Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem Examination May-2024

CS3EL14 Internet of Things

Programme: B.Tech. Branch/Specialisation: CSE All

Duration: 3Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. Which of the following best describes the primary function of IoT? **1**

(a) Gaming (b) Connectivity and data sharing

(c) Social networking (d) Virtual reality

ii. The physical design of an IoT system is part of its: **1**

(a) IoT architectural view (b) IoT protocols

(c) IoT communication APIs (d) Enabling technologies

iii. Which term describes the communication between two machines directly? **1**

(a) IoT (b) SDN (c) NFV (d) M2M

iv. Which of the following is NOT a purpose of Network Function Virtualization (NFV) in IoT? **1**

(a) Data routing (b) Data storage

(c) Energy saving (d) Enhancing scalability

v. In the IoT Platform Design, the process that describes how various components are integrated is the: **1**

(a) Domain model (b) Information model

(c) Application development (d) Device and component integration

vi. Which of the following views in IoT provides a detailed understanding of each individual component's role? **1**

(a) Functional view (b) Operational view

(c) IoT level (d) Service view

vii. Which of the following poses a threat to IoT devices and needs to be addressed for security? **1**

(a) Vulnerabilities (b) Application development

(c) Functional view (d) Data visualization

P.T.O.

viii. The model that demonstrates how an attacker might try to exploit IoT devices is called: **1**

(a) Security topography (b) Layered attacker model
(c) IoT Security protocol (d) Intrusion detection system

ix. Which of the following is an application area of IoT? **1**

(a) Video conferencing (b) Social media management
(c) Smart lighting (d) Audio processing

x. In smart cities, IoT can be used to: **1**

(a) Play online games (b) Stream movies
(c) Monitor weather conditions (d) Manage emails

Q.2 i. Define and discuss the term 'IoT'. **2**

ii. Explain the characteristics of IoT. **3**

iii. Discuss in detail the IoT architectural view. **5**

OR iv. Elaborate the different communication models of IoT and the significance of IoT protocols. **5**

Q.3 i. What is the difference between M2M and IoT? **2**

ii. Explain the concepts of SDN (Software Defined Networking) and NFV (Network Function Virtualization) in the context of IoT with the proper diagram. **8**

OR iii. Discuss in detail the role of data storage in IoT and the importance of IoT cloud based services. **8**

Q.4 i. Briefly describe the purpose and requirements of IoT platform design methodology. **3**

ii. Elaborate the steps and processes involved in device and component integration in IoT. Also, discuss the significance of application development in IoT systems. **7**

OR iii. Explain the concepts of domain model, information model, and IoT level in the context of IoT platform design. **7**

Q.5 i. List and explain the major vulnerabilities associated with IoT. **4**

ii. Discuss the IoT security tomography and the layered attacker model. How do these concepts help in understanding and mitigating threats in IoT systems? **6**

OR iii. Describe in detail the measures and protocols for identity management and access control in IoT systems. **6**

Q.6 Attempt any two:

i. Explain the role of IoT in home automation, highlighting the advantages and potential challenges. **5**

ii. Discuss the significance of smart lighting systems in the context of IoT. How does it contribute to energy savings and improved user experience? **5**

iii. Elaborate how IoT is revolutionizing agriculture and the potential benefits farmers can derive from it. **5**

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Scheme Verification - CS3EL14 (Internet of things)

Q.1 Marks.

(i) (b) (Connectivity and Data Sharing) 1

(ii) (a) (IOT architectural view) 1

(iii) (d) (M2M) 1

(iv) (c) [Energy Saving) 1

(v) (d) Device and component Integration 1

(vi) (a) functional view 1

(vii) (a) Vulnerabilities 1

(viii) (b) Layered Attacker Model 1

(ix) (c) Smart Lighting 1

(x) (c) Monitor Weather conditions

Q.2 (i) Defination of IOT - 2-marks

(ii) Minimum 3 char-ed - 3 marks

(iii) Explanation of Architecture - 3 marks
Diagram + 2 marks

(iv) Each model - 1 marks (4×1) = 4
with Diagram
Significance :- 1 marks = 1
5 marks

Q.3 (i) Minimum 4-difference (2-marks)

(ii) SDN with Diagram (4 marks)
or NFV with Diagram / 4 marks)

(iii) Data Storage (4-marks)
IOT cloud Services (4-marks)

Q.4 (i) Purpose & Requirement (Explanation 1.5 marks + Diagram 1.5 marks)

(ii) Steps & process (3.5 marks)

Significance of application (3.5 marks)

(iii) Concepts of Domain model (2 marks + Information model (2 marks) + IOT level (3 marks)

Q.5 (i) List (1 marks + vulnerabilities (3 marks)

(ii) IOT (tomography - 1 marks
layer attacked model - 2 model
threats - 2 marks

(iii) protocol Measure (3 marks)
Access Control (3 marks

Q.6 :- (i) Role of home automation - 3 marks
challenges & advantages - 2 marks

(ii) Significance of smart lighting - 3 marks
Contribution of Energy saving 2 marks

(iii) IOT revolutionizing agriculture - 3 marks
potential benefits farmers 2 marks