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Total Printed Pages -8

**F - 1027**

**M.Sc. (Fourth Semester)  
EXAMINATION, May - June, 2022**

**COMPUTER SCIENCE**

**Paper Third**

**(Internet of Things)**

*Time : Three Hours]*

*[Maximum Marks:100*

*[Minimum Pass Marks:40*

**Note: Attempt all sections as directed.**

**(Section - A)**

**(Objective/Multiple Choice Questions)**

**(1 mark each)**

**Note: Attempt all questions: Choose the correct answer:**

1. Who coined the term "Internet of Things"?
  - (A) Kevin Aston
  - (B) John Wright
  - (C) Edward Jameson
  - (D) George Gorton

[2]

2. Which of the following is not an IoT device?
  - (A) Table
  - (B) Laptop
  - (C) Arduino
  - (D) Tablet
3. Which of the following is false about IoT devices?
  - (A) IoT devices use the internet for collecting and sharing data
  - (B) IoT devices need microcontrollers
  - (C) IoT devices use wireless technology
  - (D) IoT devices are completely safe
4. Which of the following is not an application of IoT?
  - (A) BMP280
  - (B) Smart home
  - (C) Smart city
  - (D) Self driven cars
5. What is the standard port number of secure MQTT?
  - (A) 1883
  - (B) 8000
  - (C) 8883
  - (D) 8888

P.T.O.

**F - 1027**

[3]

6. Which of the following Layers provides end to end communication in IoT
  - (A) Logical layer
  - (B) Data link layer
  - (C) Transport layer
  - (D) Session layer
7. Which of the following protocols does not exist at the data link layer?
  - (A) ZigBee Smart Energy
  - (B) LoRaWAN
  - (C) Wireless HART
  - (D) Secure MQTT
8. The standard length of MAC address is-
  - (A) 16 bits
  - (B) 48 bits
  - (C) 32 bits
  - (D) 8 bits
9. Identify the language preferred for IoT analytics:
  - (A) Python
  - (B) HTML
  - (C) PHP
  - (D) C++

F - 1027

P.T.O.

[4]

10. Who operates the core element -
  - (A) PaaS
  - (B) IaaS
  - (C) IoT service provider
  - (D) SaaS
11. Identify the last step of reliable data transfer -
  - (A) Lost message detection
  - (B) Selective recovery
  - (C) Message relaying
  - (D) Initialization
12. Which of the following IoT gateway must provide?
  - (A) Protocol abstraction
  - (B) Security with hardware
  - (C) Simple and fast installation
  - (D) Data storage
13. Identify the protocol used to link all devices in IoT.
  - (A) UDP
  - (B) TCP/IP
  - (C) HTTP
  - (D) Network

F - 1027

[5]

14. Which of the following API allows the user to control electronic components?
- (A) CoAPAPI
  - (B) MQTTAPI
  - (C) RESTfulAPI
  - (D) AndroidAPI
15. The range of Z - wave is?
- (A) 30 - 100 m
  - (B) 300 - 1000 m
  - (C) < 10 m
  - (D) 100 - 1000 m
16. Internet of Things needs a lot of network connection. What is the proposed "white space" radio standard called?
- (A) Bluetooth
  - (B) WiMAX
  - (C) Weightless
  - (D) ZigBee
17. What is the sensor/protocol used in GSN?
- (A) HTTP protocol
  - (B) CoAP protocol
  - (C) MQTT protocol
  - (D) XMPP Protocol

F - 1027

P.T.O.

[6]

18. \_\_\_\_\_ is a community that is working together to establish an IoT architecture:
- (A) Eclipse IoT
  - (B) Red Hat
  - (C) Intercloud
  - (D) Bot 2 Bot
19. All portals are embedded into a single supercomputer, known as \_\_\_\_\_.
- (A) Network
  - (B) Web
  - (C) Internet
  - (D) System
20. What happens when service providers change their operating system and communication protocols?
- (A) Inoperability and complexity arises
  - (B) Only complexity arises
  - (C) Only Inoperability arises
  - (D) Nothing arises

F - 1027

[7]

**Section - B**

**(Very Short Answer Type Questions)**

**(2 marks each)**

**Note: Attempt all questions.**

1. What is XaaS?
2. Explain data representation and visualization
3. Explain IPv6.
4. Define Bluetooth low energy in IoT.
5. What is UDP?
6. What is SCTP?
7. What do you mean by knowledge management?
8. Explain DASH7.
9. What is TCP?
10. Explain Local and Wide area networking?

**Section - C**

**(Short Answer Type Questions)**

**(3 marks each)**

**Note: Attempt all questions in less than 75 words.**

1. What are the different component of IoT?
2. Explain the main design principles and needed capabilities in IoT.
3. Explain how IoT works.

**F - 1027**

**P.T.O.**

[8]

4. What do you mean by ZigBee smart energy?
5. Explain CORPL.
6. What do you understand by Constrained Application Protocol?
7. What do you know about European Telecommunications Standards Institute?
8. Explain OMA.
9. What do you mean by MQTT?
10. Explain IoT Reference Architecture.

**Section - D**

**(Long Answer Type Questions)**

**(6 marks each)**

**Note: Attempt all questions.**

1. Write the difference between IoT and M2M.
2. What do you mean by IoT Gateway? What is the role of a gateway in IoT?
3. What are different layers of the IoT protocol stack? Write the classification of IoT protocols.
4. Explain routing protocol for Low-Power and Lossy network (RPL).
5. Explain security in IoT Protocols.

**F - 1027**