

**WIRELESS & MOBILE COMPUTING
(INFO 3242)**

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 alternative for the following: **10 × 1 = 10**
- (i) The IEEE 802.11 standard is one of the most popular standards for _____.
(a) wireless LANs (b) wired LANs
(c) wired PANs (d) wireless PANs.
 - (ii) The HIPERLAN/2 is a _____ system.
(a) connection-less (b) connection-oriented
(c) internal (d) external
 - (iii) The MAC protocols for ad hoc wireless networks use channel sensing and _____ schemes.
(a) random back-off (b) fixed back-off
(c) no back-off (d) live back-off
 - (iv) The hidden and exposed terminal problems significantly reduce the throughput of a network when the traffic load is _____.
(a) less (b) high (c) medium (d) average.
 - (v) _____ is a solution that uses an address redirection mechanism for this address mobility issue in wireless Internet.
(a) Mobile IP (b) Fixed IP (c) MAC IP (d) MACA IP.
 - (vi) HLR stands for _____.
(a) Human location register (b) High location register
(c) Home location register (d) Heavy location register.
 - (vii) VLR stands for _____.
(a) Virtual Location register (b) Visitor location register
(c) View location register (d) Vintage location register.

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- (viii) The _____ validates the MTs by verifying their identity with the equipment identity register.
(a) authorization center (b) authentication center
(c) avast center (d) algorithm center.
- (ix) The QoS routing protocol used with MACA/PR is the _____ routing protocol.
(a) destination sequenced distance vector (b) destination
(c) source (d) forward.
- (x) GPRS does not need an _____ connection.
(a) end-to-end (b) source
(c) sink (d) hop-to-hop.

Group – B

2. (a) What is the main difference between analog modulation and digital modulation schemes? Which modulation mechanism is better, amplitude modulation or frequency modulation? Give reasons to support your answer.
(b) What is inter-symbol interference? Discuss a mechanism that is used for overcoming problems arising due to inter-symbol interference.
 $(3 + 3) + (2 + 4) = 12$
3. (a) What is multipath propagation? Explain how it affects signal quality.
(b) With respect to pulse code modulation, what is quantization error? Explain how it is caused.
 $(2 + 4) + (2 + 4) = 12$

Group – C

4. (a) Explain with diagram hidden and exposed terminal problems. How MACA solves hidden and exposed terminal problems.
(b) Explain the agent advertisement procedure of Mobile IP. Why are the agent advertisement messages needed?
 $(4 + 2) + (4 + 2) = 12$
5. (a) Why are collision-detection based protocols not suitable for wireless networks? How virtual channel sensing helps in medium access control in wireless network?
(b) What do you mean by agent solicitation? Describe the function of HLR and VLR in call routing and roaming.
 $(3 + 3) + (2 + 4) = 12$

Group – D

6. (a) List the advantages and disadvantages of DSDV routing protocols. Briefly explain the concept of ZRP.

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- (b) How are hand-offs handled in snooping TCP? Explain the basic idea of Freeze-TCP.

(4 + 2) + (3 + 3) = 12

7. (a) Describe in details the roles of AuC and EIR in a GSM Network?
- (b) What is the advantage of fast retransmission? What are the advantages of GPRS over GSM?

6 + (2 + 4) = 12

Group – E

8. (a) What are the major differences between ad hoc wireless networks and sensor networks? What are the advantages of a clustered architecture over a layered architecture in a sensor network?
- (b) Compare and contrast UWB communication with conventional wide-band communication techniques based on spread spectrum techniques. What are the important features that make the UWB systems applicable for high-speed mobile communications?

(3 + 3) + (3 + 3) = 12

9. (a) Discuss the factors to be considered for deciding an appropriate cost-reimbursement factor for networks with and without power constraint nodes.
- (b) Discuss the pros and cons of increasing the mobility margin in the power control scheme for hybrid wireless networks.

6 + 6 = 12

Department & Section	Submission Link
IT	https://classroom.google.com/c/MzY5OTE1MDQ4Mjg3/a/MzY5OTU0NTMwNDk3/details