

2011

## 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 × 1 = 10

- i) The DECT operation frequency band is
- a) ( 1880 – 1900 ) MHz      b) ( 1650 – 1880 ) MHz
- c) ( 2.5 – 3.5 ) MHz      d) ( 3 – 4 ) GHz.
- ii) Which satellite has a distance of 36,000 km from the centre of the earth ?
- a) GEO      b) MEO
- c) LEO      d) HEO.
- iii) GSM uses ..... for multiplexing.
- a) CDMA      b) TDMA
- c) FDMA      d) none of these.

- iv) A Bluetooth network can have ..... masters.
- a) three
  - b) eight
  - c) one
  - d) two.
- v) ..... separates the AMPS voice channels.
- a) CDMS
  - b) TDMA
  - c) FDMA
  - d) Both (a) and (b).
- vi) The bandwidth requirement for Bluetooth is
- a) 5 GHz
  - b) 2.4 GHz
  - c) 2.7 GHz
  - d) None of these.
- vii) FDMA is used in
- a) AMPS
  - b) GSM
  - c) Both (a) and (b)
  - d) None of these.
- viii) The mobile nodes are temporarily registered in
- a) HLR
  - b) VLR
  - c) EIR
  - d) AUC
- ix) WAP enables
- a) wireless LAN
  - b) Bluetooth network
  - c) internet on mobile
  - d) Wi Fi.
- x) In FHSS system, the time spent on a channel is called
- a) dwell time
  - b) recess time
  - c) break time
  - d) spent time.
- xi) A cordless telephone operates with one
- a) ups
  - b) fixed port
  - c) protection circuit
  - d) standby processor.

- xii) Indoor propagation model takes care of
- a) losses due to indoor antennas
  - b) losses due to walls
  - c) losses due to other wireless equipment
  - d) losses due to active devices operating in ISM band.

**GROUP – B**  
**( Short Answer Type Questions )**

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

2. Derive signal to interference ratio for co-channel interfering cells. 5
3. What is WAP ? Explain the various useful aspects of WAP in mobile communication.  $3 + 2$
4. What are the advantages and disadvantages of CDMA over TDMA and FDMA ? 5
5. What is an ISM band and what are its advantages ? 5
6. Explain how a mobile station connects to and talk with another mobile station. 5

**GROUP – C**  
**( Long Answer Type Questions )**

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

7. a) Draw & explain GSM architecture. 7
- b) Discuss GPRS location management procedure. 3
- c) Explain how data transfer through GPRS network and routing occurs. 5

8. a) What is Hand over ? How is it controlled ? 2 + 3
- b) Calculate the orbital velocity for Geosynchronous satellite. 5
- c) What are the different advantages and disadvantages of Geosynchronous satellite ? 5
9. Explain how mobile IP works ? What are the different challenges of Mobile IP ? What is Tunneling ? How does cellular IP solve the mobile IP challenges ? 5 + 5 + 2 + 3
10. a) In packet radio multiple access technique, explain with a schematic, how vulnerable period is set. How do we measure throughput of the system ? 4 + 2
- b) What are the major highlights and concepts of a 3G network ? 5
- c) With a schematic diagram, explain mobile network involving land line links. 4
11. Write short notes on any *three* of the following : 3 × 5
- a) Bluetooth
- b) CDMA
- c) Mobile computing
- d) Spread spectrum technology
- e) AMPS.
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