

Sl. No.

**A9.4-R5 Internet of Things (IoT): A Practical Approach**

**DURATION : 03 Hours**

**MAXIMUM MARKS : 100**

**OMR Sheet No. :**

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**Roll No. :**

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**Answer Sheet No. :**

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**Name of Candidate :** \_\_\_\_\_ ; **Signature of Candidate :** \_\_\_\_\_

**INSTRUCTIONS FOR CANDIDATES :**

- Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English language only.
- There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
- **PART ONE** is Objective type and carries **40** Marks. **PART TWO** is Subjective type and carries **60** Marks.
- **PART ONE** is to be answered in the **OMR ANSWER SHEET** only, supplied with the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book for **PART TWO**.
- Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the Answer Sheet for **PART ONE** is returned. However, Candidates who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the Answer Sheet for **PART ONE** to the Invigilator.
- **Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his/her Answer Sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
- After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question Booklet is complete in all respect.

**DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.**

**PART - ONE**

**(Answer all the questions. Each question carries ONE mark)**

**1. Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "OMR" answer sheet supplied with the question paper, following instructions therein.**

**(1x10)**

**1.1** By clicking which key the PubNub will display public, subscribe, and secret keys.

- (A) Pane
- (B) Demo Keyset
- (C) Portal
- (D) Network

**1.2** I2C can be used to connect upto :

- (A) 64 nodes
- (B) 128 nodes
- (C) 256 nodes
- (D) 512 nodes

**1.3** \_\_\_\_\_ is used to visualize data collected with the sensor.

- (A) freeboard.io
- (B) Dweet.io
- (C) Dweeting
- (D) Yocto

**1.4** The message Channel class declares the \_\_\_\_\_ class attribute that defines the key string.

- (A) command\_key
- (B) command-key
- (C) commandkey
- (D) Key\_command

**1.5** freeboard.io itself defines as \_\_\_\_\_.

- (A) Data based service
- (B) Fog based service
- (C) Cloud based service
- (D) Signals based service

**1.6** MQTT stands for \_\_\_\_\_.

- (A) MQ Telemetry Things
- (B) MQ Transport Telemetry
- (C) MQ Transport Things
- (D) MQ Telemetry Transport

**1.7** Freeboard.io allows us to build \_\_\_\_\_.

- (A) Application
- (B) Dashboard
- (C) Device
- (D) Output.

- 1.8 Which application feature is a world of warcraft gadget ?
- (A) Leftronic
  - (B) Ducksboard
  - (C) Klipfolio
  - (D) Dashzen
- 1.9 Which application supports Google Spreadsheets ?
- (A) Dashzen
  - (B) Ducksboard
  - (C) Klipfolio
  - (D) Leftronic
- 1.10 Which application allows us to build data source against many types of data ?
- (A) Dashzen
  - (B) Ducksboard
  - (C) Klipfolio
  - (D) Leftronic
2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)
- 2.1 Dash supports static images.
  - 2.2 One of the main characteristics of Linked Stream Data is "Live Streaming"
  - 2.3 Open IoT ontology is extending the W3C SSN ontology which supports the description of the physical and processing structure of sensors.
  - 2.4 MQTT is better than HTTP for sending and receiving data.
  - 2.5 API's are the inter connector.
  - 2.6 Node MCU has two ADC bins.
  - 2.7 Bluetooth will drain battery life.
  - 2.8 MAC address is logical address, which uniquely identify nodes in a network.
  - 2.9 TCP/IP Protocol suite has four layers.
  - 2.10 API management system creates Secure identity.

3. Match words and phrases in column X with the closest related meaning / word(s) /phrase(s) in column Y. Enter your selection in the "OMR" answer sheet supplied with the question paper, following instructions therein.

(1x10)

X		Y	
3.1	ARQ stands for	A.	HTTP
3.2	Version 6 of IP address has how many bits	B.	1883
3.3	NFC	C.	No front column
3.4	802.11 g	D.	128
3.5	The main protocol used to access data on the world wide web (WWW)	E.	Arduino Request Query
3.6	MQTT runs at port number	F.	Near Field Communication
3.7	TCP	G.	Wireless Local Area Network
3.8	Micro controller used in Arduino Uno	H.	Automatic Repeat Request
3.9	ESP8266	I.	Connectionless protocol
3.10	UDP	J.	AT mega 328 p
		K.	Connection oriented protocol
		L.	Motion Sensor
		M.	Wi Fi Module

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Choose the most appropriate option, enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

A	Binary	B	Disconnect	C	public_key and subscribe_key	D	Reconnect
E	3	F	Callback.	G	__Init__	H	13
I	command_key	J	RESTful API	K	Keys	L	MQ Telemetry Transport
M	pullback						

- 4.1 \_\_\_\_\_ allows us to control electronic components.
- 4.2 MQTT stands for \_\_\_\_\_.
- 4.3 Digital Pin \_\_\_\_\_ is built in LED on Arduino Board.
- 4.4 Pub Nub publishes and subscribes \_\_\_\_\_ in order to send and receive messages.
- 4.5 The message Channel class declares the \_\_\_\_\_ class attribute that defines the key string.
- 4.6 \_\_\_\_\_ specifies the function that will be called when the client disconnects.
- 4.7 A domain is a set of \_\_\_\_\_ values.
- 4.8 \_\_\_\_\_ saves the publish and subscribe keys that we have generated.
- 4.9 \_\_\_\_\_ specifies the function that will be called when there is a new message received from the channel.
- 4.10 \_\_\_\_\_ method saves the received arguments in three attributes.

**PART - TWO**

**(Answer any FOUR questions)**

5. (a) What are the main parts of IoT ?  
(b) What are security concerns related to IoT ?  
(c) Explain the IoT protocol stack.  
**(5+5+5)**
6. (a) Explain the basic architecture of the IoT network.  
(b) Explain Bluetooth Low Energy protocol for an IoT.  
(c) How might Internet Address (IPv6) affect the development and implementation of the Internet of Things ?  
**(4+5+6)**
7. (a) What is the difference between a wireless sensor network (WSN) and the Internet of Things (IoT) network ?  
(b) What is meant by a smart city regarding the Internet of Things ?  
**(7+8)**

8. (a) What is Bluegiga APX4 protocol for an Internet of Things ?  
(b) What is IoT ?  
**(7+8)**
9. (a) What impacts will the Internet of Things (IoT) have on infrastructure and Smart Cities Sector ?  
(b) What role does the Network play in the Internet of Everything ?  
**(8+7)**

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SPACE FOR ROUGH WORK

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