

(4)

67192-N

Unit-IV

8. (a) What are different requirements and design constraints associated with wireless MAC protocols? 10
- (b) Critically evaluate energy-efficient unicast routing protocol and geographic routing protocols. 6
9. (a) What is the use of addresses and names in sensor networks? Discuss its management techniques and assignment of MAC addresses. 10
- (b) How is topology of network managed under Hierarchical networks by clustering approach? Explain. 6

67192-N

67192-N

M.C.A. 2 Year Course 4th Semester (w.e.f. 2020-21)

(Re-appear) Examination, December 2022

IoT AND SENSOR NETWORKS

Paper-21MCA24C2

Time allowed : 3 hours] Maximum marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after examination.

Note : Attempt five questions in all. Question Number 1 is compulsory. In addition to compulsory question, student has to attempt four more questions selecting one question from each Unit.

1. (a) What is a 'Thing' in context of Internet of Things? 8×2=16
- (b) How can IoT be used in smart cities?
- (c) What is the purpose of using a gyroscope?
- (d) Which companies have developed their architectures for IoT?
- (e) How is WSN related to IoT?

67192-N-P-4-Q-9 (22)

[P.T.O.]

(2)

67192-N

- (f) Name the type of devices that may act as a data generator in a WSN? How? 6
- (g) Comment on statement: *Arduino is a prototyping platform for IoT.* 6
- (h) Why is energy scavenging important in a WSN? 6

Unit-I

- 2. (a) What is Internet of Things? What are major components of IoT system? Also discuss the role of MCU and explain its functional units. 10
- (b) Explain the terms: pub/sub, resource directory, polling and message queue. 6
- 3 (a) What are the sources of IoT? How is the modified OSI model used for M2M systems? Discuss the working of each layer. 10
- (b) What is RPL? Why and how do DODAGs used in RPL? 6

Unit-II

- 4. (a) What is prototyping? Why is an IDE required for it? Compare a microprocessor with a microcontroller. 10

67192-N

(3)

67192-N

- (b) How is data storage and computing different in IoT applications? What is the role of Cloud Computing and Edge computing in IoT networks? 6
- 5. Write short notes on the following: 4×4=16
 - (a) Cloud service models
 - (b) Embedded device software
 - (c) Tomography
 - (d) Threat analysis

Unit-III

- 6. (a) What do you mean by a WSN? Elaborate the design principles of WSN along with possible solutions. 10
- (b) What are the three types of mobility supported for mobile participants in a WSN? 6
- 7. Differentiate between: 4×4=16
 - (a) Source and sink
 - (b) Single hop and Multihop networks
 - (c) Scalability and Robustness
 - (d) Data centric and Identity centric network

67192-N

[P. T. O.]