Code No: 127BG

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, November/December - 2018
CELLULAR AND MOBILE COMMUNICATIONS
(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a)	What are the advantages of 3G cellular systems over 2G systems?	[2]
b)	Define (i) Coherence Bandwidth (ii)Doppler spread	[3]
c)	What are the components in a cellular system?	[2]
d)	Discuss in brief how power effects the coverage of the cellular system.	[3]
e)	State the major factors causing propagation pathloss.	[2]
f)	Why there is constant standard deviation along the pathloss curve.	[3]
g)	What is the significance of Access channels in a cellular system?	[2]
h)	Explain how set-up channels act as control channels in a cellular system.	[3]
i)	What are the advantages of hand-off process?	[2]
j)	Explain the concept of intersystem handoff in brief.	[3]

PART-B

(50 Marks)

2.a)	Explain the principle of operation of basic cellular mobile system.	
b)	Why do we divide the cell into various sectors? Explain briefly.	[5+5]
	OR	
3.a)	Mention the limitations of conventional mobile telephone systems.	
b)	Describe the frequency reuse concept in cellular communication system and derive the expression for the frequency reuse ratio.	[5+5]
4.a)	What are the different antenna parameters? Explain any four in brief.	
b)	Discuss the effect of near-end and far-end interference of mobile unit in brief.	[5+5]
	OR	
5.a)	Explain how co-channel interference is measured in real time mobile transreceiver.	
b)	Write short notes on (i) polarization diversity (ii) frequency diversity.	[5+5]
6.a)	Write short notes on Space diversity antennas.	
b)	Determine the phase difference between direct path and reflected path.	[5+5]
	OR	
7.a)	Explain in detail about near distance propagation.	
b)	Explain the basic principle of operation of mobile antenna.	[5+5]

8.a) What do you understand by non-FCA? Describe any two algorithms.
b) Explain the channel assignment to the cell sites based on the adjacent channels. [5+5]

OR

9.a) Explain the following (i) channel sharing (ii) paging channel.
b) A full duplex wireless cellular system is allocated a total spectrum of 20MHz and each simplex channel has 25 KHz RF bandwidth. Determine the following: (i) Total number of full-duplex channels available.(ii)Number of channels per cell site if K=4cell reuse pattern is employed. [5+5]

10.a) Explain the necessity of power difference handoff. Also explain the different conditions based on the power difference hand off.
b) Define the dropped call rate. How dropped calls are considered. Explain. [5+5]

OR

11. What are the different types of handoffs? Explain their implementation in brief. [10]

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