

KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2018

Marks Scored:

Level : B.E.
Year : IV

Course : ETEG 429
Semester: I

Exam Roll No.

Time: 30 mins.

F.M. : 10

Registration No.:

Date MAR 15 2018

SECTION "A"
[20 Q.×0.5=10]

Choose the most appropriate option.

1. Voice Call in cellular mobile communication is an example of
 - a) Simplex communication
 - b) Half-Duplex communication
 - c) Duplex communication
 - d) Emergency communication
2. When the fraction of assigned channel is reserved only for handoff purpose, then the concept is called.
 - a) Guard channel concept
 - b) Queuing handoff concept
 - c) Umbrella cell concept
 - d) Reserved handoff concept
3. The concept known as stands for the scheme which allows a large number of users to share the small number of channels from the pool of available channels.
 - a) Handoff
 - b) Roaming
 - c) Trunking
 - d) Polling
4. In a cellular system, interface between Base Station Controller and Mobile Switching Center is known as.
 - a) A interface
 - b) Air interface
 - c) A-bis interface
 - d) B interface
5. The minimum spectrum allocated for 3G service in UMTS is
 - a) 200 kHz
 - b) 1 MHz
 - c) 1.25 MHz
 - d) 5 MHz
6.indicates the ability of a subscriber to access a cellular system during busiest hour.
 - a) Erlang
 - b) Grade of Service
 - c) Service quality
 - d) Probability of collision
7. The actual radio coverage of a cell, which is based on field measurement, is known as
 - a) Cell coverage
 - b) Power coverage
 - c) Frequency planning
 - d) Footprint
8. In cellular communication, in order to handle the simultaneous traffic of high speed and low speed users the concept used is
 - a) Cell sectoring
 - b) Cell splitting
 - c) Micro cell zone concept
 - d) Umbrella cell
9. The table used to calculate the probability of delay is
 - a) Erlang B table
 - b) Erlang C table
 - c) Queuing table
 - d) GoS table

10. In 3G, following access technology is used
a) EDGE b) HSDPA c) WCDMA d) OFDMA
11. is the data base used for storing and managing the subscriptions.
a) HLR b) VLR c) EIR d) AUC
12. provides authentication and encryption parameters that verify the user's identity and ensure the confidentiality.
a) HLR b) VLR c) EIR d) AUC
13. GPRS stands for
a) Gateway for Packet Radio Service b) Global Packet Radio Service
c) General Packet Radio Service d) General Packet Radio Service
14. High mobility 4G users should be able to achieve the speed of
a) 10 Mbps b) 50 Mbps c) 100 Mbps d) 500 Mbps
15. The IMEI of a device can be found by entering following handset keypad
a) #*06# b) *#06# c) #*06*# d) *#06*#
16. In CDMA, sequence of code is called
a) Chips b) Bits c) PN code d) Ranging code
17. The technique that increases the system capacity by reducing co-channel interference is called
a) Cell-splitting b) Cell-Sectoring
c) Relaying d) Power controlling
18. WiMax stands for
a) Wired Interoperability for Microwave Access
b) Wireless Interoperability for Microwave Access
c) Worldwide Interoperability for Microwave Access
d) Worldwide Infrastructure for Microwave Access
19. In GSM network, edge excited cell uses
a) Omni directional antenna b) Sectored directional antenna
c) Smart array antenna d) MIMO
20. Duplex spacing of GSM-900 is
a) 45 MHz b) 55 MHz c) 80 MHz d) 95 MHz

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Level : B.E.
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Time : 2 hrs. 30 mins.

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F.M. : 40

SECTION "B"

*Attempt **All** questions. Each question carries 5 marks. Marks are indicated inside brackets.*

Question 1

- 1.1 What do you mean by Multipath propagation? Highlight the positive and negative effects of Multipath propagation. [2]
- 1.2 Write briefly on CDMA technique and then highlight its advantages in comparison to TDMA and FDMA techniques. [3]

Question 2

- 2.1 Recall the scenario before and after the development of cellular communication networks then relate it with the term mobility support. [3]
- 2.2 List the factors that determine the coverage of the base station. [2]

Question

- 3.1 Briefly explain the following terms: [5]
- (a) Handoff
 - (b) Hard handoff
 - (c) Soft handoff
 - (d) Horizontal handoff
 - (e) Vertical handoff

Question 4

- 4.1 Discuss the techniques that are commonly practiced in field of cellular communication in order to provide more channels per unit coverage area. [3]
- 4.2 Explain with example the effect known as "**Near-Far Effect**" in cellular communication. [2]

Question 5

- 5.1 List the roles of BTS and BSC in cellular mobile communication. [3]
- 5.2 What are major functions of IMSI and TMSI in cellular mobile communication? [2]

Question 6

- 6.1 “Data transmission without allocation of a dedicated traffic channel is also possible in GSM network”, elaborate the term and explain how it can be achieved in GSM networks. [3]
- 6.2 Write short notes on SMS and MMS with their infrastructure diagram. [2]

Question 7

- 7.1 Describe the role of NTA on development of communication sector in Nepal. [2]
- 7.2 Briefly summarize GSM network development trend in western countries and then compare with the GSM service development trend in context of Nepal. [3]

Question 8

- 8.1 Briefly summarize the technology behind WiMax. [2]
- 8.2 Envision the applications, requirements, and developments necessary for successful deployment of 5G? [3]