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Code No. : 16147 (C) N/O

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD
Accredited by NAAC with A++ Grade

B.E. VI-Semester Main & Backlog Examinations, May/June-2023

Introduction to Mobile Communication (OE-IV)

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B**

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO	PSO
1.	Compare different channel assignment strategies of a cellular system	2	2	1	1	2
2.	What is the concept of frequency reuse? Also, discuss the parameters that will be affected by the size of a cluster?	2	1	1	1	2
3.	Explain the advantages of two-ray ground reflection model over free-space model.	2	1	2	1	2
4.	Define path loss of a propagation model? Also, discuss the importance of path loss exponent in the propagation model.	2	1	2	1	2
5.	List the factors influencing small scale fading?	2	1	3	1	2
6.	Distinguish between Rayleigh and Rician fading models.	2	2	3	1	2
7.	Why the near-far problem is more serious in CDMA based schemes?	2	1	4	1	2
8.	With an example analyze the properties of a CDMA sequence.	2	3	4	2	2
9.	List and describe GSM services	2	1	5	1	2
10.	Find the total number of slots for a GSM having 25 MHz forward link. Per channel bandwidth is 200 kHz and eight speech channels are supported per radio channel and no guard band is assumed.	2	2	5	3	2
Part-B (5 × 8 = 40 Marks)						
11. a)	What is the significance of sectoring concept? Also, analyze the 60° and 120° sectoring techniques.	4	4	1	2	2
b)	A spectrum of 30 MHz is allocated to a wireless Frequency Division Duplexing (FDD) cellular system which uses two 25 kHz simplex channels to provide full duplex voice communication and 1 MHz control channel to carry the control information. Determine the number of available channels per cell if frequency reuse is 4, 7, and 12.	4	3	1	3	2
12. a)	Discuss about the Ground Reflection (Two-Ray) model with neat diagram.	5	2	2	2	2
b)	With relevant expressions analyze the free-space propagation model.	3	4	2	2	2

Contd... 2

120

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13. a)	Explain the effect of Doppler spread on fast fading and slow fading.	4	2	3	1	2
b)	Examine the time dispersion and frequency dispersion parameters in the radio propagation channel that influence small scale fading.	4	3	3	2	2
14. a)	Discuss the main features of Time Division Multiple Access (TDMA) technique.	4	1	4	1	2
b)	Explain the term Interference in CDMA technique. Also, explain the advantages of CDMA system.	4	2	4	1	2
15. a)	Draw the block diagram and explain GSM architecture.	4	2	5	1	2
b)	With a neat diagram explain the frame structure of a GSM system.	4	2	5	1	2
16. a)	Define handoff? Also, explain the handoff scenario when a mobile unit moves from one base station to another base station.	4	4	1	1	2
b)	With relevant sketches explain the different propagation characteristics of a mobile radio propagation model.	4	3	2	1	2
17.	Answer any <i>two</i> of the following:					
a)	Analyze the different types of small scale fading model based on time dispersion parameters.	4	4	3	2	2
b)	What is the significance of multiple access scheme? Compare different multiple accesses schemes in different generations of a cellular system.	4	3	4	2	2
c)	Explain various interfaces in GSM network architecture.	4	2	4	1	2

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level - 1	20%
ii)	Blooms Taxonomy Level - 2	39%
iii)	Blooms Taxonomy Level - 3 & 4	41%
