

Code No.: 304E1

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

Maisammaguda, Dhulapally, (Post Via kompally), Secunderabad-500 100.

MR13

IV B.Tech II sem Regular End Examinations, APRIL - 2017

SUBJECT: Wireless Communications and Networks

Branch: ECE

Time: 3 Hours

Max Marks: 75 M

PART- A

I Answer All Questions

5 X 1M = 5 Marks

1. List the examples of wireless communication system?
2. Write the Brewster angle.
3. Define Coherence Bandwidth of a channel.
4. List the services provided by IEEE 802.11
5. What is a piconet?

II Answer All Questions

10x2M=20 Marks

1. Write any two key differences between 2G and 3G wireless communications.
2. Differentiate Cellular telephony and Cordless telephony.
3. Which mobile radio propagation model gives the significance of Shadowing?
4. What are demerits of Log -Distance path loss model?
5. List the different types of Small-Scale fading.
6. Give the conditions for fast fading and slow fading.
7. List the five types of logical channels in Bluetooth.
8. Mention the data rates achievable by Wi-Fi.
9. Why was OFDM selected for WiMAX?
10. What is wireless ATM?

PART- B

Answer all questions

5X10M=50 Marks

- Q1.** a) Compare different applications with wired and wireless telephone networks
b) Write about FDD and TDD

(OR)

- Q2.** a) Describe the evolution of wireless radio communication systems.
b) Mention the limitations of wireless networks

- Q3.** a) Describe the factors influencing small scale fading.
b) Explain the different types of multipath propagation in wireless communication.

(OR)

- Q4.** Derive Impulse Response for multipath flat fading channel.

Q5. A mobile is located 8 km away from a base station and uses a vertical $\lambda/4$ monopole antenna with a gain of 3 dB to receive cellular radio signals. The E-field at 1 km from the transmitter is measured to be 10^{-3} V/m. The carrier frequency used for this system is 1800 MHz

(i) Find the length and the gain of the receiving antenna.

(ii) Find the received power at the mobile using the 2-ray ground reflection model assuming the height of the transmitting antenna is 40 m and the receiving antenna is 2 m above ground.

(OR)

Q6. Write about the following models and mention merits and demerits of each

a) Okumura Model

b) Hata Model

Q7. Discuss the applications supported by IEEE802.15 home RF technology?

(OR)

Q8. a) Explain the nature of the interference between the Bluetooth and IEEE 802.11b?

b) What is the difference between a logical and a transport channel in HIPERLAN2?

Q9. Write short notes on : a) Microdiversity b) Blocking probability.

(OR)

Q10 Discuss functional key differences between GPRS and GSM systems in detail.

Code No.: 304D2

MR13

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

Maisammaguda, Dhulapally, (Post Via kompally), Secunderabad-500 100.

IV B.TECH II SEM REGULAR END EXAMINATIONS, MARCH - 2017

SUBJECT: Radar Systems

Branch: ECE

Time: 3 Hours

Max Marks: 75 M

PART-A

I Answer All Questions

5 X 1M = 5 Marks

1. What is unambiguous range?
2. What is Doppler effect?
3. What are blind speeds?
4. What are the limitations to tracking accuracy?
5. What is balanced duplexer?

II Answer All Questions

10x2M=20 Marks

1. What is a missed target?
2. What are the precautions to be taken to minimize false alarm?
3. What are the applications of CW radar?
4. Explain the need for a bank of narrow band filters in FMCW radar.
5. What is staggered PRF?
6. Calculate the second blind speed of MTI radar whose operating wavelength is 5cm and the PRF is 2k Hz.
7. What are the techniques employed to track a radar target?
8. What are the advantages of monopulse over conical scanning?
9. What are the requirements of radar display units?
10. Explain how circulator can act as duplexer.

PART- B

Answer all questions

5X10M=50 Marks

Q1.a) Derive the simple form of radar equation.

b) If the radar is designed for operation at 10GHz with an antenna of diameter 2m, calculate the peak pulse power required to have a maximum range of 1000km with a target of cross sectional area 20m^2 .

Assume minimum detectable signal is $36 \times 10^{-15} \text{ W}$.

(OR)

Q2. By applying statistical noise theory, derive the signal to noise ratio and hence expression for probability of detection.

Q3. Explain the operation of nonzero intermediate frequency receiver and compare the same with zero IF receiver and bring out its advantages.

(OR)

Q4. Explain the operation of multiple frequency CW radar.

Q5. What is the difference between single canceller and double canceller in delay line cancellers? Explain.

(OR)

Q6. Explain the working principle of master oscillator power amplifier.

Q7. Explain the operation of amplitude comparison monopulse tracking radar.

(OR)

Q8.a) Explain how tracking in range is achieved by split range gates.

b) Explain the factors which determine the range accuracy in radar?

Q9. Explain the principle and characteristics of a matched filter. Hence derive the expression for its frequency response function.

(OR)

Q10 a) Define noise figure for a radar receiver and obtain an expression for 3 networks in cascade.

b) Three network units each of 6dB noise figure and 10dB, 6dB and 3dB gains respectively are cascaded Determine the overall noise figure of the system.

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

Maisammaguda, Dhulapally, (Post Via kompally), Secunderabad-500 100.

IV B.Tech II sem Regular End Examinations, MARCH – 2017

SUBJECT: Satellite Communications

Branch: ECE

Time: 3 Hours

Max Marks: 75 M

PART-A

I Answer All Questions

5 X 1M = 5 Marks

1. What is a Transponder?
2. What is Geostationary Satellites?
3. Define TDMA?
4. Which types of horn antennas used in satellite communication?
5. What is an EIRP?

II Answer All Questions

10x2M=20 Marks

1. State Kepler's first law.
2. Define polar-orbiting satellites.
3. What are the main functions of a space craft management?
4. Write short notes on telemetry.
5. What is fading?
6. What are the differences between TDMA and FDMA?
7. Write are the basic blocks that are used in earth station?
8. What are the features of GPS?
9. Write short notes on Pure ALOHA?
10. A satellite downlink at 12 GHz operates with a transmit power of 6 W and an antenna gain of 48.2 dB. Calculate the EIRP in dBW?

PART - B

Answer all questions

5X10M=50 Marks

1. Explain how Kepler's and Newton's laws are used to describe the orbit.

(OR)

2. Discuss about launching procedures.

3. Explain TT&C system in detail.

(OR)

4. Briefly explain the sources of noise in satellite communication. What is the importance of noise temperature in link design?

5. Explain FDMA in detail and also enumerate the interference in FDMA?

(OR)

6. Explain Spread Spectrum system in detail.

7. Discuss in detail about Differential Global positioning system.

(OR)

8. Explain Earth station transmitter and receiver with diagrams.

9. Discuss satellite internet accessing system.

(OR)

10. Discuss about how the message is transmitted by TDMA.

Code No.: 304D1

MR13

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

Maisammaguda, Dhulapally, (Post Via kompally), Secunderabad-500 100.

IV B.TECH II SEM REGULAR END EXAMINATIONS, MARCH - 2017

SUBJECT: Telecommunication Switching Systems And Networks

Branch: ECE

Time: 3 Hours

Max Marks: 75 M

PART-A

I Answer All Questions

5 X 1M = 5 Marks

1. Define Grade of service.
2. Explain the process of Conditional selection.
3. What is Common channel Signalling?
4. Explain the terms Flag and Protocol?
5. What is the difference between Bearer service and Tele service?

I. Answer all questions

10 X 2M = 20 Marks

1. On average, during the busy hour, a company makes 120 outgoing calls of average duration 2 minutes, It receives 200 incoming calls of average duration 3 minutes find the outgoing and incoming traffic.
2. During the busy hours, 1200 calls were offered to a group of trunks and six calls were lost. The average calls duration was 3 minutes find: i) The traffic offered ii) The traffic lost.
3. Draw the Block diagram for Frame alignment of PCM signals entering a digital exchange.
4. Draw the Signal exchange diagram for a local call.
5. What is process of Multiframe in PCM system,
6. Differentiate Inband and Outband Signalling.
7. Explain ALOHA Protocol.
8. Write difference between Circuit Switching and Packet Switching.
9. Why a large town has several telephone exchanges Instead of a Single large one?
10. What is dynamic Routing?.

PART-B

Answer all questions

5 X 10M = 50Marks

1. a Explain the operation of crossbar switching step by step system.
b) Obtain grade of service of lost call system having N trunks.

(OR)

Q2a) Explain General Trunking diagram of a telephone exchange.

- b Derive the expression for portability of delay and finite queue capacity.

Q3. Draw signal exchange diagram and state transition diagram of a local call.

(OR)

Q4. What are the Call – Processing Functions we have, explain them.

Q5. Discuss about the following signaling techniques:

- i) In band signaling ii) Out band signaling iii) PCM signaling.

(OR)

Q6. a) List out the advantages of common channel signaling.

- b) Explain CCITT No. 7 signaling system with its block schematic.

Q7 a) What is statistical multiplexing? Explain.

- b) Compare bus and ring networks.

(OR)

Q8. a) Distinguish between X.25 and frame relay networks.

- b) List out the features of ATM networks. Explain the principle of operation of ATM switch.

Q9. What is IDN, explain the IDN with the help of neat diagram

(OR)

Q10. Write a brief note on:

- i) Analog networks ii) Cellular networks.