18076

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – M.Tech.(RA)-2024
Course Name – MOOC-Introduction to Internet of Things
Course Code - MEC30306C
(Semester III)

Full Marks : 70 **Time : 3:0 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) Define IoT
a) Internet of Telecommunication
b) Internet of Things
c) Information of Technology
d) Input of Transmission

(ii) Recall basic layers of IoT architecture
a) Kernel, Shell, User
b) Input, Process, Output
c) Perception, Network, Application
d) None of these

(iii) Define interoperability in IoT
a) Ability to connect heterogeneous systems
b) Store multimedia files
c) Increase speed of CPU
d) Control only local devices

(iv) Identify correct IoT platform supporting interoperability
a) Arduino IDE
b) Raspberry Pi
c) Zigbee standard
d) CoAP protocol

(v) Define Arduino IDE
a) Cloud service
b) Integrated Development Environment for Arduino
c) Operating System
d) Networking tool

(vi) Define pinMode function in Arduino
a) Set direction of pin
b) Transmit sensor data
c) Initialize serial monitor
d) Connect Wi-Fi

(vii) Recognize function of digitalWrite in Arduino
a) Set pin HIGH/LOW
b) Print data
c) Delay program
d) Configure pin type

(viii) Differentiate Arduino and Raspberry Pi role
a) Arduino handles low-level control, Raspberry Pi handles high-level computing
b) Both same

c) Raspberry Pi for sensing, Arduino for networking
d) None

(ix) Differentiate GPIO in Arduino vs Raspberry Pi

a) Both identical
b) Raspberry Pi GPIO configurable, Arduino fixed pins
c) Arduino configurable, Raspberry Pi fixed
d) None

(x) Define M2M application

a) Cinema
b) Tourism
c) Smart metering
d) Painting

(xi) Identify the secure design feature in WSN

a) Printing
b) Authentication
c) Gaming
d) Animation

(xii) Analyze difference between flat and hierarchical WSN

a) Flat treats all nodes equal, hierarchical uses clusters
b) Both same
c) None of these
d) Hierarchical treats equal, flat uses clusters

(xiii) Compare energy-efficient routing vs flooding in WSN

a) Flooding saves power, efficient wastes
b) Energy-efficient saves power, flooding wastes energy
c) Both same
d) None of these

(xiv) Analyze difference between Cloud and Fog computing

a) Fog closer to devices, Cloud centralized
b) Both same
c) None
d) Cloud closer, Fog centralized

(xv) Recognize benefit of IIoT

a) Automation and efficiency
b) Film making
c) Art decoration
d) Music concert

Group-B

(Short Answer Type Questions) 3 x 10=30

2. Summarize the role of sensors in IoT systems. (3)
3. Summarize advantages of Python in IoT programming. (3)
4. Differentiate Python use in Raspberry Pi from Arduino programming. (3)
5. Describe the role of LPWAN in M2M. (3)
6. Explain the challenges of SDN deployment in IoT. (3)
7. Outline the applications of smart homes. (3)
8. Differentiate fog computing and cloud computing. (3)
9. Explain the purpose of smart meters in smart grids. (3)
10. Explain the function of IoT in telemedicine. (3)
11. Differentiate sensor-based communication architectures. (3)

OR

Analyze the constraints in IoT device communication. (3)

Group-C

(Long Answer Type Questions) 5 x 5=25

12. Examine the limitations of Arduino compared to Raspberry Pi. (5)
13. Summarize the role of security in sensor networks. (5)
14. Evaluate the contribution of cloud computing in IoT ecosystems. (5)
15. Summarize the role of IoT in smart grid development. (5)
16. Analyze the significance of CoAP in constrained IoT applications. (5)

OR

Examine the challenges of deploying large-scale IoT sensor networks. (5)

****