

Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.Tech(IT)/SEM-8/IT-802D/2012**

**2012**

**MOBILE COMMUNICATION**

*Time Allotted : 3 Hours*

*Full Marks : 70*

*The figures in the margin indicate full marks.*

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

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following :

$10 \times 1 = 10$

- i) CDMA is applied in
  - a) physical layer
  - b) MAC layer
  - c) network layer
  - d) transport layer.
- ii) The destination-sequenced distance vector ( DSDV ) protocol can be viewed as which one of the following ?
  - a) Reactive routing protocol
  - b) Proactive routing protocol
  - c) Hybrid routing protocol
  - d) Multicast routing protocol.
- iii) Mobility binding table in mobile IP is maintained by
  - a) mobile node
  - b) home agent
  - c) foreign agent
  - d) all of these.
- iv) Which one of the following is the multiple-access scheme used in GSM ?
  - a) TDMA
  - b) FDMA
  - c) CDMA
  - d) both TDMA & FDMA.



- v) To which one of the following generations does CDMA belong ?
- a) First Generation                      b) Second Generation  
c) Third Generation                      d) Fourth Generation.
- vi) Which one of the following is the main standard for Bluetooth ?
- a) IEEE 802.15                              b) IEEE 802.3  
c) IEEE 802.11                              d) IEEE 802.16.
- vii) In ....., mobile station always communicates with just one base station.
- a) roaming                                      b) a hard handoff  
c) a soft handoff                              d) a roaming handoff.
- viii) A ....., is a computerized centre that is responsible for connecting calls, recording call information and billing.
- a) base station  
b) cell  
c) mobile switching centre  
d) mobile station.
- ix) Slow start and fast retransmit is related to
- a) network layer                              b) data link layer  
c) transport layer                              d) all of these.
- x) The cell having the same number in the adjacent cluster using the same set of RF channels are termed as
- a) adjacent cell                                      b) co channel cell  
c) macro cell                                      d) selective cell.
- xi) Microwave is suitable for
- a) point to point communication  
b) omnidirection communication  
c) broadcast communication  
d) none of these.
- xii) The mechanism of putting a packet into the data part of a packet and adding a new packet header is known as
- a) decapsulation                                      b) tunnelling  
c) encapsulation                                      d) reverse tunnelling.



- xiii) A piconet can have at most
- |             |              |
|-------------|--------------|
| a) 8 slaves | b) 7 slaves  |
| c) 6 slaves | d) 5 slaves. |
- xiv) GSM phone works on
- |                                |
|--------------------------------|
| a) TDMA technology             |
| b) FDMA technology             |
| c) both TDMA and FDMA combined |
| d) none of these.              |

### GROUP - B

#### ( Short Answer Type Questions )

Answer any *three* of the following.  $3 \times 5 = 15$

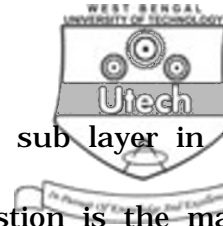
2. a) What is the Umbrellas Pattern effect ? What are its benefits ?
- b) Explain the steps of communication using Mobile IP.
3. Discuss the advantages and disadvantages of Radio wave and Infrared transmission technology in wireless network.
4. Briefly describe the GPRS technology.
5. State and explain WAP architecture design principles.
6. Describe the system architecture and protocol architecture of IEEE 802.11 with suitable diagram.

### GROUP - C

#### ( Long Answer Type Questions )

Answer any *three* of the following.  $3 \times 15 = 45$

7. Briefly describe the architecture of Bluetooth. State the functionality of Radio and Baseband layers of bluetooth protocol. What is TMSI ?  $8 + 5 + 2$
8. a) What are the services provided in a GSM system ? 4
- b) Explain how a mobile station connects to and talks with another mobile station. 5
- c) How will in between interfaces differ when a mobile station connects to a PSTN destination ? 6



9. a) What are the functions of snooping sub layer in the snooping TCP protocol ? 3
- b) Why is the presumption that congestion is the major factor limiting the data flow not valid for mobile and wireless networks ? 4
- c) What are the differences in data flow control in mobile and fixed-line networks ? 4
- d) List the deficiencies in conventional TCP on fixed-line networks that warrant modifications for the mobile networks connected to the internet. 4
10. a) Discuss the three different mechanisms to improve cell capacity and coverage area in cellular systems. 6
- b) What are the different types of interference possible in a cellular system ? Explain. 4
- c) A certain city has an area of 1300 sq.km and is covered by a cellular system using a 7-cell reuse pattern. Each cell has a radius of 4 km and the city is allocated 40 MHz of spectrum with a full-duplex channel bandwidth of 60 kHz. Compute
  - i) number of cells in the service area.
  - ii) number of channel & per cell. 5
11. a) How does mobile-TCP differ from snooping TCP ? Describe with suitable diagram. 4
- b) Describe briefly congestion control, slow start and fast retransmit mechanism. 6
- c) Describe the agent advertisement procedure of mobile IP. 5
12. Write a short notes on any *three* of the following : 3 × 5
  - a) WAP protocol stack
  - b) Hiper LAN
  - c) MANET
  - d) BRAN
  - e) AMPS
  - f) 3G-mobile communication.