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Reg. No. : .....

**Code No. : 30774 E**

**Sub. Code : EECS 31**

B.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2024.

Third Semester

Computer Science

Elective — IOT AND ITS APPLICATIONS

(For those who joined in July 2023 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following is NOT a characteristic of IoT?
  - (a) Connectivity
  - (b) Intelligence
  - (c) Scalability
  - (d) Standalone operation

2. Which protocol is commonly used at the link layer in IoT?
  - (a) HTTP
  - (b) Bluetooth low energy
  - (c) TCP
  - (d) MQTT
3. What is the primary benefit of smart appliances in IoT home automation?
  - (a) Reduced energy consumption
  - (b) Increased internet speed
  - (c) Improved sound quality
  - (d) Enhanced video resolution
4. In a smart city, what is the purpose of smart roads?
  - (a) To provide high-speed internet to vehicles
  - (b) To monitor and manage traffic conditions using IoT sensors
  - (c) To charge electric vehicles
  - (d) To offer navigation services
5. What does M2M stand for?
  - (a) Machine to machine
  - (b) Mobile to mobile
  - (c) Media to media
  - (d) Message to message





6. Which of the following is more focused on using internet protocols for communication?
- (a) IoT
  - (b) M2M
  - (c) Both IoT and M2M equally
  - (d) Neither IoT nor M2M
7. Which of the following is an immutable data type in Python?
- (a) List
  - (b) Tuple
  - (c) Dictionary
  - (d) Set
8. How can you convert a list to a tuple in Python?
- (a) tuple(list\_name)
  - (b) list(tuple\_name)
  - (c) convert(list\_name, tuple)
  - (d) to\_tuple(list\_name)
9. Which of the following is NOT a basic building block of an IoT device?
- (a) Sensors
  - (b) Actuators
  - (c) Video cards
  - (d) Microcontroller or microprocessor

10. Which of the following operating systems is commonly used of Raspberry Pi?
- (a) Linux (Raspbian)
  - (b) Windows XP
  - (c) MacOS
  - (d) Android

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).  
Each answer should not exceed 250 words.

11. (a) Define Internet of Things (IoT) and explain its three key characteristics that differentiate IoT from traditional internet-based systems.

Or

- (b) Discuss the role of wireless sensor networks in IoT and its features that support IoT applications.

12. (a) Explain the concept and benefits of smart lighting in home automation.

Or

- (b) Illustrate the smart parking solutions and discuss how IoT technology can improve parking efficiency and user convenience in urban areas.





13. (a) Write a short note on Machine-to-machine (M2M) communication and explain how it differ from IoT.

Or

- (b) Discuss the importance and challenges of systems management in IoT environments.
14. (a) Explain the differences between lists and tuples in Python.

Or

- (b) Discuss how type conversions are handled in Python.
15. (a) Demonstrate the IoT device and its key characteristics that distinguish IoT devices from traditional computing devices?

Or

- (b) Explain the significance of the Raspberry Pi as an exemplary IoT device. What are its key features and how does it support various IoT applications?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)  
Each answer should not exceed 600 words.

16. (a) Discuss and compare the roles and functions of link layer and network/internet layer in IoT protocols.

Or

- (b) Analyze the role, techniques, benefits and challenges of Big data analytics in the context of IoT.

17. (a) Illustrate the use and benefits of IoT in environmental monitoring, including weather forecasting and pollution tracking with example.

Or

- (b) Explain the role of wearable electronics in health and fitness monitoring and provide examples of popular wearable's and their features.

18. (a) Describe the need for effective systems management in IoT environments and explain its primary challenges and solutions associated with managing IoT systems.

Or

- (b) Explain the role, functions, limitations and impact of Simple Network Management Protocol (SNMP) in network management for IoT systems.





19. (a) Write the short note on structure and usage of dictionaries in Python with examples.

Or

- (b) Explain how python packages such as JSON and XML are used to handle data from IoT devices and discuss its best practices to ensure accuracy and efficiency.

20. (a) Demonstrate the role of Linux operating system on the Raspberry Pi board with examples.

Or

- (b) Describe how Amazon EC2 (Elastic Compute Cloud) is utilized in IoT applications and discuss its features and benefits.
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