

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2023 Examination

Semester: 4th
Subject Code: 203122253
Subject Name: Communication Engineering

Date: 22-3-2023
Time: 2:00pm to 4:30 pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (Fill in the blanks, one word answer, MCQ-not more than Five in case (15)
of MCQ) (All are compulsory) (Each of one mark)

1. Define communication.
2. What is Demodulation?
3. What is the role of the transmitter in the communication system?
4. In amplitude modulation frequency and phase of carrier _____
5. What is number of possible outputs if there is 6 line digital input?
6. What do you understand by the term SSB?
7. What is frequency reuse?
8. For a cellular system, if there are N cells and each cell is allocated k channel. What is the total number of available radio channels, S?
9. What is the condition for handoff?
10. What is the full form of WLAN?
11. What do you understand by low level AM?
 - a) Output power is low
 - b) Modulation is done at high power of carrier and modulating signal
 - c) Collector Modulation Method is low level AM
 - d) Output power is high
12. Which of the following stage is present in FM receiver but not in AM receiver?
 - a) Amplitude limiter
 - b) Demodulator
 - c) AM amplifier
 - d) Mixer
13. Which one of the following noise becomes of great importance at high frequencies?
 - a) flicker noise
 - b) shot noise
 - c) impulse noise
 - d) transit-time noise
14. Which of the following is a universally adopted shape of cell?
 - a) Hexagon
 - b) Square
 - c) Circle
 - d) Triangle
15. Which of the following is not an application of third generation network?
 - a) Global Positioning System (GPS)
 - b) Video conferencing
 - c) Mobile TV
 - d) Downloading rate upto 1 Gbps

Q.2 Answer the following questions. (Attempt any three) (15)

- A) Explain the need of modulation. What are the advantages of using modulation technique?
- B) Define the following terms.
 1. Atmospheric Noise
 2. Shot Noise
 3. Thermal Noise
- C) Give the advantages of FM over AM.
- D) Draw the block diagram of Superheterodyne receiver.

Q.3 A) List various types of Modulation systems and explain in detail Amplitude Modulation with (07)

necessary mathematical formulas and modulation index concept.

B) Explain the Armstrong method of generating FM with neat block diagram. (08)

OR

B) The equation of a frequency modulated voltage is $e = 10 \sin(10^8 t + 3 \sin 10^4 t)$. Calculate the carrier and modulating frequencies, the modulation index and deviation. (08)

Q.4 A) Given modulating bit stream is 11010011. Draw the ASK, FSK and PSK signals. Also draw the waveforms for carrier and modulating bit stream. (07)

OR

A) Describe the need of pre-emphasis and de-emphasis in detail used in FM. (07)

B) Draw the neat sketch of GSM architecture. Give the difference between GSM and CDMA. (08)