

Code No: **R1642041**

**R16**

**Set No. 1**

**IV B.Tech II Semester Advanced Supplementary Examinations, Aug/Sep - 2022**

**CELLULAR AND MOBILE COMMUNICATIONS**

**(Electronics and Communication Engineering)**

**Time: 3 hours**

**Max. Marks: 70**

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any FOUR questions from Part-B*

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**PART-A(14 Marks)**

1. a) What is Grade of Service? [3]
- b) What is the phase difference between direct and reflected paths [3]
- c) Define the gain of an antenna and write the expression for it. [2]
- d) What are the advantages of cell sectorization over cell splitting. [2]
- e) What is handoff? Describe its classification. [2]
- f) List different handover techniques in GSM. [2]

**PART-B(4x14 = 56 Marks)**

2. a) Explain the steps involved in planning a cellular system. Illustrate how the performance criteria is evaluated. [7]
- b) Explain briefly different ways of improving coverage and capacity in cellular systems [7]
3. a) Distinguish between signal and co-channel interference received by the mobile unit and cell site. [7]
- b) In detail Illustrate the different types of non-co channel Interferences in a cellular environment. [7]
4. a) What are the different techniques to utilize the frequency spectrum, give a brief explanation? [7]
- b) Explain in detail access channels and operational techniques. [7]
5. a) Let a distance between two fixed stations be 25 Km. The effective antenna height at one end  $h_1$  is 100m above sea level. Find  $h_2$  at the other end so that the received power always meets the condition  $P_r \geq P_o$  and find the maximum received power  $P_r$  for  $P_r = 4P_o$ . [7]
- b) Derive the path loss prediction model in non obstructive condition. [7]
6. Write short notes on the following (a) Cell splitting (b) Vehicle locating methods (c) Dropped cell rate [14]
7. a) Why CDMA is needed and explain it with an example? [7]
- b) List the difference between TDMA/FDMA/CDMA. [7]