17324

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – B.Tech.(RA)-2023
Course Name – IoT and its Applications using Raspberry Pi
Course Code - PCC-ECR503
(Semester V)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Bluetooth is the wireless technology for _____
a) Local Area Network b) Metropolitan Area Network
c) Personal Area Network d) Wide Area Network

(ii) Video surveillance as a service comes under
a) Smart logistics b) Smart agriculture
c) Smart surveillance system d) None of these

(iii) Global Sensor Network is built for _____
a) Reducing cost and time for development b) Reducing cost and increasing time for development
c) Increasing cost and increasing time for development d) Increasing cost and decreasing time for development

(iv) OSI Model has how many layers?
a) 2 b) 3
c) 5 d) 7

(v) The _____ may become an important facilitator and stimulate for the modern economy.
a) e-Governments related b) Enterprise-based
c) Company based d) Business oriented platform

(vi) The structure or format of data is called
a) Syntax b) Semantics
c) Structure d) Noise

(vii) Arduino shields are also called as _____
a) Extra peripheral b) Add on modules
c) Connectivity modules d) Another Arduinos

(viii) Using _____ toy will keep interaction between toy and child.
a) Device b) Driver

c) Motor
d) Engine

(ix) HTTP protocol has ....._ way handshaking protocol

a) One
b) Two
c) Three
d) Multiple

(x) Choose the sector where IoT has its application.

a) Healthcare
b) Agriculture
c) Manufacturing
d) All of these

(xi) Name the another name of Smart Home.

a) Future Home
b) Home automation
c) Green Home
d) New Home

(xii) Choose who will use their own IoT business models.

a) PaaS
b) SaaS
c) IoT Service Provider
d) IaaS

(xiii) Write the full form of IoT.

a) Internet of Technology
b) Incorporate of Things
c) Internet of Things
d) Incorporate of Technology

(xiv) A _____ is thermally sensitive resistor that exhibits a large change in resistance.

a) Thermistor
b) Resistance Thermometer
c) Thermo couple
d) Semiconductor based sensor

(xv) _____ consists of two different metals connected at two points.

a) Thermistor
b) Resistance Thermometer
c) Thermocouple
d) Semiconductor based sensor

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Explain how do journaling file systems work, and what advantages do they offer in terms of data integrity and recovery in the event of system crashes or power failures? (3)
3. Illustrate with an example how TCP/IP protocols are used in an IoT system (e.g., smart home or industrial sensor network). (3)
4. Identify key components of an IoT system. (3)
5. Demonstrate how to connect a temperature sensor to a Raspberry Pi. (3)
6. What are edge device interfaces in the context of IoT, and how do they bridge the gap between physical devices and the digital world? (3)

OR

How do edge device interfaces enable connectivity and communication with cloud services and central IoT platforms? (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Could you elaborate on the alternatives to TCP/IP in IoT communication and when these alternatives might be preferred? (5)
8. As IoT continues to evolve, what are the emerging trends and challenges related to TCP/IP in IoT systems, and how are these being addressed? (5)
9. What role does the choice of operating system play in IoT applications, and why is it crucial to select the right OS for a specific IoT project? (5)
10. Could you elaborate on the importance of security as a design principle in IoT, and what measures should be taken to ensure the security of IoT solutions? (5)
11. Write some of the examples of IOT (5)
12. Explain the concept of edge computing in IoT communication, and how does it enhance IoT systems? How does IoT communication enable the concept of the "Internet of Things" to expand into various industries and applications? (5)

OR

How do real-time operating systems (RTOS) benefit IoT applications, and what are some examples of scenarios where an RTOS is the preferred choice for managing IoT devices? (5)

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