

**WIRELESS AD HOC AND SENSOR NETWORKS
(ECE5131)**

Time Allotted : 2½ hrs

Full Marks : 60

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 4 (four) from Group B to E, taking one from each group.*

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

Group – A

1. Answer any twelve:

12 × 1 = 12

Choose the correct alternative for the following

- (i) Wireless transmission occurs by
 - (a) Reflection
 - (b) Scattering
 - (c) Diffraction
 - (d) All of the above
- (ii) MAC layer belongs to _____ layer of the ISO/OSI protocol from the bottom
 - (a) first
 - (b) second
 - (c) third
 - (d) fourth
- (iii) Degradations in QOS of TCP is due to
 - (a) Misinterpretation of packet loss
 - (b) Frequent path breaks
 - (c) Effect of increase in path length
 - (d) All of the above
- (iv) Feedback based TCP-F requires the support of
 - (a) A reliable Link Layer
 - (b) A stable Routing protocol
 - (c) Both (a) and (b)
 - (d) None of the above
- (v) Which is not a Network security requirement
 - (a) Confidentiality
 - (b) Integrity
 - (c) Synchronization
 - (d) Availability
- (vi) Routing attack is
 - (a) Packet replication
 - (b) Session hijacking
 - (c) Wormhole attack
 - (d) All of the above
- (vii) The “Worm hole” attack is
 - (a) Passive Attack.
 - (b) Active MACL layer attack.
 - (c) Active TRANSPORT layer attack.
 - (d) Active NETWORK layer attack
- (viii) Find the hardware platform for WSN
 - (a) MICAz
 - (b) ARDUINO
 - (c) RASBERRY PI
 - (d) All of the above

- (ix) Electric Smart Meters deployed in residences is an example of
 (a) Static WSN (b) MANET (Mobile ad hoc network)
 (c) SPAN (smart phone ad hoc network) (d) None of the above
- (x) In AD Hoc networks, the disruptions are because of
 (a) Battery getting low (b) Node going out of range
 (c) Hidden nodes (d) Any one of these.

Fill in the blanks with the correct word

- (xi) Real time monitoring of equipment with data is an application of _____
- (xii) MAC layer belongs to the _____ layer of the seven OSI model starting from the bottom.
- (xiii) Table driven protocols are called _____.
- (xiv) Security attack which alter or destroy the data exchanged in the network is _____ attack.
- (xv) Idle listening results in _____ wastage.

Group - B

2. (a) Compare the functional differences between a wireless sensor network and Ad Hoc networks. *[[CO3)(Analyse/HOCQ]]*
- (b) What are the challenges of Ad Hoc network in high end surveillances? *[[CO4)(Remember/LOCQ]]*
- (c) Describe briefly the functions of encapsulation process in reference of data security. *[[CO2)(Apply/IOCQ]]*
4 + 4 + 4 = 12
3. (a) What is the type of DSDV protocol? What does the term 'Distance Vector' signify? Why is the starting node and the beginning neighbouring node to be defined? *[[CO3)(Analyse/IOCQ]]*
- (b) There are ten nodes in a wireless network. Show how the route generation table is formed for a given source and a given destination. *[[CO2)(Analyse/HOCQ]]*
6 + 6 = 12

Group - C

4. (a) Discuss how energy efficiency can be achieved in Ad Hoc networks? Explain in details. *[[CO3)(Apply/IOCQ]]*
- (b) What are the problems in achieving window management system in Ad Hoc networks? *[[CO4)(Remember/LOCQ]]*
- (c) Is it possible to achieve any amicable solution to those problems? If so, how? *[[CO2)(Analyse/IOCQ]]*
6 + 3 + 3 = 12
5. (a) Discuss the issues to consider in designing TCP for Ad Hoc networks in details. *[[CO3)(Analyse/HOCQ]]*
- (b) Compare the differences between congestion control, reliability and flow control. *[[CO4)(Remember/LOCQ]]*

- (c) Draw the classification tree for transport layer solutions for Ad Hoc networks. [[CO2](Apply/IOCQ)]
6 + 3 + 3 = 12

Group - D

6. (a) Evaluate the various Security goals, threats and challenges in wireless ad hoc network? [[CO4](Evaluate/HOCQ)]
 (b) What are the classifications of MAC protocol? Discuss briefly. [[CO2](Remember/LOCQ)]
6 + 6 = 12
7. (a) “D-BTMA improves the performance of BTMA”- do you support this statement? Justify answer. [[CO5](Analyse/HOCQ)]
 (b) Why MACAW is said to be an extension of MACA? What are their functional differences? [[CO5](Remember/LOCQ)]
 (c) Describe briefly the difference between reservation and scheduling mechanism. [[CO3](Apply/IOCQ)]
4 + 4 + 4 = 12

Group - E

8. (a) Compare the role of complexity, control packet overhead and over emitting in WSN. [[CO6](Analyse/HOCQ)]
 (b) Write a short note on: Idle Listening, Collisions, and Overhearing. [[CO6](Remember/LOCQ)]
6 + 6 = 12
9. (a) TCP is preferred as a protocol to function in WSN and AdHoc wireless networks simultaneously? Pls justify your answer. [[CO3](Analyse/HOCQ)]
 (b) What are the usages of WSN in industrial monitoring? [[CO6](Remember/LOCQ)]
6 + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	33.3	27	35.7

