

No. of Printed Pages : 8

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 respects.

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. What is the use of Thermostat in Nest Thermostat E ?

- (A) Save energy
- (B) Show the use of energy
- (C) Supports in some devices only
- (D) Won't work at some conditions

1.2. API architecture not only includes critical elements but also caters for _____.

- (A) System
- (B) Devices
- (C) Network
- (D) Multi homing

1.3 The huge number of devices connected to the Internet of Things has to communicate automatically, not via humans. What is this called ?

- (A) Skynet
- (B) Bot 2 Bot
- (C) Machine 2 Machines
- (D) Intercloud

1.4. What is the sensor/protocol used in GSN ?

- (A) HTTP protocol
- (B) CoAP protocol
- (C) MQTT protocol
- (D) XMPP protocol

1.5. Which is the core wrapper of GSN ?

- (A) Serial
- (B) UDP
- (C) GPS Test
- (D) ZeroMQWrapper

1.6. 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

1.7. In SOA, Service is termed as _____.

- (A) Software service
- (B) Network service
- (C) Business service
- (D) Developer service

1.8. Which layer in SOA delivers messages between applications ?

- (A) ESB (Enterprise Service Bus)
- (B) Service Broker
- (C) SOA registry
- (D) SOA supervisor

1.9. Which block ties work flow and SOA registry ?

- (A) ESB (Enterprise Service Bus)
- (B) Service Broker
- (C) Accounting package
- (D) SOA supervisor

1.10. Tools required for building applications provided by Thingworx such include,

- (A) Composer
- (B) the Mashup Builder,
- (C) both
- (D) None

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. Open IoT ontology is extending the W3C SSN ontology which supports the description of the physical and processing structure of sensors.

2.2. MAC address is logical address, which uniquely identify nodes in a network.

2.3. The use of accelerometer in laptops is to protect hard drives from damage.

2.4. The parts that are present in the accelerometer sensor are piezoelectric effect, Analog display, and digital display.

2.5. Gyroscope is used to measure linear velocity.

2.6. Speedometer is included in a system to provide desirable damping effect.

2.7. Voice recognition software and virtual assistant programs offer for Communication and Entertainment.

2.8. ATmega328p is the microcontroller used in Arduino UNO.

2.9. Optiboot bootloader is the default bootloader of the Arduino UNO.

2.10. Arduino provides IDE Environment.

3. Match words and phrases in column X with the closest related meaning / words(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	UDP	A.	IPv6
3.2	Zigbee	B.	XMPP
3.3	Extensible Messaging and Presence Protocol	C.	transmission
3.4	TCP	D.	Motor
3.5	Constrained Application Protocol	E.	Simple Text Oriented Messaging Protocol
3.6	MQTT runs at port no.	F.	Connection oriented protocol
3.7	Example of actuator	G.	CoAP
3.8	Physical Address	H.	132
3.9	Logical Address	I.	1883
3.10	STOMP	J.	Connectionless protocol
		K.	MAC
		L.	80
		M.	CAP

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	transmission	B	processor	C	Industrial Internet of Things	D	Interoperability
E	Bluetooth	F	80	G	RIFD	H	Connectivity
I	Extensible Messaging	J	Autonomic Computing	K	53	L	AI
M	Blockchain						

- 4.1. Sensing information includes various smart sensor devices based on GPS, _____.
- 4.2. bluegiga apx4 supports both Bluetooth and Wi-Fi and is based on a 450mhz arm9 _____.
- 4.3. The usage of an internet of things(IoT) technologies in production is _____.
- 4.4. Zigbee based IOT nodes makes _____ and handling of data strong.
- 4.5. Industrial IoT can substantially help the industries to enhance its Scalability, Performance and _____.
- 4.6. Key components of an M2M system are RFID (Radio Frequency Identification), Sensors, Wi-Fi and _____.
- 4.7. XMPP stands for _____ and Presence Protocol.
- 4.8. The http protocol in web server runs at port _____.
- 4.9. Benefits of IoT GE Predix include Connectivity and _____.
- 4.10. BLE means _____.

PART - TWO

(Answer any FOUR questions)

5. (a) Explain any three benefits of IoT GE Predix.
(b) What is Salesforce IoT ?
(c) Give the advantages of Salesforce IoT. **(5+5+5)**
6. (a) Brief about the role & Application of IoT in Education.
(b) Give any 4 significant application of IoT in Transportation.
(c) Explain the Constrained Application Protocol. **(4+5+6)**
7. (a) Differentiate between AMQP and MQTT.
(b) Give the advantages of Data Distribution Service. **(7+8)**

8. (a) Discuss any one IoT Messaging Protocol.
(b) Brief about the Architecture of IoT in detail. **(7+8)**
9. (a) What is IoT Cisco Virtualized Packet Core ?
(b) Explain the various processes deployed for IOT Testing. **(8+7)**

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SPACE FOR ROUGH WORK



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