

KATHMANDU UNIVERSITY
End Semester Examination
July/August, 2017

Marks Scored:

Level : B.E./B. Sc.
Year : IV

Course : COMP 479
Semester : II

Exam Roll No. : Time : 30 mins.

F. M. : 10

Registration No. :

Date AUG 20 2017

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Pick the correct answer.

1. The transmission range of Mica2 Mote is _____ meters.
[a] 50 [b] 100 [c] 150 [d] 200
2. Which one of the followings is memory of sensor node?
[a] in-chip flash memory [b] RAM
[c] external flash memory [d] All of the above
3. A sensor is _____.
[a] micro-electronic device [b] mega electro-mechanical device
[c] macro-electro-mechanical device [d] none of the above
4. Which one of the followings operating system provides IP communication for IPv4 and IPv6?
[a] TinyOS [b] Contiki [c] SOS [d] LiteOS
5. Traffic analysis is a _____ threat.
[a] physical layer [b] link layer [c] network layer [d] application layer
6. Which one of the followings is not related to standardization of WSN?
[a] IEEE [b] ACM [c] IETF [d] ISA
7. Zigbee has a range of _____.
[a] 50 m [b] 100 m [c] 10 m [d] 5 m
8. Data aggregation is also known as _____.
[a] data fusion [b] data compression [c] both [d] none
9. In WSN, when duplicated messages are sent to the same node, it is called as _____.
[a] Overlap [b] Overhang [c] Implosion [d] Aggregation
10. The Great Duck Island [Mainwaring et al. 2002] is example of sensor network deployment for _____.
[a] environmental monitoring [b] agriculture management
[c] personal health monitoring [d] intrusion detection
11. Motes have an external _____ clock.
[a] 8-kHz [b] 16-kHz [c] 32-kHz [d] 64-kHz

12. During data acquisition in WSN, the data is collected in the table name _____.
[a] devices [b] tables [c] motes [d] sensors
13. In acquisitional query language, data aggregation is implemented by _____ functions.
[a] five [b] four [c] two [d] three
14. How many policies are there for semantic routing tree (SRT) parent selection?
[a] six [b] four [c] three [d] five
15. In which of the followings the tuple with the highest score is delivered?
[a] Naïve scheme [b] Winavg scheme
[c] Alpha scheme [d] Delta scheme
16. Minimum Cost Forwarding Algorithm (MCFA) is an example of _____ routing protocol.
[a] Flat-based [b] Hierarchical-based
[c] Location-based [d] QOS-based
17. Which one of the followings is not attacks on secrecy and authentication?
[a] eavesdropping [b] packet replay attacks
[c] DoS attack [d] spoofing packets
18. Probing is used to defense with _____ attack.
[a] Wormhole [b] Sybil [c] flooding [d] collision
19. WSN simulators are categorized into _____ groups.
[a] six [b] four [c] three [d] five
20. Self-developed Sensor Network Analysis and Management Platform (SNAMP) is an example of _____.
[a] simulator [b] emulator
[c] data visualization tool [d] test bed

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Time : 2 hrs. 30 mins.

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Semester : II
F. M. : 40

SECTION "B"
[6Q × 4 = 24 marks]

Attempt *ANY SIX* questions.

1. Draw a diagram to illustrate wireless sensor network (WSN). Briefly explain the working mechanism of a Sensor Node. [2+2]
2. With diagram, explain personal health monitoring using WSN. [2+2]
3. Mention different applications of WSN and briefly explain any four (4) of them. [1+3]
4. What are different entities of data management for WSN? With example, briefly explain any three of them. [1+3]
5. Explain the significance of in-network data processing in WSN. Describe in-networking functions for WSN. [2+2]
6. Explain security threats and requirements of WSN. [4]
7. What is the importance of middleware for WSN? Briefly explain middleware design principles, issues and challenges. [1+3]

SECTION "C"
[8Q × 2 = 16 marks]

Attempt *ANY TWO* questions.

8. With at least two examples, mention different types of experimental tools for WSN. Explain the characteristics of simulator, emulator and test bed. [2+2+2+2]
9. Define data routing in WSN. Different single-hop routing with multi-hop routing. With diagram, explain any three types of routing protocols for WSN. [1+1+2+2+2]
10. Write short note on (*ANY FOUR*): [4Q × 2 = 8]
 - a. Intrusion Detection
 - b. Authentication
 - c. Data Privacy
 - d. Data Integrity
 - e. Wildlife Monitoring

