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**B.Tech DEGREE EXAMINATION, NOVEMBER 2023**

### Fifth Semester

## 18CSE345T - INTERNET OF THINGS ARCHITECTURE AND PROTOCOLS

(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)

**Note:**

- i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40<sup>th</sup> minute.
- ii. **Part - B** and **Part - C** should be answered in answer booklet.

**Time: 3 Hours****Max. Marks: 100**

**PART - A (20 × 1 = 20 Marks)**

**Answer all Questions**

PART - A (20 × 1 = 20 Marks)		Marks	BL	CO
Answer all Questions				
1.	Which of the following is NOT a function of an IoT gateway? (A) Switching (B) Routing (C) Protocol conversion (D) Key generation and distribution	1	1	1
2.	Which of the following statement is/are NOT a characteristic of IoT? Statement I: Efficient, scalable and associated architecture. Statement II: Ambiguous naming and addressing. Statement III: Abundance of sleeping nodes, mobile and non-IP devices. (A) Only Statement I (B) Statement I & III (C) Only statement III (D) Statement I, II and III	1	1	1
3.	After the data from various inputs has been combined together, _____ section of the information value chain creates information components. (A) Processing (B) Packaging (C) Production (D) Marketing	1	1	1
4.	Which device provides feature device management and an execution environment for hosting multiple applications? (A) Single (B) Multiple (C) Simple (D) Advanced	1	1	2
5.	Which of the following has the overwhelming majority of M2M data is of temporal nature, measuring the environment over time? (A) Big data (B) Heterogeneous data (C) Temporal Data (D) Spatial Data	1	1	2
6.	The _____ system usually communicate with distributed devices over wired or wireless links to acquire the needed data, and need to respect security, protocol, and application requirements. (A) Data Generation (B) Data acquisition (C) Data Validation (D) Data Storage	1	1	3
7.	_____ uses means, variances, maxima, minima, aggregates, and frequencies, optionally grouped by selected characteristics. (A) Descriptive Analytics (B) Predictive Analytics (C) Clustering (D) Anomaly Detection	1	1	3
8.	Identify the interface that provides MTC devices access to the 3GPP network for the transport of user traffic. (A) MTCu (B) MTCi (C) MTCsms (D) MTCz	1	1	2

- |     |  |   |   |   |
|-----|--|---|---|---|
| 9.  | Identify the tag that has broad applications, including the rapid collection of data in commercial environments?   | 1 | 1 | 3 |
|     | (A) MRP (B) JIT  |   |   |   |
|     | (C) EDI (D) RFID   |   |   |   |
| 10. | Identify the wireless technology where stations need to "contend," or compete, for their chance to send a frame over the air.  | 1 | 1 | 3 |
|     | (A) Wi-Fi (B) Wi-Max   |   |   |   |
|     | (C) Bluetooth (D) Z-Wave   |   |   |   |
| 11. | The routing protocols that have low routing overhead, balanced with topology changes and power conservation is _____.  | 1 | 1 | 4 |
|     | (A) Zigbee (B) 6LoWPAN   |   |   |   |
|     | (C) ZigbeeIP (D) Wireless HART   |   |   |   |
| 12. | _____ is a part of IP, that pings to check the live status and helps to maintain, check the TCP session.   | 1 | 1 | 4 |
|     | (A) ICMP (B) DHCP  |   |   |   |
|     | (C) SMTP (D) SOAP  |   |   |   |
| 13. | _____ association means that sessions stay up once in place because the communications overhead necessary to keep a session established is much less than is involved in opening and closing many separate sessions over the same time period. | 1 | 1 | 4 |
|     | (A) Short (B) Medium   |   |   |   |
|     | (C) Very short (D) Long  |   |   |   |
| 14. | CoAP over _____ as defined in Open Mobile Alliance for Lightweight Machine-to-Machine (LWM2M) for IoT device management is also being considered.  | 1 | 1 | 4 |
|     | (A) SMS (B) MMS  |   |   |   |
|     | (C) GPS (D) GPRS   |   |   |   |
| 15. | The role of _____ is to connect to the message broker and publish content  | 1 | 1 | 4 |
|     | (A) Publisher (B) Subscriber   |   |   |   |
|     | (C) Implementer (D) Message Broker   |   |   |   |
| 16. | Which stanza is used to send asynchronous messages to a given receiver?  | 1 | 1 | 4 |
|     | (A) Presence (B) Message   |   |   |   |
|     | (C) iq (D) id  |   |   |   |
| 17. | The M2M _____ may also provide services to other legacy devices that are not visible to the Network Domain.  | 1 | 1 | 5 |
|     | (A) Device (B) Gateway   |   |   |   |
|     | (C) Area Network (D) Service Capabilities  |   |   |   |
| 18. | The way to gain access to a system is to try and impersonate a server component in a system instead of a client is often referred to as a _____ attack.  | 1 | 1 | 6 |
|     | (A) DOS (B) Man in Middle  |   |   |   |
|     | (C) Sniff (D) Web Crawl  |   |   |   |
| 19. | Devices cannot make any decision about who sees the published data or who makes a request since identities are stripped away by the _____ protocol.  | 1 | 1 | 5 |
|     | (A) XMPP (B) MQTT  |   |   |   |
|     | (C) COAP (D) XMPL  |   |   |   |
| 20. | The MAC layer achieves synchronization by using the _____ frame used in the transmission of beacons from a PAN coordinator.  | 1 | 1 | 5 |
|     | (A) Data (B) Beacon  |   |   |   |
|     | (C) Acknowledgement (D) MAC Control  |   |   |   |

**PART - B (5 × 4 = 20 Marks)**

Answer **any 5** Questions

Marks BL CO

21. To what extent does the security and trust play a major role in IoT? List out the components mentioned in the trust model.	4	2	1
22. Summarizes the term 4V's.	4	2	2
23. Analyze the Hidden station problem in detail.	4	4	2
24. Compare LWM2M and NB-IoT.	4	1	3
25. Distinguish between TCP and UDP.	4	2	5
26. List the fields mentioned in UDP header and outline about each field.	4	2	4
27. Show and discuss the diagrammatic representation of M2M architecture framework.	4	2	6

**PART - C (5 × 12 = 60 Marks)**

Answer **all** Questions

**Marks BL CO**

28. (a) Discuss in detail about the IoT value chains.	12	2	1
<b>(OR)</b>			
(b) Justify the need of LAN and WAN with examples. Also outline the benefits and limitations of each.			
29. (a) Define knowledge management. List out the discovery tools and data present in knowledge management with explanation.	12	2	2
<b>(OR)</b>			
(b) Illustrate the concepts of Bluetooth and Bluetooth Low Energy.			
30. (a) Examine in detail about the concepts of Wi-Fi and PLC.	12	4	3
<b>(OR)</b>			
(b) Summarize the Network layer routing protocols mentioned in the IPV4 version of internet.			
31. (a) "A single host with a single IP address can able to communicate with multiple servers". Justify the statement and summarize the concept of transport layer in detail.	12	3	4
<b>(OR)</b>			
(b) What are the functions of session layer? Demonstrate how HTTP is related to it.			
32. (a) Explain the concepts of Modes of Attack in DOS, Getting Access, Guess, Man in middle Attack, and Breaking Cipher.	12	2	6
<b>(OR)</b>			
(b) Describe the term security mode in MAC 802.15.4 standards.			

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