उम्मीदवार इस पुस्तिका के सबसे ऊपरी सील को खोलकर पृष्ठ संख्या 2 और 3 के मध्य स्थापित OMR उत्तर शीट को निकाल लें। परीक्षा पुस्तिका सं. :
Candidates should open the top side of the seal of this Booklet and take out the OMR Answer Sheet placed between page no. 2 and 3. Test Booklet No. :

A4-R5 : INTERNET OF THINGS AND ITS APPLICATIONS
SET - 02

परीक्षा पुस्तिका शृंखला : **21**
Test Booklet Series :

निर्धारित समय : 3 घंटे
Time Allowed : 3 Hours

अधिकतम अंक : 100
Maximum Marks : 100

रोल नं.
Roll No. :

उत्तर शीट सं.:
Answer Sheet No. :

प्रश्नों के उत्तर देने से पहले निम्नलिखित अनुदेशों को ध्यान से पढ़ लें। / **Read the following instructions carefully before you begin to answer the questions.**

उम्मीदवारों के लिए अनुदेश	Instructions to the Candidates

1. प्रश्नों के उत्तर लिखना आरंभ करने से पहले आप इस पुस्तिका की जाँच करके सुनिश्चित कर लें कि इसमें पूरे पृष्ठ (12) हैं तथा कोई पृष्ठ या उसका भाग कम या दुबारा तो नहीं आ गया है। यदि आप इस पुस्तिका में कोई त्रुटि पाएं, तो *तत्काल* इसके बदले दूसरी पुस्तिका ले।

2. ओएमआर उत्तर-शीट प्रश्न पुस्तिका में ही उपलब्ध रहेगी। कृपया सुनिश्चित करें कि ओएमआर शीट संख्या और परीक्षण पुस्तिका संख्या समान हैं। ओएमआर शीट पर जानकारी भरने से पहले ओएमआर शीट पर छपे निर्देशों को ध्यान से पढ़ें। आपको ओएमआर उत्तर-पत्रक पर सभी विवरणों को सही ढंग से पूरा और कोड करना होगा, ऐसा न करने पर आपकी उत्तर पुस्तिका का मूल्यांकन नहीं किया जा सकता है। प्रश्नों का उत्तर देना शुरू करने से पहले आपको ओएमआर उत्तर-पत्रक पर दिये गए निर्धारित स्थान पर अपने हस्ताक्षर करने होंगे। इन निर्देशों का पूर्ण रूप से पालन किया जाना चाहिए, ऐसा न करने पर आपकी ओएमआर उत्तर-पुस्तिका का मूल्यांकन नहीं किया जा सकता है।

3. इस पुस्तिका में कुल 100 बहुविकल्पीय प्रश्न हैं जो कि केवल इंग्लिश भाषा में उपलब्ध है। प्रत्येक प्रश्न के 4 विकल्प दिए गए हैं, (A), (B), (C) और (D)। किसी भी स्थिति में प्रत्येक प्रश्न का केवल एक विकल्प ही सही उत्तर है। यदि आपको एक से अधिक विकल्प सही लगें तो सबसे अधिक उचित एक विकल्प का चुनाव करें और उत्तर शीट में सम्बंधित प्रश्न के सामने वाले उपयुक्त गोले को काला करें।

4. प्रत्येक **सही** उत्तर के लिए 1 अंक दिया जाएगा। गलत उत्तर के लिए कोई **नकारात्मक अंकन नहीं** है।

5. गोले को काला करने के लिए केवल काले/नीले बॉल प्वाइंट पेन का प्रयोग करें। गोले को एक बार काला करने के बाद इसको मिटाने या बदलने की अनुमति नहीं है। यदि किसी प्रश्न के सामने एक से ज्यादा गोले काले किये गए हों तो मशीन द्वारा उसके लिए **शून्य अंक** दिया जाएगा।

6. किसी भी स्थिति में उत्तर शीट को न मोड़ें।

7. उत्तर-पुस्तिका पर कोई भी रफ कार्य नहीं करना है। रफ कार्य के लिए इस पुस्तिका में स्थान दिया गया है।

8. परीक्षा हॉल/कमरों में मोबाइल फोन तथा बेतार संचार साधन पूरी तरह निषिद्ध हैं। उम्मीदवारों को उनके अपने हित में सलाह दी जाती है कि मोबाइल फोन/किसी अन्य बेतार संचार साधन को स्विच ऑफ करके भी अपने पास न रखें। इस प्रावधान का अनुपालन न करने को परीक्षा में अनुचित उपायों का प्रयोग माना जायेगा और उनके विरुद्ध कार्यवाही की जाएगी, जिसमें उनकी उम्मीदवारी रद्द करना भी शामिल है।

9. अभ्यर्थी अपनी उत्तर पुस्तिका पर्यवेक्षक को सौंपे बिना और अपने रोल नंबर के सामने उचित स्थान पर उपस्थिति पत्रक पर हस्ताक्षर किए बिना परीक्षा हॉल/कक्ष से बाहर नहीं जा सकता। इसके अलावा अभ्यर्थी को उपस्थिति पत्रक पर हस्ताक्षर करने से पहले यह भी सुनिश्चित करना चाहिए कि बुकलेट नंबर, बुकलेट सीरीज और ओएमआर उत्तर पुस्तिका संख्या सही ढंग से लिखी गई हो। ऐसा ना करने पर, ओएमआर उत्तर पुस्तिका को अमान्य माना जाएगा/मूल्यांकन नहीं किया जा सकता है।

Instructions to the Candidates

1. Before you start to answer the questions you must check this booklet and ensure that it contains all the pages (12) and see that no page or portion thereof is missing or repeated. If you find any defect in this Booklet, you must get it replaced *immediately*.

2. **OMR Answer-Sheet is within the Question Booklet. Please ensure OMR Answer-Sheet number and Test Booklet No. of Question Paper are same. Read the instructions printed on OMR Answer-Sheet carefully before filling the information on the OMR Answer-Sheet. You must complete and code all the details on the OMR answer sheet correctly, failing which your answer sheet may not be evaluated. You must also put your signature on the OMR Answer-Sheet at the prescribed place before you start answering the questions. These instructions must be fully complied with, failing which, your OMR Answer-Sheet may not be evaluated.**

3. This booklet consists of **100** Multiple Choice Questions and are printed in English language only. Each question has 4 (four) alternatives (A), (B), (C) and (D). In case if you find more than one correct answer, then choose the most appropriate single option and darken the appropriate circle in the answer sheet against the related question.

4. For each **correct** answer One mark will be given and **no negative marking** for incorrect answer.

5. Use Black/Blue ball point Pen to darken the circle. Answer once darkened is not allowed to be erased or altered. Against any question if more than one circle is darkened, machine will allot **zero mark** for that question.

6. Do not fold answer sheet in any case.

7. No rough work should be done on the Answer-Sheet. Space for rough work has been provided in this booklet.

8. Mobile phones and wireless communication devices are completely banned in the examination hall/rooms. Candidates are advised not to keep mobile phones/any other wireless communication devices with them even in switched off mode, in their own interest. Failing to comply with this provision will be considered as using unfair means in the examination and action will be taken against them including cancellation of their candidature.

9. **Candidate should not leave the examination hall/room without handing over his/her Answer-Sheet to the invigilator and without signing on the attendance sheet at proper place against your roll number. Further candidate should also ensure that booklet no., booklet series and OMR Answer-Sheet No. are correctly written on attendance sheet before signing on it, failing in doing so, may lead to disqualification/ no evaluation of OMR Answer-Sheet will be done.**

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.**

उम्मीदवार का नाम/**Name of Candidate :** _____ उम्मीदवार के हस्ताक्षर/**Signature of Candidate :** _____

1. The future IoT trust infrastructures are based on_____technology for business-critical interaction between devices without direct human interaction.

   (A) XML   (B) .Net

   (C) Blockchain   (D) None of these

2. What are three R's in SQ3R reading comprehension method ?

   (A) Read, Recite, and Review

   (B) Read, Remember, and Review

   (C) Read, Recite, and Recall

   (D) Read, Recite, and Retain

3. The leadership trait/traits is/are :

   (A) To influence people

   (B) To guide followers

   (C) To achieve a common goal

   (D) All of these

4. The language of memos should be ___ and ___ to understand.

   (A) Indirect, personal

   (B) Direct, concise

   (C) Lucid, easy

   (D) Concise, difficult

5. An array index, xyz [ ] starts with _____:

   (A) 0   (B) -1

   (C) 1   (D) 2

6. IR Sensors are used in :

   (A) GPS Tracking

   (B) Moisture sensing

   (C) Object detection

   (D) Analog signals

7. An IoT protocols does not include :

   (A) Network/Internet protocol layer

   (B) Link layer protocol

   (C) Application layer protocol

   (D) Session layer protocol

8. In the given C code, for loop executes for :

   #include

   void main ()

   {

   int x=10;

   for (; ;) { printf("%d\n",x):}

   (A) 10 times   (B) 9 times

   (C) infinite   (D) zero

9. How to run two variables x and y in for loop simultaneously ?

   (A) for (x = 0; x<m, x++), for (y = 0; y<m, y+=3) { }

   (B) for (x = 0, y = 0; x<m, y<m; x++, y+=3)

   (C) both (A) and (B)

   (D) for (x = 0; x<m, x++) { }, for (y = 0; y<m, y+=3) { }

10. Main components of IoT based systems are :

    (A) Sensors

    (B) Actuators

    (C) Microcontrollers

    (D) All of the above

11. The communication technologies used for IoT is/are :

    (A) Bluetooth   (B) Zigbee

    (C) WiMAX   (D) All of these

12. The routine reports prepared in time-intervals like daily, weekly, monthly...... are called :

(A) Formal Reports

(B) Conference Reports

(C) Progress Report

(D) Periodic Reports

13. In a sentence, subject communicates about _____ and predicate talks about_____.

(A) predicate, sentence

(B) sentence, verb

(C) sentence, subject

(D) predicate, subject

14. Which type of IoT communication model is bi-directional and fully duplex ?

(A) Publish-Subscribe

(B) Request - Response

(C) Exclusive Pair

(D) Push-Pull

15. Which feature defines IoT ?

(A) Local network

(B) Non-changing conditions

(C) Self-configuring

(D) Non-interoperable protocol

16. Microcontrollers are :

(A) Embedded System

(B) Application-specific

(C) Harvard

(D) All of these

17. IoT enabled technologies include following :

(A) Security Protocols

(B) Wireless Sensor Networks

(C) Cloud Computing

(D) All of these

18. Which is IoT integrated development environment (IDE) and tools ?

(A) HTML   (B) Pascal

(C) Arduino   (D) PHP

19. The wireless battery free sensor designed to record environmental and material temperature is :

(A) DHT11   (B) ESP8266

(C) RFM3200   (D) LM35

20. Mr. Rahul is seeking feedback after completing and implementing his project. This act represents _____.

(A) Time-Management

(B) Self-Awareness

(C) Gratitude

(D) Self-Love

21. Paralanguage is a part of meta-communication that deals with non-verbal communication. Also known as _____.

(A) Poetry   (B) Prosody

(C) Haptics   (D) Vocalic

22. Which address schemes are used by Ipv4 and Ipv6 internet protocols ?

(A) 128-bit and 16-bit

(B) 32-bit and 128-bit

(C) 32-bit and 64-bit

(D) 16-bit and 128-bit

23. Following layer is not mentioned in TCP/IP Model.

(A) Presentation   (B) Network

(C) Application   (D) Transport

24. IoT devices are vulnerable to attacks and threats. One of them is Cryptanalysis attack that means :
(A) By recovering the encryption information
(B) Inject malicious codes
(C) Find ciphertext to break the encryption
(D) Tamper with the hardware

25. The format specifier for printf () and wprintf () of long integer in C is denoted as :
(A) % ld   (B) % d
(C) % li   (D) % f

26. What is ESP8266 used in IoT applications ?
(A) Low-cost Wi-Fi module
(B) Microprocessor on a chip
(C) In-build HTTP software
(D) High-cost Wi-Fi module

27. What is true about Arduino Codes ?
(A) Setup () is a startup function
(B) Loop () is executed repeatedly
(C) Also known as sketches
(D) All of these

28. The statements that are TRUE about 'Arduino.h' header fileare :
(A) Avrdude software uploads the hex file
(B) Gives access to all of Arduino's core functionality
(C) #include <Arduino.h>
(D) All of these

29. A constant variable can be declared as :
(A) only in variable declaration area
(B) After main ()
(C) const number int
(D) #define number 35

30. An IoT device may need interfaces for :
(A) sensors
(B) audio/video
(C) internet connectivity
(D) all of these

31. Choose the correct option to access the 4th element of the array :
int z [30];
int *pz;
pz = z;
(A) *(z+3)   (B) z [3]
(C) pz [3]   (D) *(*pz+3)

32. What is the bootloader in the Arduino IDE ?
(A) a piece of code
(B) initiates the sketch
(C) stored in the memory space
(D) all of these

33. The function pgm_read_word ((&(var_data[x][y]))) reads _____ from flash memory :
(A) Address   (B) Integers
(C) Strings   (D) Data files

34. Which of the following is not the component of IoT Endpoint ?
(A) Router
(B) Gateway
(C) Communication Module
(D) MCU

35. The main security challenge to overcome to make IoT services available at low cost is :
(A) Open security   (B) Scalability
(C) Detachment   (D) None of these

36. In Microcontrollers, external access is used for :
(A) Power supply
(B) Latches
(C) Memory Interfacing
(D) Peripherals

37. Which macro confirms "Hello friend" will be stored in the Flash memory :
(A) Serial. Print (F ("Hello Friend"));
(B) Serial. Print (A ("Hello Friend"));
(C) Serial. Print (C ("Hello Friend"));
(D) Serial. Print (N ("Hello Friend"));

38. Keyboard pins while interfacing can cause interrupt called as :
(A) Timer Interrupt
(B) Software Interrupt
(C) External Hardware Interrupt
(D) Interfacing Interrupt

39. Sensors convert signals from analog to which domain ?
(A) Digital
(B) Electrical
(C) Mechanical
(D) Both (A) and (B)

40. Choose the correct option for the ternary operator in embedded C :
(A) based on ternary condition
(B) condition ? Expression 1: Expression 2
(C) condition ? Expression 1 < Expression 2
(D) Similar to execution of a Loop

41. The IoT temperature monitoring is related to :
(A) Analog to Digital conversion
(B) Save time
(C) Real Time system
(D) All of these

42. The examples of Open-loop system in control system are :
(A) Traffic Light, Toaster
(B) Traffic Light, Temperature Controller
(C) Traffic Light, Automatic washing machine
(D) All of these

43. Which of the following operators isn't a bitwise operator ?
(A) * (B) &&
(C) || (D) <<

44. What is the Optiboot bootloader in the Arduino IDE ?
(A) Default bootloader
(B) ATmega328p
(C) Both (A) and (B)
(D) Takes 1024 bytes for initiating

45. Which application layer protocol is responsible for machine to machine (M2M) communication in restricted environment ?
(A) MQTT (B) CoAP
(C) XMPP (D) AMQP

46. The IoT supports :
(A) Cloud computing
(B) Block-chain Technology
(C) Data Analytics
(D) All of these

47. Communication with oneself is called _____.
(A) Interpersonal (B) Intrapersonal
(C) Impersonal (D) Formal

48. Reading is an art to bring in knowledge. It basically _____.

(A) Encodes   (B) Translates

(C) Decodes   (D) None of these

49. LDR Sensors :

(A) Light Dependent Resistor

(B) 2 pinned IC

(C) Controls Light Intensity

(D) All of these

50. What is WoT and its usage in the IoT ?

(A) Wireless of Things & increase time complexity

(B) Wireless of Things & reduce security

(C) Web of Things & improves interoperability

(D) Web of Things & increment in cost

51. The output of given C code is :

```
#include
int main ()
{
int x=1, y = 1, z;
z= x++ + y;
printf ("%d, %d", x, y);
}
```

(A) x= 1, y=1   (B) x= 2, y=1

(C) x=1, y=2   (D) x=2, y=2

52. The differences in an open-loop and a closed-loop systems are based on :

(A) Feedback   (B) Stability

(C) Complexity   (D) All of these

53. Arduino is a _____.

(A) Open-source Text editor

(B) Open-source electronics platform

(C) Web programming language

(D) None of these

54. The keyword 'PROGMEM' is a variable modifier of PROGMEM Utility. Which header file contains it ?

(A) avr/pspace.h

(B) avr/pgmspace.h

(C) avr/pmspace.h

(D) avr/progmem.h

55. The way we dress is an example of _____ communication.

(A) Verbal   (B) Nonverbal

(C) Written   (D) Spoken

56. How can we initialize the array ?

(A) Initializing

(B) Assigning array

(C) Factoring and array

(D) Populating an array

57. The role of public cloud computing in the IoT architecture is :

(A) Need for on-premises hosting

(B) Remote processing power.

(C) Enhanced inter-device communication

(D) Both (B) and (C)

58. LDR Sensors are made of :

(A) Semiconductor   (B) PbS

(C) Lead Sulfide   (D) All of these

59. The role of a moderator is :
(A) Focus on group
(B) Managing the dynamics
(C) Smooth running of discussion
(D) All of these

60. Stochastic control system has :
(A) Feedback with unknown random actions
(B) Positive Feedback with unknown random actions
(C) Negative Feedback with unknown random actions
(D) All of these

61. The messages meant for the general public and that sent to a specific group are called _____, _____ respectively.
(A) Circular, Memo
(B) Notice, Circular
(C) Note, Circular
(D) Minute, Circular

62. Sketches in Arduino are saved with the extension _____.
(A) .exe   (B) .ino
(C) .ide   (D) .doc

63. How many pwm pins does the Arduino Uno have ?
(A) 1   (B) 2
(C) 4   (D) 6

64. Which of the following operators have the highest precedence ?
(A) == and! =   (B) Logical
(C) Relational   (D) Arithmetic

65. Which one is not a microcontroller in Embedded Ecosystem ?
(A) PIC   (B) 8086
(C) ARM   (D) 8051

66. MQ135 Sensor is :
(A) AI detector
(B) Gas Sensor
(C) Monitors Air Pollution
(D) (B) and (C)

67. What is true about sending and receiving the Serial TTL Signals ?
(A) At least one serial port is there.
(B) Communicates on digital input, 0(Rx) and 1(Tx)
(C) UART or USART
(D) All of these

68. In bar code system _____.
(A) No line of sight required for reading
(B) Same as RFID system
(C) From any angle reader can read
(D) Line of sight required for reading

69. IoT comprises of internet, physical devices, sensors, microcontroller, and _____.
(A) Information   (B) Actuators
(C) Intranet   (D) Electronics

70. The speed of DC motor is controlled by Arduino using _____.
(A) PCM   (B) PPM
(C) PWM   (D) QAM

71. What are the effective stages of IoT architecture ?

(A) Internet gateway, Edge information

(B) Sensors and Actuators

(C) Data center and cloud analysis

(D) All of these

72. In a function, an array is passed by :

(A) Address relocation

(B) Call by value

(C) Function arguments

(D) Call by reference

73. LCD displays the text form of data when EN line shows ___ and RS line is_____.

(A) 0 to 1 transitions & High

(B) 1 to 0 transitions & High

(C) 0 to 1 transitions & Low

(D) 1 to 0 transitions & Low

74. Microprocessors have following components embedded in them :

(A) RAM   (B) Memory

(C) ROM   (D) None of these

75. An IoT device connects with other interfaces using connections which are :

(A) wired   (B) wired and wireless

(C) wireless   (D) none of these

76. The wireless network types that promote IoT deployment in industries are :

(A) Cellular (2G-5G) network protocols

(B) Bluetooth

(C) Near-field communication

(D) All of these

77. A_____is a document that can be used as evidence in court.

(A) Notice   (B) Minutes

(C) Letter   (D) Email

78. UART stands for :

(A) Universal Asymmetrical Radio Telecasting

(B) Universal Asymmetrical Radio Transmitter

(C) Universal Asynchronous Receiver/ Transmitter

(D) Universal Asynchronous Radio Transmitter

79. Arduino can be programmed using following languages :

(A) Python

(B) C++

(C) Both (A) and (B)

(D) None of the above

80. Which document that can be used as an evident in legal cases ?

(A) Notice

(B) Minutes of a meeting

(C) Agenda

(D) Memo

81. The major characteristics on which OSI and TCP/IP model differs :

(A) OSI model is independent generic protocol & TCP/IP is communication protocol

(B) In OSI model, Transport layer guarantees the delivery

(C) (A) and (B)

(D) TCP/IP model consists of 7 layers

82. The communication process comprises of :

(A) Sender (Decoder) → channel → Receiver (Encoder) → Response → Feedback

(B) Sender (Encoder) → channel → Receiver (Decoder) → Response → Feedback

(C) Sender (Encoder) → channel → Receiver (Response) → Decoder → Feedback

(D) Sender (Response) → channel → Receiver (Decoder) → Encoder → Feedback

83. IoT promotes the creation of IoT terminal industry _____.

(A) Devices   (B) Network

(C) Clusters   (D) Things

84. The selection of Microcontrollers for IoT is based on :

(A) Individual Characteristics

(B) Stability

(C) Desirable output

(D) All of these

85. The memory used while saving the data during 'PROGMEM utility' is :

(A) DRAM   (B) Flash

(C) SRAM   (D) EEPROM

86. The enduring feature that describes an individual's behavior and attitude is called _____.

(A) Education

(B) Personality Traits

(C) Financial Status

(D) Job Profile

87. The essential feature/features of an email as communication medium is/are :

(A) Automatic filing

(B) Facility to send copies of message

(C) Automatic retrieval

(D) All of these

88. Humidity Sensor is related to :

(A) DHT11

(B) Hygrometer

(C) Parts Per Million or Relative Humidity

(D) All of these

89. The stress management technique based on mental exercises which to produces the relaxation response :

(A) Autogenic Technique

(B) Eating

(C) Sleeping

(D) Medicine intake

90. A LED interfacing with Arduino as shown implies :

digitalWrite (led_pin, LOW);

digitalWrite (led_pin, HIGH);

(A) LED off and on

(B) LED off and on by varying VCC

(C) Can introduce delay for better o/p

(D) All of these

91. Self-esteem promotes _____.

(A) Self-worth

(B) Disappointment

(C) Failure

(D) ill-health

92. Choose the correct option for indexing of the given code :

int main ()

{

int xyz (8);

return 0;

}

(A) 0, 7   (B) 0,8

(C) -1, 7   (D) 1, 7

93. How to terminate an infinite loop in embedded C ?

(A) End   (B) Exit

(C) Break   (D) Abort

94. What is the basic function of the spring in a control valve ?

(A) Characterize flow

(B) Oppose the diaphragm to position the valve according to signal pressure

(C) Close the valve if air failure occurs

(D) Open the valve if air failure occurs

95. In embedded C, Literals means :

(A) a word

(B) a letter

(C) a digit

(D) a string constant

96. Choose the correct option of C program having array :

int main ()

{

int xyz (4) = [10,20,30,40];

printf ("%d", xyz (1));

}

(A) 0   (B) Compile error

(C) 10   (D) 20

97. 8051 is :

(A) 4-bit Microcontroller

(B) 8-bit Microcontroller

(C) 12-bit Microcontroller

(D) 16 bit Microcontroller

98. The prototype hardware used for IoT architecture is/are :

(A) Raspberry Pi   (B) Arduino Uno

(C) Cubie Board   (D) All of these

99. Which is not the synonym of memo ?

(A) Circular   (B) Memorandum

(C) Message   (D) Minute

100. The difference in If-Else and switch case statement is :

(A) If-Else enforces binary search

(B) Switch-case enforces linear search

(C) Multiple statements can be used for numerous decisions inside If-Else

(D) Multiple statements can be used for numerous decisions inside switch case

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SPACE FOR ROUGH WORK