05/05/17 FN

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 71656

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Seventh/Eighth Semester

Computer Science and Engineering

CS 6003 – AD HOC AND SENSORS NETWORKS

(Common to : Biomedical Engineering / Electronics and Communication Engineering / Information Technology)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define a wireless sensor network.
2. State the difference between cellular network and Ad hoc wireless network.
3. Define packet delivery ratio.
4. What is a contention based protocol?
5. How the table driven protocols work in Ad hoc network?
6. What is hybrid routing?
7. List the components of a sensor node.
8. Define data relaying in a wireless sensor network.
9. Outline the need for data dissemination in a wireless sensor network.
10. Define quality of service.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the characteristics of wireless channel. (6)

(ii) Explain the radio propagation mechanisms. (10)

Or

(b) (i) What is multipath propagation? Explain with an example how it affects the signal quality. (6)

(ii) Explain the design issues in Ad Hoc networks. (10)

12. (a) Discuss the issues in designing of MAC protocol for Ad Hoc networks. (16)

Or

(b) Classify MAC protocols for Ad Hoc networks and present an overview of the same. (16)

13. (a) Discuss any four reactive routing protocols for Ad Hoc wireless networks. (16)

Or

(b) What is TCP? Discuss with an example TCP over Ad Hoc wireless networks. (16)

14. (a) Discuss the architecture of wireless sensor network with diagrammatic illustration. (16)

Or

(b) Present an overview of MAC protocols for wireless sensor networks. (16)

15. (a) (i) Appraise the issues related to routing in wireless sensor networks. (8)

(ii) Present an overview of localization in wireless sensor networks. (8)

Or

(b) (i) Appraise the QoS related measures in wireless sensor networks. (8)

(ii) Outline the issues related to the transport layer in wireless sensor networks. (8)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 40883

02/05/18 AN

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018
Seventh/Eighth Semester
Computer Science and Engineering
CS 6003 – AD HOC AND SENSORS NETWORKS
(Common to : Biomedical Engineering/Electronics and Communication Engineering/Information Technology)
(Regulations 2013)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A (10×2=20 Marks)

1. Compare between fast fading and slow fading.
2. List the three radio waves propagation mechanisms.
3. How mobility of nodes affects the throughout in wireless networks ?
4. How does Multi-Hop Coordination mechanism work ?
5. Differentiate intra-zone and inter-zone routing protocol in hybrid routing.
6. Sketch the classification tree of transport layer protocol.
7. List some design challenges posed by sensor networks.
8. What is data aggregation strategy in wireless sensor networks ?
9. List the benefits of OLSR protocol.
10. What is Multi-Lateration (ML) technique ? List some of the ML techniques.

PART – B (5×16=80 Marks)

11. a) i) Describe about the electromagnetic spectrum and its frequency bands with its uses. (8)
    ii) Explain about the characteristics of the wireless channel. (8)

(OR)

b) Discuss in detail about the design challenges in Ad hoc and sensor networks. (16)

12. a) i) Sketch the transmission in Busy Tone Multiple Access (BTMA) protocol and explain it. (7)

ii) Write in detail about the Five Phase Reservation Protocol (FPRP) and its frame structure. (9)

(OR)

b) i) Illustrate the operation of Multichannel MAC Protocol. (6)

ii) Explain about the contention based MAC protocols with scheduling mechanisms. (10)

13. a) i) Discuss the operation of AODV routing protocols with neat diagram. (10)

ii) Identify the major reasons behind that TCP not perform well in Ad hoc Networks. (6)

(OR)

b) i) Explain the DSR routing protocols with neat diagram. (8)

ii) Illustrate the operations of Ad Hoc TCP and split TCP with neat diagram. (8)

14. a) Explain in detail about the single node architecture in wireless sensor networks. (16)

(OR)

b) Describe in depth about the MAC Protocols for Sensor Networks. (16)

15. a) Discuss on the parameters of Coverage and Exposure to improve the quality of sensor Networks. (16)

(OR)

b) i) Why synchronization is essential in Multi-Hop wireless networks ? Discuss how shifting of frames carried out in resynchronization. (10)

ii) Write short notes on Transport Layer issues in sensor networks. (6)

15/4/19

Reg. No. :

Question Paper Code : 52840

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Seventh/Eighth Semester

Computer Science and Engineering

CS 6003 — AD HOC AND SENSOR NETWORKS

(Common to : Electronics and Communication Engineering/Biomedical Engineering/Electronics and Communication Engineering/Information Technology)

(Regulation 2013)

(Also common to PTCS 6003 – AD Hoc and Sensor Networks for B.E. (Part-Time) – Computer Science and Engineering – Sixth/Seventh Semester – Electronics and Communication Engineering – Regulations 2014)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Given a channel with an intended capacity of 20 Mbps, the bandwidth of the channel is 3 MHz what signal-to-noise (SNR) ratio is required to achieve this capacity?

2. Differentiate address centric paradigm and data centric paradigm.

3. List the issues of designing a MAC protocol for ad hoc networks.

4. Draw the frame format of IEEE802.11 physical layer using DSSS.

5. What is the use of route caching in the Dynamic Source Routing (DSR) protocol?

6. Can we use the traditional TCP for the Ad hoc network? Justify.

7. How an implosion is caused?

8. What is data aggregation?

9. Define Lateration, Angulation.

10. Write the equation for calculating the sensing power of a node.

PART B — (5 × 13 = 65 marks)

11. (a) (i) What is multipath propagation? Explain with an example how it affects the quality of the signal. (7)

(ii) What are the main problems of signal propagation? Why do radio waves not always follow the straight line? (6)

Or

(b) Tabulate the difference between the cellular network and Ad hoc network (any TEN). (13)

12. (a) Explain the contention based protocols with scheduling and reservation in detail. (13)

Or

(b) Illustrate various steps involved in five phase reservation protocol with its frame format. (13)

13. (a) An Ad hoc network has 8 nodes and one node can reach other node by one or more hops. The node number 3 which is nearer to node 4 is now moved near to node 7. Using DSR show the topology and routing table of node 3 before and after movement. Give the final routing table of node 3. (13)

Or

(b) Discuss the reasons why TCP does not perform well in Ad hoc wireless network? Elaborate in detail about the classification of transport layer solutions. (13)

14. (a) With a neat sketch explain the architecture of wireless sensor networks. (13)

Or

(b) (i) How the data dissemination is performed in the sensor networks? Explain in detail. (9)

(ii) Discuss the various types (any four) of sensors. (4)

15. (a) Illustrate the working principle of OLSR with neat sketch. (13)

Or

(b) (i) Explain in detail about trilateration and triangulation. (8)

(ii) Write short notes on QOS in WSN. (5)

PART C — (1 × 15 = 15 marks)

16. (a) Discuss in detail about IEEE 802.11. (15)

Or

(b) Explain the types of routing protocol in WSN. Give example. (15)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 50365

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017
Seventh/Eighth Semester
Computer Science and Engineering
CS6003 – ADHOC AND SENSOR NETWORKS
Common to Biomedical Engineering, Electronics and Communication Engineering/ Information Technology
(Regulations 2013)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions :

PART – A **(10×2=20 Marks)**

1. State Shannon's theorem.
2. What is fading ? List the different types of fading ?
3. Write down the issues of designing a MAC protocol for Ad-hoc networks.
4. Outline how node scheduling is done in contention-based MAC protocols with scheduling mechanisms.
5. What is called hybrid routing ?
6. Write down the difference between proactive and reactive routing.
7. List out the hardware and software components of a sensor node.
8. Write down the various operational states of transceiver in WSN.
9. Define localization, lateration.
10. Define the term data dissemination.

PART – B (5×16=80 Marks)

11. a) Explain.
    i) Challenges of mobile adhoc networks. (8)
    ii) Electromagnetic spectrum. (8)

(OR)

b) i) Differentiate adhoc and cellular network. (8)
    ii) Write the advantages of directional antennas of MMAC over MACAW. (8)

12. a) Describe the scheduling mechanism achieved in distributed wireless ordering protocol. Explain how the information symmetry and perceived collisions are handled. (16)

(OR)

b) Elaborately explain different steps involved in five phase reservation protocol with its frame format. (16)

13. a) Explain various protocols used in multicast routing in detail. (16)

(OR)

b) i) Explain the demand routing protocol in detail. (8)
    ii) Discuss MAC protocol in WSN in detail. (8)

14. a) Explain localization and its services with examples. (16)

(OR)

b) i) Explain IEEE 802.15.4 in detail. (8)
    ii) With neat sketch discuss sensor network architecture. (8)

15. a) Discuss in detail about triangulation. (16)

(OR)

b) Explain :
    i) Physical time.
    ii) QoS challenges.
    iii) Issues in WSN routing.
    iv) OLSR routing protocol. (16)

24/11/18

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Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 20341

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Seventh / Eighth Semester

Computer Science and Engineering

CS 6003 – AD HOC AND SENSORS NETWORKS

(Common to Biomedical Engineering, Electronics and Communication Engineering, Information Technology)

(Regulations 2013)

(Also common to PTCS 6003 – Ad Hoc and Sensors Networks for B.E. (Part-Time) Sixth Semester – Computer Science and Engineering and Seventh Semester – Electronics and Communication Engineering, Regulations – 2014)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term: Internet Protocol (IP).
2. Differentiate between WSNs and MANETs.
3. What is meant by Internet Proxy?
4. What is slotted ALOHA?
5. What is the need for Routing Protocols?
6. Mention the QoS parameters.
7. What is Data relaying?
8. What is Sensor Network Localization?
9. Why is energy efficiency important in WSN Routing?
10. What is Synchronized communication?

PART B — (5 × 13 = 65 marks)

11. (a) Describe the characteristics of Wireless Channel in detail.

Or

(b) (i) Explain briefly the architecture of MANET with a neat diagram. (7)

(ii) Describe the characteristics, requirements and applications of Ad Hoc and Sensor Networks. (6)

12. (a) Explain in detail the principle of contention based protocols with scheduling mechanism. (13)

Or

(b) Discuss the classification of MAC protocols. Explain the principle of contention based reservation mechanism. (13)

13. (a) Describe in detail the design issues in routing and transport layer protocols. (13)

Or

(b) Explain the various classical improvements over TCP in mobile with environment.

14. (a) Outline the hardware and software components of a Sensor Node with a block diagram.

Or

(b) Explain data aggregation strategies in WSNs. (13)

15. (a) Distinguish between Absolute and Relative Localization in detail. (13)

Or

(b) Describe about OLSR routing protocol with an example. (13)

PART C — (1 × 15 = 15 marks)

16. (a) How will you conduct Mathematical analysis of routing, based on Circular Graphs? Illustrate with an example. (15)

Or

(b) How will you estimate the technical challenges related to the information flow in a network and the communication costs imposed by different algorithms? Illustrate with suitable examples. (15)

Reg. No. :

Question Paper Code : 91375

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

Seventh/Eighth Semester

Computer Science and Engineering

CS 6003 – AD HOC AND SENSOR NETWORKS

(Common to Electronics and Communication Engineering/Biomedical Engineering/Electronics and Communication Engineering/Information Technology)

(Regulations 2013)

(Also Common to PTCS 6003 – Ad hoc and Sensor Networks for B.E. Part-Time – Computer Science and Engineering – Sixth Semester – Electronics and Communication Engineering – Seventh Semester – Regulations 2014)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. Define attenuation.
2. Distinguish between shadowing and reflection of signal propagation.
3. Abbreviate FAMA and write a brief note.
4. What are the mechanisms used in the MAC layer ?
5. What is the need for power management in Ad hoc network ?
6. Why does TCP not work well in Ad hoc network ?
7. Draw the diagram for sensor node hardware components.
8. List the features of 802.15 standards.
9. Define Delay and Jitter.
10. Name the three types of control messages used in OLSR.

PART – B **(5×13=65 Marks)**

11. a) i) What are the characteristics and features of Ad hoc networks ? **(7)**

ii) Differentiate between cellular network and Ad hoc network (any 6). **(6)**

(OR)

b) How the path loss and Fading affect in Wireless Channel ? Elaborate. **(13)**

12. a) Classify the MAC protocols and explain the contention based protocols with scheduling and reservation in detail. **(13)**

(OR)

b) Explain the qualities of service metrics that are used to evaluate the performance of the network. **(13)**

13. a) An Ad hoc network has 7 nodes namely A, B, C, D, E, F and G and one node can reach other node by one or more hops. The node named B which is nearer to node D is now moved near to node G. Using DSDV show the topology and routing table of node B before and after movement. Give the final routing table of node B. **(13)**

(OR)

b) How is routing table constructed in fisheye state routing protocol ? Explain in detail. **(13)**

14. a) Explain in detail about MAC protocols of Wireless Sensor Network. **(13)**

(OR)

b) Discuss in detail about IEEE 802.15.4 protocol stack. **(13)**

15. a) What is meant by OLSR and explain about OLSR routing protocol with an example. **(13)**

(OR)

b) Discuss in detail on sensor network absolute and relative localization. **(13)**

PART – C **(1×15=15 Marks)**

16. a) TCP has become standard transport protocol for computer communication. This allows slow start increase of transmission rate when doing cold start and then adjust rate when a threshold is crossed. Why do you have several variations of TCP and what are their relative advantages and disadvantages ? Are any of these variation suited for Wireless Ad hoc networks ? How does the hidden terminal problem affect TCP over multihop transmission ? **(15)**

(OR)

b) 500 sensors are randomly deployed in a rectangular area of 40 × 40. Draw a Varonoi diagram. Apply the Delaunay triangulation to determine the maximum cost path between node 250 to 287 using graph search traversal method. Derive the analytical model between the densities of the nodes, coverage and sleep cycle. (Assume appropriate parameters if required as commonly used in literature). **(15)**