

Roll. No.

Question Booklet Number

Ö.M.R. Serial No.

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600122

B.C.A. (SEM.-VI) (NEP) EXAMINATION, 2024
COMPUTER APPLICATION
(Internet of Things)

[BCA-6002]

Paper Code						
Z	2	0	0	0	7	4

Time : 1 : 30 Hours

Question Booklet
Series
B

Max. Marks : 75

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.
4. Four alternative answers are mentioned for each question as - A, B, C & D in the booklet. The candidate has to choose the correct / answer and mark the same in the OMR Answer-Sheet as per the direction:

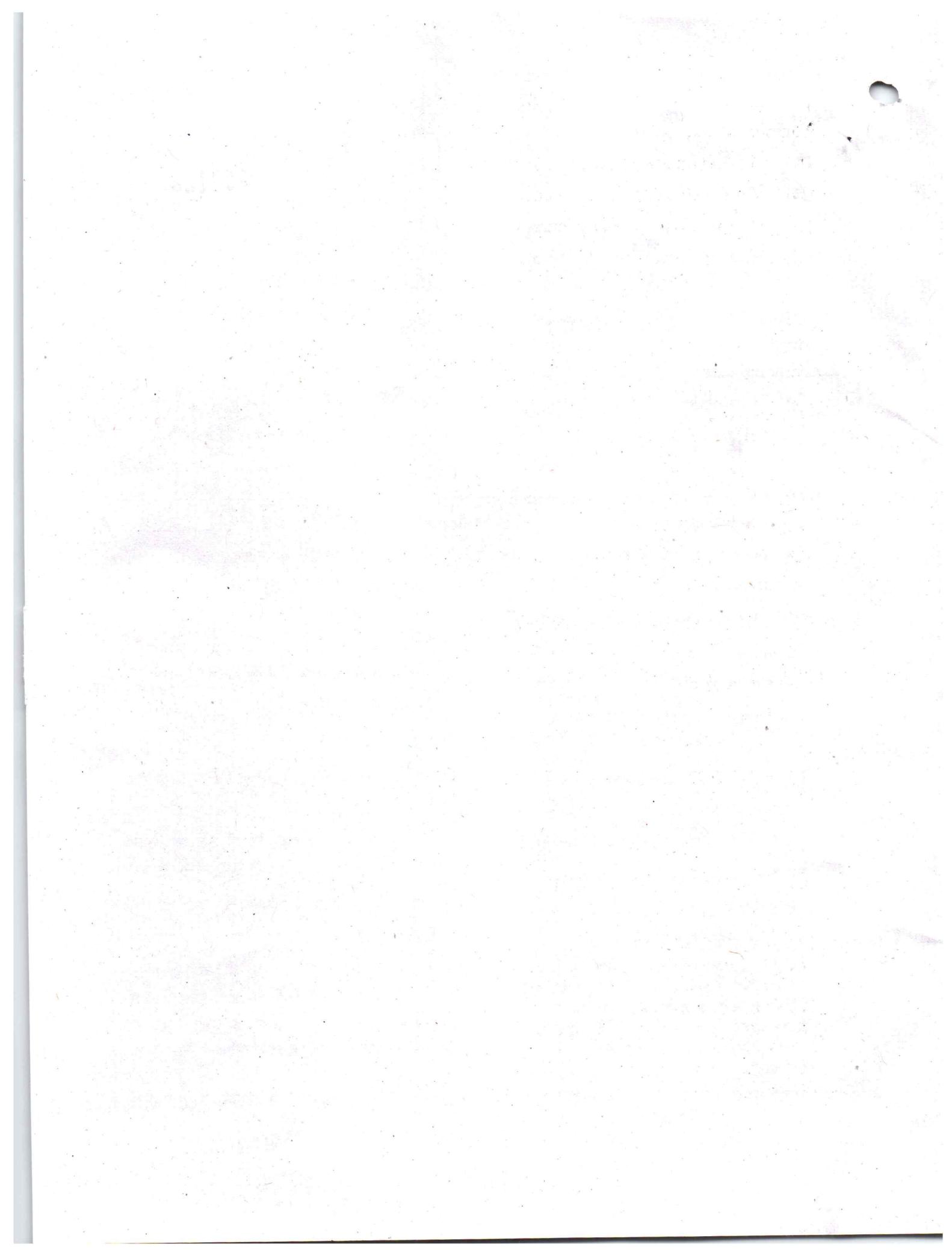
(Remaining instructions on last page)

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हौं या प्रश्न एक से आधिक बार छप गए हैं या उसमें किसी अन्य प्रकार की कमी हो, उसे तुरन्त बदल लें।
4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर- A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छाँटना है। उत्तर को OMR उत्तर-पत्रक में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

(शेष निर्देश अन्तिम पृष्ठ पर)

SE



1. What role does power efficiency play in the selection of hardware components for IoT applications?
 - (A) Impact on data security
 - (B) Influence on device lifespan
 - (C) Correlation with data accuracy
 - (D) Relationship with network speed
2. What is a common issue related to the wireless medium access in IoT communication?
 - (A) Limited battery life of devices
 - (B) High security protocols
 - (C) Large bandwidth availability
 - (D) Low data transmission speed
3. Which MAC protocol is commonly used in IoT networks for low power consumption?
 - (A) Carrier Sense Multiple Access (CSMA)
 - (B) Time Division Multiple Access (TDMA)
 - (C) Code Division Multiple Access (CDMA)
 - (D) Frequency Division Multiple Access (FDMA)
4. What is a primary concern when surveying routing protocols for IoT applications?
 - (A) Scalability
 - (B) Software compatibility
 - (C) Hardware complexity
 - (D) Real-time data processing
5. When deploying sensors in IoT networks, what is crucial for effective coverage and data collection?
 - (A) Placing sensors in isolated areas
 - (B) Ensure sensors are tightly packed together
 - (C) Randomly scattering sensors
 - (D) Strategic sensor placement
6. What is a key challenge associated with node discovery in IoT environments?
 - (A) Limited network congestion
 - (B) Quick identification of nearby nodes
 - (C) Nodes being too easily detectable
 - (D) Node mobility
7. In IoT, which type of routing protocol is commonly used for constrained devices with low power?
 - (A) Proactive
 - (B) Reactive
 - (C) Hybrid
 - (D) Static
8. What is a disadvantage of using contention-based MAC protocols in IoT networks?
 - (A) Low energy efficiency
 - (B) High collision rates
 - (C) Simplified device synchronization
 - (D) Increased data throughput

9. Which technology in IoT is used for the unique identification and tracking of items using radio waves?
- (A) NFC (Near Field Communication)
(B) Bluetooth
(C) RFID (Radio Frequency Identification)
(D) GPS (Global Positioning System)
10. What type of networks are commonly used in IoT for connecting various devices wirelessly?
- (A) Local Area Networks (LANs)
(B) Wide Area Networks (WANs)
(C) Wireless Sensor Networks (WSNs)
(D) Metropolitan Area Networks (MANs)
11. Participatory sensing technology in IoT involves:
- (A) Passive data collection by sensors
(B) Active involvement of users in data collection
(C) Centralized data processing
(D) Real-time data transmission
12. Which of the following is NOT an example of an embedded computing basic in the context of IoT?
- (A) Microcontrollers
(B) Sensors
13. What is the primary role of hardware platforms in IoT ecosystems?
- (A) Data analysis and interpretation
(B) Physical computing and data collection
(C) Cloud storage management
(D) Software development
14. Which type of embedded platform is specifically designed to support IoT applications and technologies?
- (A) Wearable devices
(B) Smartphones
(C) Single-board computers
(D) Gaming consoles
15. What does an embedded computing system use to interact with the outside world?
- (A) Bluetooth
(B) GPIO (General Purpose Input/Output) pins
(C) USB ports
(D) HDMI cables
16. In IoT, what is the purpose of a power management system in embedded platforms?
- (A) Data encryption
(B) Ensuring data integrity
(C) Regulating power consumption
(D) Communication with cloud servers

17. Which MAC protocol is known for its simplicity and effectiveness in IoT networks with low traffic?
- (A) Token Passing
 - (B) Pure ALOHA
 - (C) Reservation ALOHA
 - (D) Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA)
18. What is a benefit of using proactive routing protocols in IoT networks?
- (A) Reduced control message overhead
 - (B) Minimal routing table maintenance
 - (C) Quick response to network changes
 - (D) Low initial setup complexity
19. When choosing a MAC protocol for IoT, what impact does contention-based protocols have on network efficiency?
- (A) Higher energy consumption
 - (B) Lower collision rates
 - (C) Improved real-time data transmission
 - (D) Enhanced scalability
20. How does node discovery contribute to energy efficiency in IoT networks?
- (A) Reducing redundant data transmissions
 - (B) Increasing network bandwidth
 - (C) Extending device battery life
 - (D) Enhancing data encryption
21. Which factor is crucial for successful deployment of IoT sensor nodes?
- (A) Strong device authentication
 - (B) Regular security updates
 - (C) Continuous data backups
 - (D) Adequate power supply
22. What is a common example of a home automation application using IoT technology?
- (A) Automated lighting systems
 - (B) Bicycle manufacturing
 - (C) Agricultural irrigation systems
 - (D) Airline reservation systems
23. Which of the following is an industry application of IoT?
- (A) Smart refrigerators
 - (B) Online gaming platforms
 - (C) Predictive maintenance in manufacturing equipment
 - (D) Social media networks
24. What is a common surveillance application of IoT technology?
- (A) Smart thermostats
 - (B) GPS navigation
 - (C) Video monitoring systems
 - (D) E-commerce platforms
25. Which of the following is NOT typically considered an IoT application?
- (A) Traffic management systems
 - (B) Wearable health devices
 - (C) Music streaming services
 - (D) Smart grid technology

26. What is a critical aspect of securing IoT devices?
- (A) Keeping all security measures secret
 - (B) Ignoring security concerns
 - (C) Regularly updating device software and implementing strong authentication
 - (D) Blaming security breaches on aliens
27. Which technology is fundamental for enabling IoT applications in remote locations?
- (A) Invisible ink
 - (B) Satellite communication
 - (C) Carrier pigeons
 - (D) Telepathy
28. What does the term 'Edge Computing' refer to in IoT?
- (A) Performing data processing closer to the data source
 - (B) Balancing on the edge of tall buildings
 - (C) Creating data processing centers in outer space
 - (D) Using a knife to cut your internet connection
29. Which of the following is an example of wearable IoT technology?
- (A) Smartwatches
 - (B) Wooden clogs
30. What is the primary purpose of IoT technology in agriculture?
- (A) Making farmers' lives more complicated
 - (B) Improving crop management and increasing efficiency
 - (C) Teaching cows to dance
 - (D) Broadcasting karaoke shows in the fields
31. What type of technology is commonly used in IoT for detecting and monitoring physical phenomena?
- (A) Sensors
 - (B) Transistors
 - (C) Resistors
 - (D) Amplifiers
32. Which of the following is an example of a digital sensor used in IoT applications?
- (A) Thermocouple
 - (B) Photodiode
 - (C) Accelerometer
 - (D) Light-dependent resistor
33. In the context of IoT, what are actuators primarily responsible for?
- (A) Collecting data
 - (B) Processing data
 - (C) Storing data
 - (D) Executing actions

34. Which factor is essential to consider when planning sensor deployment in IoT systems?
- (A) Network latency
 - (B) Encrypted data transmission
 - (C) Sensory data storage capacity
 - (D) Communication range
35. When selecting a MAC protocol for an IoT network, what should be a priority for high device connectivity?
- (A) Low latency
 - (B) High channel capacity
 - (C) Device synchronization
 - (D) Energy efficiency
36. What is a critical consideration when evaluating the performance of routing protocols in IoT?
- (A) Number of network devices
 - (B) Distance between nodes
 - (C) Network topology changes
 - (D) Data encryption methods
37. Which routing protocol is designed to address the dynamic nature and scalability of IoT networks?
- (A) Optimized Link State Routing (OLSR)
 - (B) Destination-Sequenced Distance Vector (DSDV)
 - (C) Ad hoc On-Demand Distance Vector (AODV)
 - (D) Routing Information Protocol (RIP)
38. What is a common characteristic of sensor nodes in IoT applications?
- (A) High processing power
 - (B) Large memory storage
 - (C) Long battery life
 - (D) Limited processing and memory resources
39. Why is node discovery important in IoT networks?
- (A) To prevent unauthorized network access
 - (B) To optimize network security
 - (C) To establish network connectivity
 - (D) To reduce data latency
40. In IoT, which routing protocol is more suitable for networks with changing topologies?
- (A) Distance Vector
 - (B) Link State
 - (C) Hybrid
 - (D) Proactive
41. When deploying sensors in urban environments for IoT applications, what should be considered to enhance communication reliability?
- (A) Close proximity to water sources
 - (B) Avoiding line of sight communication
 - (C) Height of sensor placement
 - (D) Random sensor placement

42. How does IoT impact data collection and analysis?
- (A) It makes data collection and analysis more difficult
 - (B) It has no impact on data processes
 - (C) It enhances data collection and analysis capabilities
 - (D) It only works on weekends
43. What does the conceptual framework of IoT outline?
- (A) The best IoT memes
 - (B) The theoretical structure and design of IoT systems
 - (C) The rules of IoT chess
 - (D) The history of IoT legends
44. Which statement best describes the vision of IoT?
- (A) To connect all devices and objects to the internet
 - (B) To disconnect all devices from the internet
 - (C) To create more confusion in the world
 - (D) To move all devices to outer space
45. What is the significance of the architectural view in IoT systems?
- (A) It provides a physical model for IoT devices
 - (B) It offers a blueprint for designing IoT networks
46. Which sector benefits most from IoT applications?
- (A) Everything but the healthcare sector
 - (B) Only the fashion industry
 - (C) Various industries like healthcare, agriculture, and transportation
 - (D) The bubble gum industry
47. How do IoT devices communicate with each other?
- (A) Through telepathy
 - (B) Via carrier pigeons
 - (C) Over a network using protocols
 - (D) Through interpretive dance
48. What role do sensors play in IoT systems?
- (A) Collecting data from the environment
 - (B) Making toast
 - (C) Predicting the future
 - (D) Creating chaos
49. Which phrase best describes the concept of 'smart cities' in the context of IoT?
- (A) Cities that know all your secrets
 - (B) Urban areas that use IoT technologies to improve services and efficiency
 - (C) Cities made of candy
 - (D) Cities run entirely by robots

50. How does IoT technology contribute to environmental sustainability?
- (A) By increasing waste production
(B) By optimizing energy consumption
(C) By depleting natural resources
(D) By encouraging pollution
51. Which of the following is a benefit of using IoT in supply chain management?
- (A) Decreased visibility into logistics
(B) Increased operational inefficiencies
(C) Improved inventory tracking
(D) Limited access to real-time data
52. In which sector are smart meters commonly used as an IoT application?
- (A) Entertainment
(B) Telecommunications
(C) Utilities
(D) Hospitality
53. What is a common smart city application of IoT technology?
- (A) Noise pollution sensors
54. Which industry often utilizes IoT for condition monitoring of equipment?
- (A) Fashion
(B) Mining
(C) Travel
(D) Food service
55. How does IoT technology facilitate remote monitoring in the field of oil and gas?
- (A) By reducing safety measures
(B) By enabling real-time data collection
(C) By increasing manual inspections
(D) By limiting communication channels
56. What is an example of an IoT application in smart grid technology?
- (A) Professional sports leagues
(B) Traffic light control systems
(C) Real-time energy consumption monitoring
(D) Social networking sites

57. Why is data integration important in IoT architecture?
- (A) To create data silos
 - (B) To increase complexity
 - (C) To enhance decision-making and insights
 - (D) To hinder communication
58. How do standards considerations impact the scalability of IoT solutions?
- (A) They have no effect
 - (B) They limit scalability
 - (C) They promote interoperability and scalability
 - (D) They increase security risks
59. Which architectural approach is more focused on real-time data processing?
- (A) IoT
 - (B) M2M
 - (C) Both are equally focused on real-time processing
 - (D) Neither focus on real-time data processing
60. What does IoT stand for?
- (A) Internet of Technology
 - (B) Internet of Things
 - (C) Internet on Television
 - (D) Internet of Thinking
61. Which of the following is a key component of IoT architecture?
- (A) Microprocessors
 - (B) Cooking utensils
 - (C) Musical instruments
 - (D) Gardening tools
62. What is M2M communication in the context of IoT?
- (A) Man to Man communication
 - (B) Machine to Machine communication
 - (C) Mind to Mind communication
 - (D) Map to Map communication
63. Which technology is commonly used for wireless communication in IoT devices?
- (A) Morse Code
 - (B) Zigbee
 - (C) Smoke Signals
 - (D) Carrier Pigeons
64. Which of the following is NOT a potential source of IoT data?
- (A) Sensors
 - (B) Smartphones
 - (C) Social Media
 - (D) Refrigerators
65. In the IoT world, what does the 'Internet' refer to?
- (A) A vast network of interconnected computers
 - (B) A series of tubes
 - (C) A secret underground society
 - (D) A magical portal
66. What is a common example of IoT technology in everyday life?
- (A) Smart thermostats
 - (B) Manual typewriters
 - (C) Horse-drawn carriages
 - (D) Abacus

67. In which industry is IoT technology commonly used for asset tracking?
- (A) Fashion
 - (B) Healthcare
 - (C) Logistics
 - (D) Tourism
68. What is an example of an IoT application in healthcare?
- (A) Online shopping platforms
 - (B) Remote patient monitoring
 - (C) Weather forecasting
 - (D) Ride-sharing services
69. How does IoT technology enhance energy efficiency in buildings?
- (A) By increasing water consumption
 - (B) By optimizing HVAC systems based on occupancy
 - (C) By promoting excessive energy consumption
 - (D) By encouraging paper wastage
70. What is a key benefit of using IoT in agriculture?
- (A) Increased water usage
 - (B) Improved crop monitoring and management
 - (C) Decreased food production
 - (D) Enhanced soil erosion
71. Which of the following is an example of an industrial IoT use case?
- (A) Inventory management in retail stores
 - (B) Personal fitness trackers
- (C) Fleet management for transportation companies
- (D) Social media applications
72. What is a potential challenge of implementing IoT in smart cities?
- (A) Improved traffic flow
 - (B) Increased safety measures
 - (C) Privacy and security concerns
 - (D) Enhanced communication networks
73. Which industry commonly utilizes IoT for predictive maintenance of machinery?
- (A) Agriculture
 - (B) Construction
 - (C) Manufacturing
 - (D) Entertainment
74. What is a unique feature of IoT applications in the automotive industry?
- (A) Monitoring heart rate
 - (B) Autonomous driving technologies
 - (C) Weather forecasting
 - (D) Food delivery services
75. What is an example of an IoT application in retail?
- (A) Real-time inventory tracking
 - (B) Recipe sharing platforms
 - (C) Fitness tracking apps
 - (D) Online dating websites

76. Which of the following is NOT a typical capability needed in an IoT architecture?
- (A) Real-time data analytics
 - (B) Device management
 - (C) Unlimited energy usage
 - (D) Remote monitoring
77. What should be considered when outlining an IoT architecture with regards to security?
- (A) Security is not important in IoT
 - (B) Security should be an afterthought
 - (C) Security should be integrated from the beginning
 - (D) Security can be added at the end
78. Which of the following is a common standard in IoT technology?
- (A) Non-standardized communication protocols
 - (B) Vendor-specific solutions
 - (C) Wi-Fi and Bluetooth only
 - (D) MQTT and CoAP
79. What is the main benefit of having a Reference Architecture in IoT?
- (A) It limits scalability
 - (B) It restricts communication
 - (C) It provides a common framework for development
 - (D) It increases complexity
80. How does a Reference Model aid in the development of IoT solutions?
- (A) It provides no value
- (B) It increases security risks
- (C) It helps to establish common terminology and concepts
- (D) It causes confusion
81. In M2M vs IoT architecture, which tends to have more diverse devices to manage?
- (A) M2M
 - (B) IoT
 - (C) Both have the same amount
 - (D) Neither have any devices to manage
82. Which of the following is NOT a primary consideration in M2M vs IoT architectural design?
- (A) Scalability
 - (B) Security
 - (C) Data Privacy
 - (D) Consumption of data
83. What plays a crucial role in the success of IoT deployments?
- (A) Non-standardized communication
 - (B) Limited connectivity
 - (C) Standardized architectures and interfaces
 - (D) Vendor lock-in
84. What is a key challenge when developing an M2M architecture?
- (A) Enabling device communication
 - (B) Managing data flow
 - (C) Ensuring low latency
 - (D) None of the above

85. Which of the following is an example of an IoT supported hardware platform that provides a comprehensive development environment?
- (A) Arduino
 - (B) PlayStation
 - (C) Laptop
 - (D) Smartwatch
86. What hardware component is essential for an embedded device to communicate wirelessly in IoT applications?
- (A) Antenna
 - (B) Fan
 - (C) Thermal paste
 - (D) Power supply
87. In the context of IoT, what role does a real-time operating system (RTOS) play in embedded platforms?
- (A) Providing high-speed internet connectivity
 - (B) Enabling real-time data processing
 - (C) Enhancing graphic performance
 - (D) Improving battery life
88. Which of the following statements is true about the use of firmware in embedded systems for IoT?
- (A) Firmware is non-upgradable and static
 - (B) Firmware controls the operation of hardware components
89. What is a key advantage of using embedded computing platforms for IoT applications?
- (A) Unlimited power supply
 - (B) High processing speed
 - (C) Large form factor
 - (D) Cost-effectiveness
90. Which hardware component is crucial for enabling data storage and retrieval in IoT devices?
- (A) Microphone
 - (B) Hard drive
 - (C) Graphics card
 - (D) Memory module
91. How do IoT devices utilize sensors and actuators for data acquisition and implementation?
- (A) Sensors for data storage, actuators for data retrieval
 - (B) Sensors for data processing, actuators for data analysis
 - (C) Sensors for data collection, actuators for executing actions
 - (D) Sensors for data transmission, actuators for communication
92. Which networking technology is commonly used for connecting IoT devices over short distances?
- (A) Ethernet
 - (B) Wi-Fi
 - (C) Zigbee
 - (D) Cellular

93. What is a key main design principle for M2M architecture?
- (A) Low latency
 - (B) High energy consumption
 - (C) Limited scalability
 - (D) Centralized data processing
94. Which of the following is a needed capability in IoT architecture?
- (A) Decreased data security
 - (B) High device autonomy
 - (C) Standardized communication protocols
 - (D) Singular data processing center
95. In IoT architecture outline, what is a common approach to data communication?
- (A) Decentralized data processing
 - (B) High accessibility barriers
 - (C) Centralized data storage
 - (D) Low device interoperability
96. When considering standards in IoT architecture, why are they important?
- (A) To limit innovation
 - (B) To hinder interoperability
 - (C) To ensure security and compatibility
 - (D) To increase data silos
97. Which of the following best describes a Reference Architecture in IoT?
- (A) A highly customized solution
- for each organization
- (B) A generic blueprint providing common structures and functions
 - (C) A rigid framework without flexibility
 - (D) An isolated system with no connectivity
98. What is the purpose of a Reference Model in IoT architecture?
- (A) To confuse system developers
 - (B) To restrict design options
 - (C) To provide a common language and understanding
 - (D) To stifle creativity
99. What does M2M stand for in the context of Architecture?
- (A) Many to Many
 - (B) Mini to Massive
 - (C) Machine to Machine
 - (D) Mobile to Mobile
100. How do Main design principles differ between M2M and IoT architectures?
- (A) They are exactly the same
 - (B) M2M focuses more on security, while IoT focuses on scalability
 - (C) IoT is all about energy consumption, while M2M is not
 - (D) There are no design principles in IoT architecture

Rough Work

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(15)

Example :

Question :

Q.1 A ● C D

Q.2 A B ● D

Q.3 A ● C D

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination, candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager & cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

उदाहरण :

प्रश्न :

प्रश्न 1 A ● C D

प्रश्न 2 A B ● D

प्रश्न 3 A ● C D

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निरेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैल्कुलेटर, पेजर तथा सेल्फुलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण: प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।