(2 ½ Hours) [Total Marks: 75]

N.B. 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All

(a) Select the correct alternative from the options given: **(10M)**

(i) Data in WSN is transmitted by _____ connectivity.
(a) Wireless (b) Wired
(c) Both a and b (d) None of these

(ii) Similarities between WSNs and MANETs networks is _____.
(a) nodes are densely deployed (b) the nodes communicate each other using multi-hop communication
(c) topology changes very frequently (d) have global unique identification for nodes

(iii) Which protocol assigns an IP address to the client connected to the internet?
(a) DHCP (b) IP
(c) RPC (d) RSVP

(iv) Which of the following constraints depend on the cost and size of the sensor in WSN?
(a) Energy (b) Memory
(c) Speed (d) All of these

(v) Wireless sensor not uses following entity in architecture _____
(a) Processor (b) Storage
(c) Power Unit (d) Resource Management

(vi) RTS/CTS period is called _____
(a) waiting period (b) contention period
(c) running period (d) none of these

(vii) The radio communication spectrum is divided into bands based on _____
(a) Frequency (b) cost and hardware
(c) transmission media (d) amplitude

(viii) Optimization of wireless sensor network is based on _____
(a) Quality Of Service (b) Energy Efficiency
(c) Scalability (d) all of above

(ix) A star network is implemented using _____ distribution paradigm in computer networks.
(a) Spoke hub (b) Mesh
(c) Triangle (d) none of these

(x) A sensor node with a processing unit has _____ computational power.
(a) Limited (b) Minimum
(c) Maximum (d) Zero

(b) **Fill in the blanks by selecting from the pool of options:** (5M)
(frequency, cluster head, pure aloha, data & node / node & data, antenna)

(i) The radio communication spectrum is divided into bands based on _____.

(ii) In _____ each station sends a frame whenever it has a frame to send.

(iii) The _____ is designed to radiate the aura of the electromagnetic field created by the electric current.

(iv) The more capable nodes can naturally play the role of _____.

(v) Network for sensor networks is ____centric but not _____centric.

Q. 2 Attempt the following (Any THREE) (15M)

(a) State the reasons why gateways are needed in WSN.
(b) What is a Wireless Sensor Networks and its application?
(c) Discuss on Issues and Challenges in Designing a Sensor Networks?
(d) What are the characteristics of an ideal routing-protocol for Adhoc networks?
(e) Explain about mobile adhoc network with a neat diagram?
(f) In Wireless Sensor Networks, state the three types of Mobility.

Q. 3 Attempt the following (Any THREE) (15M)

(a) What are Requirements and design constraints for wireless MAC protocols.
(b) What is Low Energy Adaptive Clustering Hierarchy? State its advantages and disadvantages.
(c) Explain in brief common MAC protocols used in WSN.
(d) List and explain components of Sensor MAC.
(e) Discuss issues in designing MAC protocol for adhoc-networks.
(f) Explain directional busy-tone-based MAC protocol in detail.

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Paper / Subject Code: 87001 / Wireless Sensor Network & Mobile

(2 ½ Hours) **[Total Marks: 75]**

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(c) running period (d) none of these

(vii) The radio communication spectrum is divided into bands based on _____
(a) Frequency (b) cost and hardware
(c) transmission media (d) amplitude

Q. 4 **Attempt the following (Any THREE)** (15)

(a) What are the application of satellite communication?

(b) Explain different types of satellite orbits with suitable diagram.

(c) Write a note of GSM security services.

(d) Gives an overview of the frequency spectrum that can be used for data transmission.

(e) Explain signal propagation using different types of antenna.

(f) Explain satellite system for global mobile telecommunications.

Q. 5 **Attempt the following (Any FIVE)** (15)

(a) How to turn relatively imprecise optimization goals into measurable figures of merit for sensor node network?

(b) Explain Single-Hop versus Multi-Hop Networks.

(c) Explain Inclination angle of a satellite with suitable diagram.

(d) Explain DECT system architecture with suitable diagram.

(e) Explain Routing Strategies in Wireless Sensor Networks.

(f) What are the Transport Protocol Design Issues?

(g) Give the examples existing Transport Control Protocols for WSN.

(h) Write a short note on WSN tunnelling.

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