

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**B.Tech. Winter 2022-23 Examination**

**Semester: 7****Subject Code: 203107421****Subject Name: Mobile Communication Networks****Date: 08/10/2022****Time: 10:30 am to 01:00 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 - (All are compulsory) (Each of one mark) (15)**

1. In \_\_\_\_\_ channel assignment strategy each cell is allocated with predetermine set of voice channels
2. \_\_\_\_\_ is the process of transferring mobile station from one base station to another base station.
3. If the \_\_\_\_\_ is too low then system gets insufficient time to handoff and as a result call may drop.
4. \_\_\_\_\_ is used to reduce problem occur during the handoff process by the users with high mobility.  
(a) Frequency reuse (b) Umbrella cell approach (c) Cell Splitting (d) Cell Sectoring
5. Interference resulting from signals which are adjacent in frequency to the desired signal is called as \_\_\_\_\_.
6. \_\_\_\_\_ is the process of subdividing a congested cell into the smaller cells each with its own base stations.
7. Radio wave propagation models are used to estimate \_\_\_\_\_ in the system.
8. \_\_\_\_\_ radio wave propagation model is used to estimate the path loss and the received power when there is line of sight communication between transmitter and receiver.
9. Reflection, Diffraction and \_\_\_\_\_ are the three basic propagation mechanism which impact the propagation in cellular communication system.
10. Small scale fading creates rapid fluctuations in the \_\_\_\_\_ of the received signal.  
(a) Amplitude (b) Frequency (c) Phase (d) All of these
11. \_\_\_\_\_ Fading occurs when the bandwidth of the signal is greater than the bandwidth of the channel.  
(a) fast fading (b) slow fading (c) flat fading (d) Frequency selective fading
12. \_\_\_\_\_ is used to reduce ISI created by multipath fading effect.
13. \_\_\_\_\_ is used to compensate the effect of small scale fading.
14. GSM uses \_\_\_\_\_ modulation technique.
15. MIMO system improve \_\_\_\_\_ of the wireless communication system.

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

- A) Explain the "Umbrella" cell approach.
- B) Briefly explain the concept of (i) Cell Splitting and (ii) Cell Sectoring
- C) Explain the Doppler Effect in wireless communication systems.
- D) Write brief note on Okumura's model.

**Q.3 A) List out various multiple access techniques and explain any one of them in detail. (07)**  
**B) Write brief note on GMSK modulation technique. (08)**

**OR**

- B) What is the role of Equalizer in wireless communication system? Briefly explain the types of Equalizers. (08)**

**Q.4 A) Draw GSM architecture and explain the working of each block in brief. (07)**

**OR**

- A) Explain the working of RAKE receiver with suitable diagram. (07)**
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- B) Write brief note on Wi-MAX (08)**