(vi) A Bluetooth frame needs .....µs for hopping and control mechanisms.
(a) 625 (b) 259 (c) 3 (d) a multiple of 259.

(vii) Signals, which occupy _____frequency bands can be easily separated using appropriate band pass filters.
(a) pulse divided (b) overlapping
(c) non overlapping (d) code divided.

(viii) The problem of a station not being able to detect a potential competitor for the medium because it thinks that there is activity between them is called _____
(a) Exposed Station Problem
(b) Collision Avoidance Problem
(c) Hidden Station Problem
(d) Access Grant Problem

(ix) Mobile phone in roaming is registered in _____
(a) Visitors Location Registry of another MSC
(b) Visitors Location Registry of same MSC
(c) Home Location Registry of another MSC
(d) Home Location Registry of same MSC

(x) Which of the following routing algorithm is used in MANETs?
(a) Shortest Path First
(b) Routing Information Protocol
(c) Distance Vector Protocol
(d) Ad hoc On-demand Distance Vector Protocol

Group - B

2. (a) Explain the GSM architecture. What are the uplink and downlink frequency for GSM 1900?

(b) Explain the functionalities of serving GPRS support node and gateway GPRS support node after illustrating the GPRS architecture.

(c) What is COA? How is it assigned?

(3+2) + 5 + 2 = 12

3. (a) What are the characteristics of 3G systems?

(b) Compare between W-CDMA and CDMA 2000 with reference to chip rate and timing synchronization with base station.

(c) What are the benefits of IMT-2000 over 2G systems?

3 + 5 + 4 = 12

Group - C

4. (a) Explain the operation of DCF and PCF in IEEE 802.11 standard.

(b) Explain with suitable diagram the 'hidden terminal problem' and 'exposed terminal problem' in wireless LAN. How the hidden terminal problem is solved using RTS and CTS?

(c) What is the count to infinity problem? Explain with suitable example.

4 + (2.5+ 2.5) + 3 = 12

5. (a) What is a piconet? What is scatternet?

(b) What are the various quality of service classes of IEEE 802.16?

(c) Explain the different components which form Zigbee network or system.

(d) State the routing challenges of MANET.

(2+2) + 2+ 4 + 2 = 12

Group - D

6. (a) Explain the registration phase of Mobile IP?

(b) What do you understand by triangular routing? What are its limitations? How can they be solved?

(c) What do you understand by IP-in-IP Encapsulation and GRE Encapsulation?

3 + (2+2+1) + (2+2) = 12

7. (a) Briefly describe WLL architecture. Name any two major WLL technologies. What are the advantages and disadvantages of these approaches?

(b) What features are offered by Wireless Transaction Protocol (WTP) to higher layers?

(3+ 2+3) + 4 = 12

Group - E

8. (a) Explain the Diffie Hellman Key Exchange Algorithm with suitable example.

   (b) What do you understand by the term "Cognitive Radio"? What are the various phases of working of a Cognitive Radio Network?

   (c) State the challenges of a Wireless Sensor Network.

3 + (3+2) + 4 = 12

9. (a) What are the different types of VPN? What are the different authentication methods used in VPNs?

   (b) Alice & Bob want to establish a secret key using the Diffie -Hellman Key Exchange protocol. Assuming the values as n=11,g=5,x=2 & y=3, find out the values of A, B and the secret key K1 & K2.

   (c) How does Wireless Transport Layer Security (WTLS) establish a secure session and transport datagram?

4 + (3+3) + 2 = 12

2016

MOBILE COMPUTING
(CSEN 5224)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following: **10 × 1=10**

   (i) In Global Service for Mobile (GSM), each band is divided into 124 channels of
   (a) 200 KHz (b) 150 KHz (c) 100 KHz (d) 50 KHz.

   (ii) Fading of the received radio signals in a mobile communication environment occurs because of
   (a) direct propagation (b) multipath Propagation
   (c) bi-path Propagation (d) none of the above.

   (iii) ..... are typically characterized by very small cells, especially in densely populated areas.
   (a) 2G system. (b) 2.5G system.
   (c) 3G system. (d) 3.5G system.

   (iv) Military vehicles on a battlefield with no existing infrastructure will deploy _____ network.
   (a) MANET (b) Cell Network (c) LAN (d) Wi-Fi.

   (v) Network layer firewall has two sub-categories as
   (a) bit oriented firewall and byte oriented firewall
   (b) stateful firewall and stateless firewall
   (c) frame firewall and packet firewall
   (d) none of the mentioned.