Sl. No.

A10.4-R5 : INTERNET OF THINGS (IOT) USING RASPBERRY Pi

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 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 will be the output of the following code ?

print type(type(int));

(A) type 'int'

(B) type 'type'

(C) Error

(D) 0

1.2 What is the output of the following program ?

y = 8

z = lambda x : x * y

print z(6)

(A) 48

(B) 14

(C) 64

(D) None of the above

1.3 Which of these is not a core data type ?

(A) Lists

(B) Dictionary

(C) Tuples

(D) Class

1.4 Which of the following function convert a string to a float in python ?

(A) int(x [,base])

(B) long(x [,base])

(C) float(x)

(D) str(x)

1.5 How power supply is done to RPi ?

(A) USB connection

(B) Internal battery

(C) Charger

(D) Adapter

1.6 Which instruction set architecture is used in Raspberry Pi ?

(A) X86

(B) MSP

(C) AVR

(D) ARM

1.7 Which command is used to display the unix version ?

(A) uname -r

(B) uname -n

(C) uname -t

(D) kernel

1.8 Find / -name '*' will :

(A) List all files and directories recursively starting from /

(B) List a file named * in /

(C) List all files in / directory

(D) List all files and directories in/ directory

1.9 Which challenge comes under IoT devices, reliable bidirectional signaling ?

(A) Signaling

(B) Security

(C) Presence detection

(D) Power consumption

1.10 The IoT operates at which of the following scale :

(A) Machine

(B) Human

(C) Device

(D) Sensor

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 Does Raspberry Pi need external hardware ?

2.2 Global scheduler keeps the track of and control the life cycle of IoT services.

2.3 Bootstrap is a front end development only.

2.4 Bootstrap uses Pixels.

2.5 MAC address contain characters.

2.6 IEEE standards for Institute of Electrical and Electronics Engineers.

2.7 The soft link will increase the link counter of the file.

2.8 By default if any regular file is created, the number of link is displayed as 1.

2.9 The sort command by default sorts in the numeric order.

2.10 nohup is used to continue the process after logout.

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	Arduino shields are also called	**A.**	Shift register
3.2	UART contain	**B.**	Multi master, multi slave
3.3	HDLC stands for	**C.**	Case Sensitive
3.4	protocol used by USART	**D.**	Add on modules
3.5	Inter Integrated Circuit is a	**E.**	Queued SPI
3.6	I2C messaging example	**F.**	RS232C
3.7	MOSI means	**G.**	Message oriented
3.8	type of SPI controller	**H.**	Head
3.9	MQTT is	**I.**	High level Data Link Control
3.10	XMPP Full form is	**J.**	Line for master to send data to the slave
		K.	24c32 EEPROM
		L.	Extensible Messaging and Presence Protocol
		M.	UNIX

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.	<select>	**B.**	sun microsystem	**C.**	Network Interface Card	**D.**	Dynamic nature
E.	Tens of thousands of data	**F.**	packets	**G.**	Python	**H.**	Internet Control Message Protocol
I.	presence detection	**J.**	64 bit	**K.**	Command [options] [arguments]	**L.**	Logging
M.	Microsoft						

4.1 Syntax of any Unix command is _____.

4.2 Solaris is the name of a flavor of UNIX from _____.

4.3 Bottle is a fast, simple and lightweight WSGI micro web-framework for _____.

4.4 _____ bit processor is used in Pi 3.

4.5 Sensors provide _____ data per second.

4.6 Gateway software should be smart enough to handle _____.

4.7 _____ translates IP address into MAC address.

4.8 Data in network layer is transferred in the form of _____.

4.9 ICMP stands for _____.

4.10 _____ gives an exact, up to the second state of all devices on a network.

PART TWO

(Answer any FOUR Questions)

5. (a) Write a Python program to split array and move first part to end.

(b) Write a Python program to count Even and Odd numbers in a List.

(c) What are the features of Python ? **(5+5+5)**

6. (a) What is Arduino Programming ?

(b) What programming does Arduino use ?

(c) How Arduino is programmed ? **(4+5+6)**

7. (a) What are the basic components of Linux ?

(b) What is the difference between UNIX and LINUX ? **(7+8)**

8. (a) What is MQTT ? What is MQTT used for ? Why MQTT is used in IOT.

(b) Discuss Bottle : a Python Web framework in detail. **(7+8)**

9. (a) What is difference between UART and SPI ?

(b) Why UART is used ? **(8+7)**

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SPACE FOR ROUGH WORK

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