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**PRESIDENCY UNIVERSITY  
BENGALURU**  
**SCHOOL OF ENGINEERING**

**TEST - 1**

**Even Semester:** 2018-19

**Course Code:** ECE 304

**Course Name:** Mobile Communication

**Programme & Sem:** B.Tech & VIII Sem (Group-I)

**Date:** 06 March 2019

**Time:** 1 Hour

**Max Marks:** 40

**Weightage:** 20%

**Instructions:**

- (i) *Read the questions carefully.*
- (ii) *All questions are compulsory.*

**Part A**

Answer **all** the Questions. **Each** question carries **four** marks.

(3Qx4M=12)

1. State the expansion of the following:

- (a) IMSI
- (b) ESN
- (c) IMEI
- (d) FCC

2. Identify the layer of the OSI Model which is responsible for

- (a) Providing logical address to the data packets
- (b) Checks authorization of data packets
- (c) Reduces the size of the data bits
- (d) MAC address

3. In Kormangla region, the cellular system using FDMA, 50 KHz simplex channels is assigned with 10 MHz spectrum. Compute number of possible simultaneous calls.

**Part B**

Answer **both** the Questions. **Each** question carries **eight** marks.

(2Qx8M=16)

4. Interpret the following duplexing technique shown in figure 1.

- (a) Identify A, B,  $f_1$ ,  $f_2$ .
- (b) Discuss among  $f_1$  and  $f_2$  which frequency is greater and why.
- (c) Discuss the duplexing technique used and why there is a gap between  $f_1$  and  $f_2$ .
- (d) How transmitter and receiver distinguishes between two frequencies.

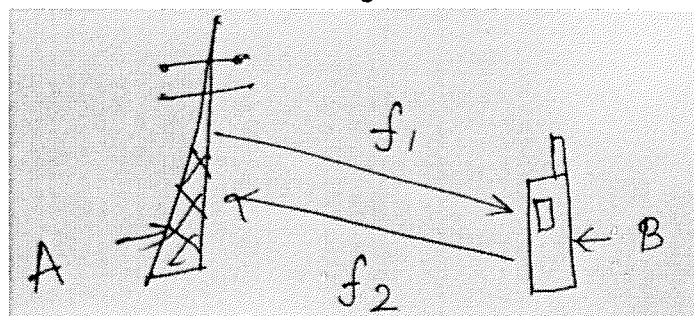
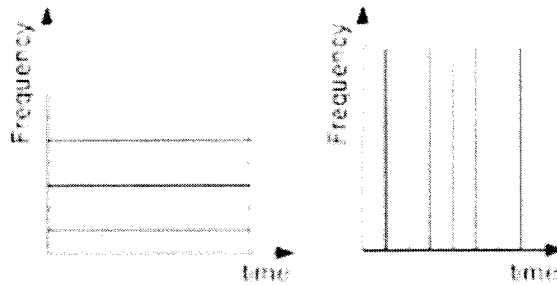


Fig 1.

5. Interpret the graph shown in the fig below

- Identify the two multiple access techniques used.
- Write the features of two techniques and why Graph 2 is preferred over Graph 1.
- Discuss the advantages and disadvantages of the techniques.



Graph 1

Graph 2

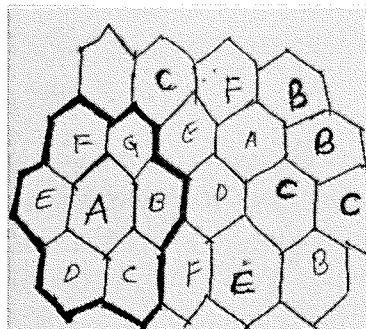
Fig 2.

### Part C

Answer the Questions. Question carries **twelve** marks.

(1Qx12M=12)

- Illustrate the procedure for establishing the call with the help of diagram if one subscriber in cell "A" wants to call his friend who is present in cell "B".
- Apply the "**Frequency Reuse Concept**" to answer the following questions:
  - Define cluster. Cluster of **A** consists of how many cells?
  - Error in the given fig.
  - What measure is taken to remove the error.
  - What are co-channel cells.





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**TEST - 2**

**Even Semester:** 2018-19

**Course Code:** ECE 304

**Course Name:** Mobile Communication

**Program & Sem:** B.Tech & VIII Sem (DE) Group-I

**Date:** 16 April 2019

**Time:** 1 Hour

**Max Marks:** 40

**Weightage:** 20%

**Instructions:**

- (i) **All the questions are compulsory.**
- (ii) **Read the questions carefully.**

**Part A**

Answer **all** the Questions. **Each** question carries **four** marks. (3Qx4M=12)

1. State the expansion of the following:

- |          |          |
|----------|----------|
| (a) EDGE | (b) UMTS |
| (c) AMPS | (d) HSPA |

2. Name and explain the role played by the databases which are involved in the following condition with reference to GSM

- (a) You and your friends went to GOA for vacations as soon as you got down you got a message "Welcome to GOA"
- (b) Your phone got stolen, an unique number which you will get by dialing \*#06# you gave to police, Now the thief is unable to make a call from your phone

3. Illustrate with reference to 2G answer the following:

- (a) The data rate of GSM is more as compared to AMPS phones. Justify.
- (b) Calculate the duration of 1 frame and the number of channels in GSM900.

**Part B**

Answer **both** the Questions. **Each** question carries **eight** marks. (2Qx8M=16)

4. Interpret the following analogy:

- (a) Your friend is angry on you, every time you tried calling him he disconnects the call so you were not able to convey your information .You decided to send a Whatsapp message so even if he was offline you were able to send your message when you saw the double tick you are assured that your message got delivered. Explain the **switching modes** involved in both cases.
- (b) Explain the functions of GRPS support nodes.

5. Interpret the following diagram and answer the questions:

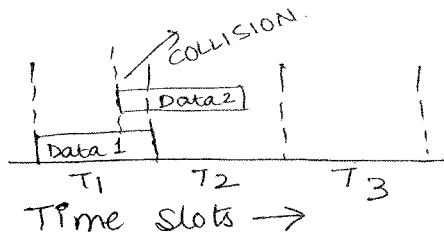


Fig: 1

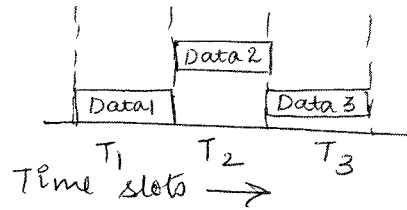


Fig: 2

- Identify the two random access protocols.
- Why Fig: 2 is more efficient than Fig: 1
- Explain CSMA along with its advantages.
- Name and explain the type of CSMA protocol where the nodes doesn't checks the channel continuously.

### Part C

Answer the Question. The question carries **twelve** marks.

(1Qx12M=12)

6. (a) Illustrate 2 features of each G phones till 3G.

(b) Apply the concept of "CDMA" to answer the following questions

(1) Code 1: 0101      Code2:0110      Code 3: 0101      Code 4:1010

Above are the codes mentioned which will be assigned to 3 different users. Using the concept of CDMA identify the fault .If any, then mention the criteria to remove the fault.

(2) One of the main advantage of CDMA it is very difficult for the third party to trace the message sent as the transmitted message is spreaded version of the original message. Explain this with the help of an example.



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**END TERM FINAL EXAMINATION**

**Even Semester:** 2018-19

**Course Code:** ECE 304

**Course Name:** Mobile Communication (DE)

**Program & Sem:** B.Tech & VIII Sem (Group-I)

**Date:** 23 May 2019

**Time:** 3 Hours

**Max Marks:** 80

**Weightage:** 40%

**Instructions:**

- (i) **All the questions are compulsory.**
- (ii) **Read the questions carefully.**

**Part A**

Answer **all** the Questions. **Each** question carries **one** mark.

(20Qx1M=20M)

1.

- i. A cordless telephone using separate frequencies for transmission in base and portable units is known as:
  - (a) Duplex communication
  - (b) Simplex communication
  - (c) Half Duplex communication
  - (d) none of the above
- ii. What conditions must be fulfilled in a good digital communication system?
  - (a) High data rate
  - (b) High fidelity
  - (c) Low transmit power
  - (d) All of the above
- iii. In a communications system, noise is most likely to affect the signal
  - (a) Transmitter
  - (b) Receiver
  - (c) Information source
  - (d) channel
- iv. MODEM stands for \_\_\_\_\_.
- v. If  $D$  is the distance between co-channel cells and  $R$  be the cell radius, co-channel reuse ratio is given by \_\_\_\_
  - (a)  $D \cdot R$
  - (b)  $D^2/R$
  - (c)  $D/R$
  - (d)  $D/R^2$
- vi. What is the responsibility of MSC in cellular telephone system?
  - (a) Connection of mobile to base stations
  - (b) Connection of mobile to PSTN
  - (c) Connection of base station to PSTN
  - (d) Connection of base station to MSC
- vii. Paging system uses which mode of transmission?
  - (a) Duplex
  - (b) Simplex
  - (c) Half Duplex
  - (d) None of the above

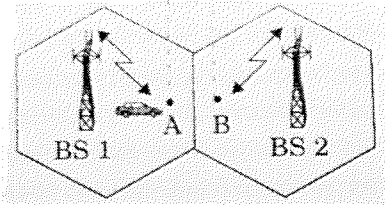
- viii. Which of the following is the world's first cellular system to specify digital modulation and network level architecture?
- (a) GSM (b) AMPS  
(c) IS-95 (d) UMTS
- ix. \_\_\_\_\_ manages the switching function in GSM.
- (a) BSS (b) OSS  
(c) NSS (d) All of the above
- x. The DHCP server \_\_\_\_\_.
- (a) Maintains a database of available IP addresses  
(b) Maintains the information about client configuration parameters  
(c) Grants a IP address when receives a request from a client  
(d) all of the mentioned
- xi. TCP/IP model does not have \_\_\_\_\_ but OSI model have this layer
- (a) session layer (b) Transport layer  
(c) Application Layer (d) None of the above
- xii. TCP/IP was developed \_\_\_\_\_ to OSI reference model
- (a) After (b) prior  
(c) Simultaneous to (d) none of the above mentioned
- xiii. Following are the types of routing protocols in MANET **except**:
- (a) Reactive (b) Proactive  
(c) Hyperactive (d) Hybrid
- xiv. Which multiplexing technique transmits digital signals?
- (a) FDM (b) TDM  
(c) OFDM (d) WDM
- xv. IP assigned for a client by DHCP server is:
- (a) for a limited period (b) for an unlimited period  
(c) not time dependent (d) none of the above
- xvi. Expansion of FTP is \_\_\_\_\_.
- xvii. The first line of HTTP request message is called \_\_\_\_\_
- (a) Request Line (b) Header Line  
(c) Status Line (d) Entity Line
- xviii. The data link layer takes the packets from \_\_\_\_\_ and encapsulates them into frames for transmission.
- (a) network layer (b) Physical layer  
(c) application layer (d) Transport Layer
- xix. What is the dimension of object as compared to wavelength of propagating wave when reflection occurs?
- (a) Large (b) Small  
(c) Same (d) very small
- xx. Diffraction occurs when radio path between Tx. And Rx. Is obstructed by \_\_\_\_\_
- (a) Surface having sharp irregularities. (b) Smooth irregularities  
(c) Rough surface (d) All of the Above

## Part B

Answer **all** the Questions. **Each** question carries **twelve** marks.

(3Qx12M=36M)

2. (a)



**(3+3=6Marks)**

Ramesh is sitting in the car and he is on call with his best friend. He is going to Domino's which is cell B. While going from cell "A" to cell "B":

Case 1: His call drops and call gets disconnected.

Case 2: He enjoys talking with his best friend who is on call.

Analyze the situation and explain the above two cases.

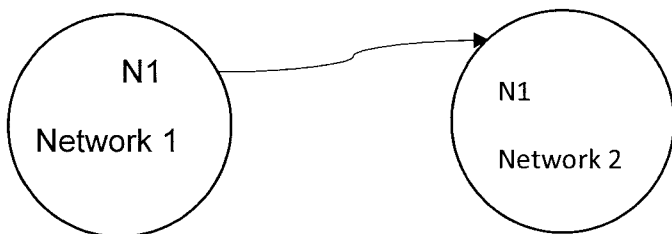
(b) A spectrum of 30 MHz is allocated to a wireless FDD cellular system which uses two 25kHz simplex channels to provide full duplex voice and control channels compute the number of available channels available per cell if a system uses: (a) 7 cell reuse (b) 12 cell reuse

**(3+3=6 Marks)**

3. (a) Consider a startup Company where only few countable people are working network administrator can prove IP address manually, after struggling many years that company grew into big company where thousands of people are working and everyday thousands of clients are coming, proving IP address manually is a very difficult job. How to overcome the problem? Explain.

**(6 Marks)**

(b)



Let N1 be the device which is connected to Network 1. He went to network 2. Explain the following with respect to the above diagram:

**(2+2+2=6 Marks)**

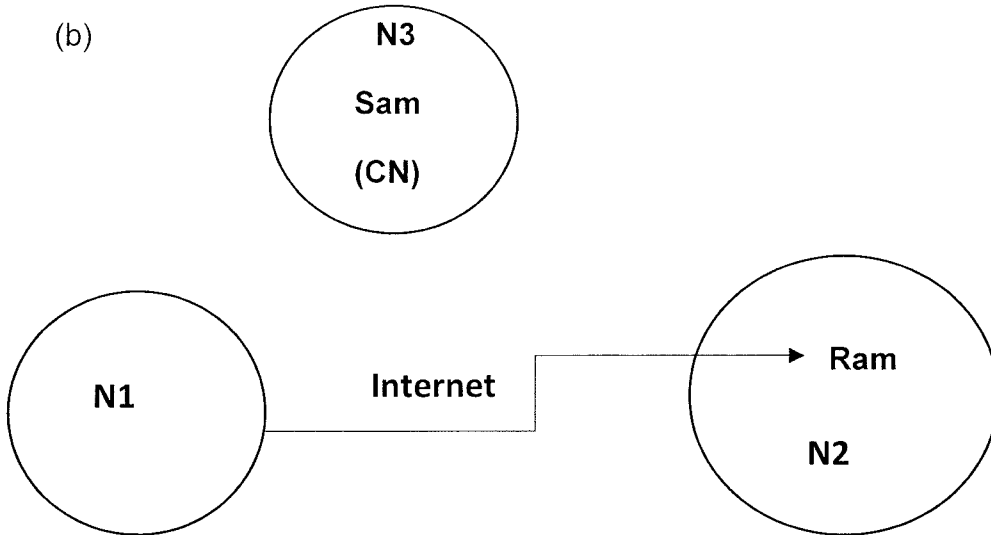
- (1). COA                      (2).Agent Discovery                      (3) Registration of N1 in network 2

4. (a) Explain the following: :

**(2+2+2=6 Marks)**

- (1) Correspondent Node                      (2) Encapsulation                      (3) Tunneling

(b)



Analyse the above diagram. Ram was earlier present in network 1, but now he is present in N2 (network 2). Sam wants to send the data to Ram. Explain the entire process of communication between Ram and Sam. All the networks are connected together through internet. **(6 Marks)**

### Part C

Answer **both** the Questions.

(2Q=24 Marks)

**(8 Marks)**

5. (a) Rohan is on call with his mother, meanwhile his best friend messages him in whatsapp. Draw and explain. The architecture of that system which supports voice and data at the same time.

(b) Explain HTTP and FTP protocol.

**(2+2=4 Marks)**

6. (a) When the results are declared, you have to log in the college website to see the result. It may happen that your friend saw his result but just after 1 minute when you log in that site is not opening chances are high that the router cannot forward too many packets at the same time. Name and explain the two protocols which is used to avoid this problem. **(4 Marks)**

(b) Expand the following

OSI, TCP, HTTP, HTML, FTP, URL, MIP, WWW

**(4 Marks)**

(c) **Draw** OSI model and TCP model and also **mark** which layer of the OSI model is mapped to TCP model. **(2+2=4 Marks)**