A4-R5 : INTERNET OF THINGS AND ITS APPLICATIONS

अवधि : 03 घंटे **अधिकतम अंक : 100**
DURATION : 03 Hours **MAXIMUM MARKS : 100**

ओएमआर शीट सं. : **OMR Sheet No. :**						

रोल नं. : **Roll No. :** | | | | | | |

उत्तर-पुस्तिका सं. : **Answer Sheet No. :** | | | | | | |

परीक्षार्थी का नाम : **परीक्षार्थी के हस्ताक्षर :**
Name of Candidate : _____ **Signature of Candidate :** _____

परीक्षार्थियों के लिए निर्देश :	**Instructions for Candidate :**
कृपया प्रश्न-पुस्तिका, ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यानपूर्वक पढ़ें।	Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
प्रश्न-पुस्तिका की भाषा अंग्रेजी है। परीक्षार्थी केवल अंग्रेजी भाषा में ही उत्तर दे सकता है।	Question Paper is in English language. Candidate can answer in English language only.
इस मॉड्यूल/पेपर के **दो भाग** हैं। **भाग एक** में **चार** प्रश्न और **भाग दो** में **पाँच** प्रश्न हैं।	There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
भाग एक ''वैकल्पिक'' प्रकार का है जिसके कुल अंक 40 है तथा **भाग दो** ''व्यक्तिपरक'' प्रकार का है और इसके कुल अंक 60 है।	**PART ONE** is Objective type and carries 40 Marks. **PART TWO** is Subjective type and carries 60 Marks.
भाग एक के उत्तर, **ओएमआर उत्तर-पुस्तिका** पर ही दिये जाने हैं। **भाग दो** की उत्तर-पुस्तिका में **भाग एक** के उत्तर **नहीं** दिये जाने चाहिए।	**PART ONE** is to be answered in the **OMR ANSWER SHEET** only. **PART ONE** is **NOT** to be answered in the answer book for **PART TWO**.
भाग एक के लिए अधिकतम समय सीमा **एक घण्टा** निर्धारित की गई है। **भाग दो** की उत्तर-पुस्तिका, **भाग एक** की उत्तर-पुस्तिका जमा कराने के पश्चात् दी जाएगी। तथापि, निर्धारित एक घंटे से पहले **भाग एक** पूरा करने वाले परीक्षार्थी **भाग एक** की उत्तर-पुस्तिका निरीक्षक को सौंपने के तुरंत बाद, **भाग दो** की उत्तर-पुस्तिका ले सकते हैं।	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.
परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना और अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हॉल/कमरा नहीं छोड़ सकते हैं। ऐसा नहीं करने पर, परीक्षार्थी को इस मॉड्यूल/पेपर में अयोग्य घोषित कर दिया जाएगा।	**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.**
प्रश्न-पुस्तिका को खोलने के निर्देश मिलने के पश्चात् एवं उत्तर लिखना आरम्भ करने से पहले उम्मीदवार जाँच कर यह सुनिश्चित कर लें कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है।	After receiving the instruction to open the booklet and before starting to answer the questions, the candidate should ensure that the Question Booklet is complete in all respect.

जब तक आपसे कहा न जाए, तब तक प्रश्न-पुस्तिका न खोलें।
DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

PART ONE

(Answer all the questions)

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 Which protocol is lightweight ?

(A) MQTT

(B) HTTP

(C) CoAP

(D) SPI

1.2 Which device measures gases or liquid ?

(A) Proximity sensor

(B) Pressure sensor

(C) Temperature sensor

(D) Touch sensor

1.3 What is ESP8266 ?

(A) WIFI module

(B) Sensor

(C) Board

(D) USB cable

1.4 _____ consists of two different metals connected at two points.

(A) Thermistor

(B) Resistance Thermometer

(C) Thermocouple

(D) Semiconductor based sensor

1.5 Smart phones can be used in IoT setup with _____ application categories.

(A) 2

(B) 3

(C) 4

(D) 5

1.6 Which of the following is threat to IoT Device ?

(A) Virus

(B) Natural Disaster

(C) Spoofing

(D) All of the above

1.7 Which characteristics involve the facility the thing to respond in an intelligent way to a particular situation ?

(A) Intelligence

(B) Connectivity

(C) Dynamic Nature

(D) Enormous Scale

1.8 Which of the following is not an asset in a typical IoT System ?

(A) IoT Device

(B) Gateway

(C) Application

(D) None of the above

1.9 Communication is a non-stop :

(A) Paper

(B) Process

(C) Programme

(D) Plan

1.10 The core element is operated by :

(A) PaaS

(B) IoT service Provider

(C) SaaS

(D) IaaS

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 The use of RFID in product logistics may realize automatic acquisition of logistics information.

2.2 IoT is not a paradigm that involves ubiquitous presence in the environment.

2.3 SLA stands for Service Level Agreement.

2.4 MQTT protocol is used in GSN.

2.5 Build() and loop() are two functions of Arduino IDE.

2.6 One of the main characteristics of Linked Stream Data is "Live Streaming".

2.7 IoT is a network of smart devices, sensors and actuators that can interconnect with each other.

2.8 Interpersonal communication is a process that involves only sending verbal and non-verbal messages.

2.9 Effective communication is not related to the manager's use of his or her time.

2.10 TCP/IP is a four-layered model, whereas, OSI has seven layers.

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	IoT Applications	**A.**	Sensors, Protocols, Actuators, Cloud services and layers
3.2	IoT Architectures	**B.**	LCD
3.3	Arduino Integrated Development Environment	**C.**	Safeguard connected devices
3.4	Liquid Crystal Display	**D.**	Include remotes, dashboards, networks, gateways, analytics, data storage and security.
3.5	IoT Security	**E.**	Healthcare
3.6	IoT connectivity models	**F.**	Level 1, Level 2, Level 3, Level 4
3.7	IoT ecosystem	**G.**	Program the microcontroller
3.8	IoT Levels	**H.**	Machine Learning
3.9	Embedded C language	**I.**	Self-esteem
3.10	LDR in IOT are _____	**J.**	Cross-platform application that is written in functions from C and C++
		K.	Device-to-device, Device-to-cloud, Device-to-Gateway
		L.	Light dependant devices
		M.	Load Dependent Resistor

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.	Capacitive Proximity	**B.**	Security	**C.**	Logging	**D.**	Intelligent Transportation Services
E.	Method	**F.**	Connectivity	**G.**	RAM memory	**H.**	ATmega328p
I.	Self-awareness	**J.**	Bandwidth	**K.**	Presentation	**L.**	IoT Levels
M.	Heterogeneity						

4.1 _____ empowers IoT by bringing together everyday objects.

4.2 _____ in IoT as one of the key characteristics, devices have different hardware platforms and networks.

4.3 IoT devices are naturally vulnerable to _____ threats.

4.4 _____ in a cellular network is expensive, especially with many IoT devices.

4.5 _____ detects metals but along with it can also detect resins, liquids.

4.6 Gateway software should be smart enough to handle _____.

4.7 ITS stands for _____.

4.8 A request from client is basically made of _____.

4.9 General purpose memory is called as _____.

4.10 _____ is the microcontroller used in Arduino UNO.

PART TWO

(Answer any FOUR questions)

5. (a) What impacts will the Internet of Things (IoT) have on Agriculture Sector ?

(b) Explain the basic architecture of the IoT network.

(c) What are the main parts of IoT systems ? **(4+8+3)**

6. (a) What is IoT ? Enlist the benefits of the same.

(b) Discuss the problems which can be solved by IoT Security. **(7+8)**

7. (a) What affects will the internet of things (IoT) have on infrastructure and smart cities region ?

(b) What is an Arduino ? How to write instructions or programs for Arduino boards ? What are the hardware communication interfaces present in the Arduino board ? **(7+8)**

8. (a) Explain HC-05 Bluetooth Module Interfacing with Node MCU.

(b) Describe the traits that an individual should have to build for the development of his/her personality. **(8+7)**

9. Briefly explain the following (Any three) :

(a) OSI Model

(b) Time Management

(c) Microcontroller

(d) IoT Protocol Stack **(5+5+5)**

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SPACE FOR ROUGH WORK

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