiency of 69%, and is used to receive a signal at 4350 MHz. at this frequency the system noise temperature is 78K when the antenna points at the satellite at an elevation angle of 28^0. What is the earth station G/T ratio under these conditions? [7]

5 a) Compare and contrast pre assigned FDMA and demand assigned FDMA [8]

b) Discuss clearly the CDMA system with example

OR [7]

6 a) Illustrate the operations required for receiving a signal from the satellite using multicarrier earth station [8]

b) Illustrate the design of electromagnetic-horn radiator [7]

7 a) What are the important factors that influence the design of any satellite communication system? Discuss [8]

b) What do you mean by Globalstar, Ellipso? Explain in detail

OR [7]

8 a) Draw the general arrangement of position location with GPS and explain about GPS in detail [8]

b) Draw the block diagram of C/A code generator and explain [7]

9. Explain on:

a)Ionospheric scintillation and low angle fading

b)Atmospheric absorption

OR

10.What is MI G/i Queue .And why packet reservation is significant in satellite communication.

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MODEL PAPER –I

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

IV B.Tech II Semester Examinations

RADAR SYSTEMS

(Electronics & Communication Engineering)

Time: 3 hours **Max. Marks: 75marks**

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and all questions are to be answered .
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer all FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART A **(25 Marks)**

1.

a) Radar angular measurements are referenced to true north and local horizontal plane. With reference to them Define Azimuth and Elevation angles and their ranges. [2M]
b) Define the term radar range resolution and write the equation. [3M]
c) Describe the Doppler Effect. [2M]
d) Establish a relation between Doppler frequency shift and radial velocity of a moving target. [3M]
e) Define MTI radars. [2M]
f) What are Range gate Doppler filters? [3M]
g) List out and describe the basic methods of scanning. [2M]
h) What is Squint angle? [3M]
i) What is a matched filter Receiver? [2M]
j) Write the equation for Noise figure. [3M]

Part B **50 Marks**

2. Derive the simple radar range equation in terms of minimum detectable signal to noise ratio $(S/N)_{min}$ and explain why $(S/N)_{min}$ is a better measure of a radar detection than the minimum detectable signal (S_{min}).

(OR)

3. Explain the Radar Cross Section (RCS) of sphere and cone-sphere targets.
4. Explain the principle of operation of CW Doppler radar with non zero IF receiver.

(OR)

5. Explain how range and Doppler measurements are performed using FM CW radar.
6. (a) Explain the principle of operation of MTI radar with power oscillator transmitter with a neat block diagram.
   (b) Discuss about blind speeds.

(OR)

7. What are Delay line cancellers and explain their filter characteristics?
8. Explain the operation of a two-coordinate Amplitude comparison mono pulse Tacking Radar.

(OR)

9. Write the differences between conical and mono pulse Tracking Radars.

10. (a) What is a matched filter receiver? Derive its frequency response function.

(b) Describe the operation of matched filter with non white noise.

(OR)

11. Explain the following:

i) Branch type duplexer

ii) Balanced type duplexer

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MODEL PAPER –II

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

IV B.Tech II Semester Examinations

RADAR SYSTEMS

(Electronics & Communication Engineering)

Time: 3 hours **Max. Marks: 75marks**

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART A **(25 Marks)**

1.

a) Explain the importance of Radar Pulse repetition frequency in determining the minimum range of radar. [2M]
b) List out some important applications of a radar system. [3M]
c) If the transmitting source is fixed and the radar target is approaching the source, What type of change the received frequency will undergo? [2M]
d) Why isolation between Transmitter and Receiver is required in CW Radar? [3M]
e) Define pulse Doppler radars [2M]
f) What is Butter fly effect? [3M]
g) What is sequential Lobing? [2M]
h) Explain Boxcar Generator in conical Scanning? [3M]
i) Define Noise Temperature and give it's relationship with Noise figure. [2M]
j) Explain what is a A scope display [3M]

Part B **50 Marks**

2. Write explanatory notes on:
   i) Minimum detectable signal
   ii) False alarm
   iii) Missed detection.

(OR)

3. Derive the maximum range for a radar system from first principles. Explain the applications of radar.
4. Define Doppler effect. Explain how it is used in CW radar.

(OR)

5. Explain the principle of operation of FMCW altimeter with suitable diagram.

6. Explain the concept of staggered PRFs in MTI radar.

(OR)

7. Draw the block diagram of MTI radar using range gates and filters and explain each block.

8. Explain the operation of amplitude comparison monopulse tracking radar with the help of a block diagram.

(OR)

9. Explain in detail about limitations to tracking accuracy.

10. a) Derive the matched filter characteristic.
    b) Discuss about efficiency of non-matched filters.

(OR)

11. a) Write short notes on various displays.
    b) Explain the operation of branch type duplexer with neat sketch.

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MODEL PAPER –III

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

IV B.Tech II Semester Examinations

RADAR SYSTEMS

(Electronics & Communication Engineering)

Time: 3 hours **Max. Marks: 75marks**

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART A **(25 Marks)**

1.

a) Explain the relation between Pulse Repetition period and Pulse Repetition frequency in a Radar System. [2M]
b) Define Unambiguous range in a radar system. [3M]
c) Write the applications of CW Radar [2M]
d) What is the principle of FM Radar? [3M]
e) What is a delay line canceller? [2M]
f) Explain Staggered PRFs. [3M]
g) What is conical scanning? [2M]
h) What is Amplitude Comparison monopulse? [3M]
i) Give an expression for the effective Noise temperature of N cascaded stages [2M]
j) Explain what is a PPI display [3M]

Part B **50 Marks**

2. Write explanatory notes on:
   i) Receiver noise
   ii) Signal to noise ratio
   iii) Radar cross section of targets.

(OR)

3. a) Explain the basic principles of Radar and discuss about various parameters which improve the performance of the Radar.
   b) Discuss about Radar frequencies.
4. Explain how isolation between transmitter and receiver is obtained in CW radar.

(OR)

5. Explain how the noise signals are limiting the performance of FMCW altimeter.

6. Explain the following limitations of MTI radar.
   a) Equipment instabilities.
   b) Scanning modulation.

c) Internal fluctuation of clutter.

(OR)

7. a) Draw and explain the frequency response characteristics of a MTI using Range gates and filters.
   b) A MTI Radar operates at frequency of 6Ghz with a PRF of 800 PPS. Calculate the lowest blind speeds of this Radar.

8. a) Draw and explain the following with respect to Tracking in range:
      i. Echo pulse
      ii. Early-late range gates
      iii. Difference signal between early and late range gates.
   b) Limitations of automatic detection and tracking.

(OR)

9. a) Draw and explain the wave front phase relationships in phase comparison monopulse radar.

   b) Write a brief note on acquisition and scanning patterns.

10. a) Explain the basic concept of phased array antennas.
    b) Explain characteristics of different radar displays.

(OR)

11. a) Write notes on:
      i) Noise figure
      ii) Noise temperature.
    b) Explain any two types of mixers

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MODEL PAPER –IV

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

IV B.Tech II Semester Examinations

RADAR SYSTEMS

(Electronics & Communication Engineering)

Time: 3 hours **Max. Marks: 75marks**

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART A **(25 Marks)**

1.

a) Distinguish between average power and Peak power and express the relation between the two. [2M]
b) Write simple Radar Equation. [3M]
c) If the target and the Frequency source are moving close to each other, with constant velocity, explain the change in the frequency? [2M]
d) What is the principle of CW Radar? [3M]
e) What are blind speeds? [2M]
f) What limitations of MTI Performance? [3M]
g) What is Monopulse Tracking Radar? [2M]
h) What is AGC in conical Scanning? [3M]
i) Explain what is a matched filter with a Non White Noise and give the expression for it's frequency response. [2M]
j) Explain the effect of Beam steering on the Beam width in a Phased array Radar and also give the expression for the beam width . [3M]

Part B **50 Marks**

2. What is Maximum Unambiguous Range? How is it related with pulse repetition rate?

(OR)

3. Explain in detail various system losses involved in Radar system.
4. a) What is the Doppler effect? What are some of the ways in which it manifests itself? What are its radar applications?
   b) What is the relation between bandwidth and the acceleration of the target with respect to radar?

(OR)

5. Discuss about the Multiple Frequency CW Radar.
6. a) Explain the function of time domain filter in a MTI Radar with an example.
   b) A MTI radar operates at 10GHz with a PRF of 300 pps. Calculate the lowest blind speed?

(OR)

7. a) What is an MTI Radar and how does it operate.
   b) Define blind speed. A MTI radar operates at 5 Ghz with a PRF of 100PPS. Find the three lowest blind speeds of this Radar. Explain the importance of Staggered PRF.
8. a) Compare the tracking techniques.

b) Explain in detail about limitations to tracking accuracy.

(OR)

9. a) With a neat diagram explain the operation of a conical scan Radar. Explain the various factors that need to be considered for optimum squint angle.

   b) Explain with the help of a neat block diagram Amplitude comparison Monopulse radar for extracting error signals in both Azimuth and Elevation.

10. What is meant by correlation? Explain cross relation with the help of neat block diagram.

(OR)

11. Establish the impulse response characteristic for a matched filter

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MODEL PAPER –V

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

IV B.Tech II Semester Examinations

RADAR SYSTEMS

(Electronics & Communication Engineering)

Time: 3 hours **Max. Marks: 75marks**

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART A **(25 Marks)**

1.

a) Explain the relation between Pulse Repetition period and Pulse Repetition frequency in a Radar System. [2M]

b) Explain what is meant by false alarm. [3M]

c) Explain how the Doppler effect is used to determine velocity of targets in Radar systems? [2M]

d) What is FM-CW Altimeter? [3M]

e) Compare and contrast the situations with a power amplifier and a power oscillator in the transmitter of an MTI system. [2M]

f) Distinguish between MTI and Pulse Doppler Radar. [3M]

g) What is Phase Comparison Monopulse? [2M]

h) Define Beam, rotation and Target axis in conical scanning. [3M]

i) What is the Rule of Thumb relation between the Bandwidth B and the pulse width τ in a matched filter receiver [2M]

j) State a few important advantages of Phased array Radars [3M]

Part B **50 Marks**

2. a) Explain how a threshold level is selected in threshold detection?
   b) How to find the number of pulses that returned from a point target as the radar antenna scans through its beam width?
   c) Why most of the radar receivers are considered as envelop detectors while calculating the SNR?

(OR)

3. a) A low power, short range radar is solid-state throughout, including a low-noise RF amplifier which gives it an overall noise figure of 4.77dB. If the antenna diameter is 1m, the IF bandwidth is 500 kHz, the operating frequency is 8 GHz and the radar set is supposed to be capable of detecting targets of 5m2 cross sectional area at a maximum distance of 12 km, what must be the peak transmitted pulse power?
   b) The average false alarm time is a more significant parameter than the false alarm probability. Give the reasons.
   c) Why post detection integration is not as efficient as pre-detection integration of radar pulses?

4. a) Draw the block diagram of a FMCW Radar using side band super heterodyne receiver and explain it's operation.

b) With a transmit (CW) frequency of 5GHz, calculate the Doppler frequency seen by a Stationary Radar when the target radial velocity is 100 km/h (62.5 mph)?

(OR)

5. a) Explain the operation of the two frequency CW Radar.
   b) How to select the difference between the two transmitted signals of CW radar?
6. a) Compare MTI Radar with Pulse Doppler radar.
   b) Explain the function of a single delay line canceller and derive an expression for the frequency response function.

(OR)

7. a) Compare and contrast the situations with a Power amplifier and Power oscillator in the transmitter of a MTI system.
   b) Calculate the blind speed for a Radar with the following specifications: Wave length: 0.1 mtr and PRF : 200 Hz
8. Why is amplitude comparison mono pulse more likely to be preferred over the phase comparison mono pulse and conical scan tracker over sequential lobbing, or lobe switching tracker? Explain.

(OR)

9. a) Discuss in detail about the Amplitude fluctuations and how its effects are minimized.
   b) Explain Mono pulse tracking in two angle coordinates.
10. Explain the expression for frequency response of the matched filter with Non White noise.

(OR)

11. Explain how beam width of a phase array antenna will vary with steering angle.

IV ECE - WCN (A80454) R13-Regulation

UNIT WISE IMPORTANT QUESTIONS

Unit – I: The Cellular Concept-System Design Fundamentals

2 MARKS QUESTIONS

1. Write some examples for wireless communication system.
2. What is fixed channel assignment?
3. What is dynamic channel assignment?
4. What is hand off?
5. Define Grade of service

3 MARKS QUESTIONS

1. Write a short note on cordless telephone systems?
2. Write a short note on cellular telephone systems?
3. Explain briefly about frequency reuse?
4. Explain about channel assignment strategies?
5. Write a short note on practical handoff considerations?

5 MARKS QUESTIONS

1. Explain about Interference and System Capacity?
2. Briefly explain the words Trunking and Grade of Service and explain how they are related to System performance?
3. Explain with two techniques how coverage and capacity are improved in cellular systems?
4. Write a short note on the following two terms
   a). Hand Off strategies b). Prioritizing Handoffs
5. Explain the channel planning for wireless systems.

Unit -II: Mobile Radio Propagation: Large-Scale Path Loss

2 MARKS QUESTIONS

1. Define large scale propagation model?
2. What are the factors influencing small scale fading?
3. What is free space propagation model?
4. What is scattering?
5. Name some of the outdoor propagation models?

3 MARKS QUESTIONS

1. Explain about free space propagation model?

2. What are the three basic propagation mechanisms? Explain them?
3. Write a short note on Reflection?
4. Explain the terms Brewster angle and Reflection from perfect conductor?
5. Explain the term Diffraction?

5 MARKS QUESTIONS

1. Write a short note on Fresnel zone geometry and Knife edge diffraction model?
2. Explain the terms in connection with scattering?
3. Explain any two methods of outdoor propagation model?
4. Explain any two methods of indoor propagation model?
5. Explain the terms signal penetration into buildings and Ray tracing and site specific modeling?

Unit – III: Mobile Radio Propagation: Small –Scale Fading and Multipath

2MARKS QUESTIONS

1. What is Doppler shift?
2. Define coherence Bandwidth?
3. Define coherence time?
4. Define Clark model?
5. What is Doppler spread?

3MARKS QUESTIONS

1. Explain impulse response model of a multiparty channel?
2. Explain parameters of mobile multiparty channels?
3. What are statistical models for multiparty fading channels?
4. Explain briefly about Level crossing and fading statistics?
5. Explain clarets model for flat fading?

5MARK QUESTIONS

1. What are factors influencing small scale fading?
2. Explain briefly about parameters of mobile multiparty channels?
3. Explain different types of small scale fading?
4. Explain briefly about Two -ray Rayleigh fading model?
5. Explain simulation of Clarke and Guns fading model?

Unit-IV: Equalization and Diversity

2MARKS QUESTIONS

1. Define decision feedback equalization?
2. Define zero forcing algorithm?
3. Define scanning diversity?
4. Define polarization diversity?
5. Define frequency diversity?

3MARKS QUESTIONS

1. What is Decision feedback Equalization?
2. Explain about Rake receiver?
3. Derive the expression for selection diversity improvement?
4. Explain Maximal ratio combining and equal gain combining?
5. Explain briefly about Linear Equalizers?

5MARK QUESTIONS

1. Explain a generic adaptive equalizer?
2. Explain equalizers in a communication receiver?
3. Explain Maximum Likelihood Sequence Estimation?
4. Explain different diversity techniques?
5. Derive expression for Maximum Ratio Combining Improvement?

Unit-V: Wireless Networks

2MARKS QUESTIONS

1. Write an I EEE standard name for Wi-Fi &Bluetooth?
2. Define I EEE 802.11?
3. Define Wireless PAN?
4. Define WLL?
5. Define HIPER LAN?

3MARKS QUESTIONS

1. Explain Advantages & Disadvantages of WLAN?
2. Explain briefly about HIPER LAN?
3. Explain briefly about WLL?
4. What are enhancements in IEEE 802.16?
5. Compare standards of I EEE 802.11 a, b, g and n standards?

5MARK QUESTIONS

1. Explain different types of WLAN Topologies?
2. Compare standards of I EEE 802.11 a, b, g and n standards?
3. Explain IEEE 802.11 & its enhancements?
4. Explain briefly IEEE 802.11 medium access control?
5. Explain briefly about WLAN & WLL?

NOTE: Practice Text Book Problems From 2,3 and 4^{th} Units