

A4-R5 : INTERNET OF THINGS AND ITS APPLICATIONS

अवधि : 03 घंटे
DURATION : 03 Hours

अधिकतम अंक : 100
MAXIMUM MARKS : 100

ओएमआर शीट सं. :					
OMR Sheet No. :					

रोल नं. :
Roll No. :

उत्तर-पुस्तिका सं. :
Answer Sheet No. :

परीक्षार्थी का नाम : _____
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 हैं तथा भाग दो "व्यक्तिपरक" प्रकार का है और इसके कुल अंक 60 हैं।	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 AMQP stands for :

- (A) Advanced Mass Query Protocol
- (B) Advanced Message Queuing Protocol
- (C) Add-on Message Query Protocol
- (D) Add-on Message Queuing Protocol

1.2 What does IDE stand for ?

- (A) In Deep Environment
- (B) Integrated Development Environment
- (C) Internal Deep Escape
- (D) IDLE

1.3 Which is not a characteristic of TCP/IP Model ?

- (A) Connection-oriented protocol.
- (B) implement flow control
- (C) Support for a flexible architecture
- (D) Unreliable

1.4 Which of the following things can have an effect on the development of an individual's personality ?

- (A) physical and mental capabilities
- (B) health and physical appearance
- (C) skin color and gender
- (D) all of the above

1.5 If you didn't know the recipient's name, how would you close the letter ?

- (A) With love.
- (B) Yours sincerely.
- (C) Yours faithfully.
- (D) Affectionately yours.

1.6 The huge number of devices connected to the IoT to communicate automatically. It is called :

- (A) Bot to Bot (B2B)
- (B) Machine to Machine (M2M)
- (C) Skynet
- (D) InterCloud

1.7 IoT security management includes :

- (A) Protocol abstraction
- (B) Simple and fast installation
- (C) Security with hardware
- (D) Data storage

1.8 IoT data scalability includes _____.

- (A) Protocol abstraction
- (B) Simple and fast installation
- (C) Security with hardware
- (D) Data storage

1.9 Which protocol is used to link all the devices in the IoT ?

- (A) TCP/IP
- (B) Network
- (C) UDP
- (D) HTTP

1.10 _____ supports low energy radio operation.

- (A) IETF 6LoWPAN
- (B) IEF CoAP
- (C) RFID/NFC
- (D) Bluetooth

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 MQTT is a transport layer protocol.

2.2 RFID is a wired communication method.

2.3 Microcontroller is used to control the function in smart Fridge.

2.4 Arduino board does not have memory.

2.5 Arduino uses AtMega microcontroller.

2.6 Arduino Uno has USB connectivity.

2.7 Embedded C language supports loop statements.

2.8 Arduino code can be written in JAVA

2.9 Sensors are the output device.

2.10 All IoT devices are very secure.

3. Match words and phrases in column X with the closest related meaning of 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	Ethernet	A	Actuator
3.2	WiFi	B	C Language code
3.3	MQ-135	C	Has external memory
3.4	LCD Display	D	Has internal memory
3.5	Microcontroller	E	Interacts with devices
3.6	Microprocessor	F	Interacts with user
3.7	Arduino	G	MBTI Theory
3.8	Determine Personality	H	Sensor
3.9	Physical Layer	I	Used in Wired communication
3.10	Application Layer	J	Used in Wireless Communication
		K	OSI Model
		L	Closed Loop System
		M	Hygrometer

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	UDP	B	connection-oriented	C	Microprocessor
D	Microcontroller	E	Digital	F	USART
G	Analog	H	Uno	I	connection-less
J	light intensity	K	High and Low	L	temperature
M	OSI				

- 4.1 Arduino _____ with an integrated WiFi module.
- 4.2 _____ is a serial port allows communication between Arduino and computer.
- 4.3 LDR is a _____ sensor.
- 4.4 Personal computers use _____.
- 4.5 Digital pins of Arduino can have only _____ values
- 4.6 Physical layer is a _____ layer.
- 4.7 Arduino board has a _____ to control other devices
- 4.8 ADC on Arduino board is used to convert _____ signal into digital signal.
- 4.9 CoAP is supported by _____ protocol.
- 4.10 OSI model, the transport layer, is only _____.

PART TWO

(Answer any four questions)

5. (a) Explain the building block of IoT.

(b) State five characteristics of IoT.

(8+7)

6. (a) What are the factors that affect the battery life of devices/sensors connected together ?

(b) Explain the role of sensor and actuator in an IOT environment with the help of example.

(8+7)

7. (a) What do you mean by Close loop control system. Explain with the help of a diagram.

(b) Explain the functionality of ZigBee, a wireless technology used with IoT devices.

(8+7)

8. (a) Design a breadboard circuit and write an Arduino program to complete the tasks: Measure and continuously display the ambient temperature using DHT sensor (temperature and humidity sensor) in °C on the Serial Monitor.

(b) Write the code so that the program can display the difference between the previous temperature and the current temperature. **(8+7)**

9. (a) What are the main challenges in IoT scenario ?

(b) How important is body language while appearing for an interview? **(8+7)**

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SPACE FOR ROUGH WORK

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