Term End Examination 2023-2024
Programme – MCA-2022
Course Name – Internet of Things and Data Analytics
Course Code - MCA402A
(Semester IV)

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)   Which technology driver is a cellular network technology that provides high-speed, low-latency connectivity and is anticipated to play a crucial role in connecting a massive number of devices in the IoT ecosystem?

a) 3G   b) 4G LTE
c) 5G   d) GSM

(ii) Examine the use of IoT contribute to sustainability goals in smart cities.

a) Increased Energy Consumption   b) Improved Traffic Congestion
c) Reduced Waste Management Efficiency   d) Limited Environmental Monitoring

(iii) Identify, which wireless technology is often associated with short-range communication and low-power consumption in WSNs?

a) Wi-Fi   b) Zigbee
c) LTE (Long-Term Evolution)   d) 3G (Third Generation)

(iv) Assess the primary function of RFID technology.

a) Voice recognition   b) Contactless identification and tracking of objects
c) Satellite communication   d) Television broadcasting

(v)   Analyse which topology does Z-Wave use for communication between devices?

a) Bus Topology   b) Star Topology
c) Ring Topology   d) Mesh Topology

(vi) What does Nimbits provide connectivity between?

a) Websites   b) Devices using data points
c) Cloud computing architectures   d) IoT legislation and regulations

(vii) Infer the two pillars of web applications and the Internet revolution.

a) HTML and FTP   b) HTTP and XML
c) HTML/HTTP/URL and application servers   d) Java and JavaScript

(viii) Choose the correct version of HTML used for building WoT applications.

a) HTML2   b) HTML3
c) HTML4   d) HTML5

(ix) Discover the primary focus of the Smart Composables Internet of Things concept.

a) Industrial automation   b) Recycling of physical objects

c) Knowledge support for object composition   d) Augmentation of virtual reality

(x) Determine the connection between telemetry and Internet of Things (IoT).

a) It is an outdated technology replaced by IoT.   b) It is a precursor and integral part of IoT.

c) It is a subset of IoT used only in military applications.   d) It is unrelated to IoT as it predates modern digital technologies.

(xi) Choose the correct answer: The main strength of Composables in the Smart Composables Internet of Things is depended on.

a) Providing context-aware querying capabilities   b) Enabling bidirectional data exchange between objects

c) Encouraging creativity in composing and decomposing objects   d) Facilitating domain-specific smart object creation

(xii) Compare and contrast simple linear regression and polynomial regression in terms of their ability to model complex relationships in data.

a) Simple linear regression is more flexible than polynomial regression.   b) Polynomial regression can capture non-linear relationships better than simple linear regression.

c) Both simple linear regression and polynomial regression are equally effective in modeling complex relationships.   d) Polynomial regression is less prone to overfitting compared to simple linear regression.

(xiii) What is a sparse model in the context of IoT data analytics?

a) A model that uses a small amount of data   b) A model that employs complex algorithms

c) Because they can handle large volumes of data efficiently   d) Because they are easier to interpret and understand

(xiv) How can sparse models be applied in IoT sensor data analysis? Discover it.

a) By incorporating all available sensor data into the model   b) By selecting only the most relevant sensor data for analysis

c) By ignoring sensor data altogether   d) By using pre-trained models without modification

(xv) Why is it important to assess the quality of clusters in clustering analysis? Select the correct answer.

a) To determine the computational resources required for clustering   b) To identify the most suitable clustering algorithm for a specific dataset

c) To evaluate the effectiveness and reliability of the clustering results   d) To establish the optimal number of clusters for a given dataset

Group-B
(Short Answer Type Questions)   3 x 5=15

2. Describe some applications of Open Interconnect Consortium(OIC).   (3)
3. List out the significance of Internet of Things(IoT).   (3)
4. Illustrate the importance of governance in managing IoT ecosystems.   (3)
5. Appraise the significance of unified data standards in IoT ecosystems.   (3)
6. Compare and contrast the assumptions underlying simple linear regression and multiple regression, highlighting how violations of these assumptions can affect the reliability of the regression results.   (3)

OR

Analyze the differences between unsupervised and supervised learning approaches.   (3)

Group-C
(Long Answer Type Questions)   5 x 6=30

7. Review the potential societal implications of IoT in healthcare applications.   (5)
8. Explain the concept of ubiquitous computing and its relationship with the Internet of Things.   (5)
9. Interpret the advantages of Zigbee's mesh network architecture in IoT applications.   (5)
10. Explain the concept of brownfield use cases in the context of IoT technology and how they contribute to the evolution of Industry 4.0.   (5)
11. Identify the types of problems in IoT data analytics where Random Forest is commonly applied.   (5)
12. List out various functions and technologies involved in business intelligence (BI) and decision support systems (DSS), highlighting their significance in IoT applications.   (5)
OR
Illustrate the role of the IoT bus in integrating data from IoT adaptors, and discuss its significance in achieving seamless communication within the WoT architecture.   (5)

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