

CS/B.Tech/IT(O)/ODD/SEM-7/IT-704E/2019-20



**MAULANA ABUL KALAM AZAD UNIVERSITY OF
TECHNOLOGY, WEST BENGAL**

Paper Code : IT-704E

PUID : 07056 (To be mentioned in the main answer script)

MOBILE COMPUTING

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) Dynamic resource routing is
- a) Ad hoc routing b) Proactive process
- c) On demand routing d) Both (a) and (c)..
- ii) Bluetooth is
- a) Wireless LAN
- b) WAN
- c) Short range infrared ad-hoc
- d) Short range wireless ad-hoc services.
- iii) SIM algorithm checking is done by
- a) HRL b) VRL
- c) AUC d) EIR.

- iv) The profile synchronization in Bluetooth is achieved by
- a) OBEX
 - b) AT Commands
 - c) TCS BIN
 - d) PPP.
- v) WML script
- a) is used in wireless application protocol
 - b) is like Java script
 - c) is used in normal internet browser
 - d) both (a) and (b).
- vi) If N is the number of cell per cluster, then frequency reuse factor of the cellular system is
- a) N
 - b) N^2
 - c) $1/N$
 - d) None of these.
- vii) Slow start and fast retransmit is related to
- a) transport layer
 - b) data link layer
 - c) network layer
 - d) all of these.
- viii) The wireless standard which is a set of protocols that allows portable devices to communicate with the Internet, is
- a) TDMA
 - b) CDMA
 - c) WAP
 - d) VXML.
- ix) Which one is used in WAN ?
- a) Access point
 - b) Router
 - c) Both (a) and (b)
 - d) None of these.
- x) Mobile IP refers to
- a) Mobility
 - b) IP tunneling
 - c) IP within IP
 - d) All of these.
- xi) Piconet consists of
- a) Six devices
 - b) Eight devices
 - c) Eight Bluetooth devices
 - d) Seven Bluetooth devices.

- xii) Access method in IEEE 802.11 for wireless LANs is based on
- a) CSMA CD
 - b) CSMA CA
 - c) Token Passing
 - d) CSMA.

GROUP - B

(Short Answer Type Questions)

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

2. Draw architecture of general packet radio service (GPRS) and explain. Describe the signaling protocol structure in GPRS system. $3 + 2$
3. What do you mean by piconet ? What are the functions of L2CAP ? $2 + 3$
4. What do you mean by tunneling and encapsulation in the contest of mobile IP ?
5. a) Explain the different kinds of service by GSM system.
b) What is load balancing ? $3 + 2$
6. What is Bluetooth Protocol stack ? Describe.

GROUP - C

(Long Answer Type Questions)

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

7. a) What are the uplink and downlink frequency of GSM system ?
b) What is the difference between the care-of address and the co-located care-of address ?
c) What do you mean by reverse tunneling and bi-directional tunneling ?
d) How do the three wireless networks try to solve the collisions or minimize the probability of collisions ?
e) In what situations can collisions occur in IEEE 802.11, Hiper LAN2 and Bluetooth networks ?

$2 + 2 + 2 + 4 + 5$

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8. a) What are the main reasons for using cellular system ? Describe the dynamic channel allocation in cellular system.
- b) Show that a frequency reuse factor for a cellular system is given by K/S . Where k is the average no. of channels per cell and S is the total no. of channels available to the cellular service provider.
- c) If a signal-to-interference ratio of dB is required for satisfactory forward channel performance of cellular system, what is the frequency reuse factor and cluster size that should be used for maximum capacity if the path loss exponent is (a) $n = 4$, (b) $n = 3$? Assume that there are six co-channel cells in the first tier and all of them are at the same distance from the mobile. Use the suitable approximation. $2 + 3 + 5 + 5$
9. a) Explain GPRS with proper example.
- b) Briefly describe the GPRS architecture with proper diagram.
- c) What are the different kinds of GPRS ? $4 + 8 + 3$
10. a) What is satellite network ? Explain.
- b) What are the similarities of GLOBALSTAR and IRIDIUM system ?
- c) Discuss the GLOBALSTAR satellite system. $4 + 4 + 7$
11. Write short notes on any three of the following : 3×5
- a) 4G
- b) MANET (mobile Ad-hoc Network)
- c) Personal communication service
- d) Global star satellite system
- e) Pervasive web application architecture.