

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

Test Booklet Series : **24**

Time Allowed : 2 Hours

Maximum Marks : 100

Roll No. :

Answer Sheet No. :

Read the following instructions carefully before you begin to answer the questions.

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.
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DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

Name of Candidate : _____ Signature of Candidate : _____

1. Which of the following helps to collaborate in IoT development ?
 (A) physical computing
 (B) chemical computing
 (C) mechanism
 (D) cloud computing
2. A good presenter and communicator should :
 (A) Follow good sequencing of ideas
 (B) Manage time properly
 (C) Clear doubts
 (D) All of these
3. The main objective of WoT (Web of Things) is _____.
 (A) Improve usability and interoperability
 (B) Reduce the security
 (C) Complicate the development
 (D) Increase the cost
4. The advantages of using functions is _____.
 (A) Partition larger task into smaller tasks
 (B) Code reusability
 (C) Manage complexity
 (D) All of these
5. An IoT network is a collection of _____ devices.
 (A) Signal
 (B) Machine to machine
 (C) Interconnected
 (D) Network
6. What are the major categories of communications ?
 (A) Speech, writing
 (B) Printing
 (C) Electronic communication
 (D) All of the above
7. What will be the output of the following Arduino code ?

```
void main() {
  int k = 0;
  double d = 10.21;
  printf("%lu", sizeof(k + d));
}
void loop() {}
```

 (A) 10.21 (B) 8
 (C) null (D) 23
8. What is the size of RAM memory in 8051 ?
 (A) 32 bytes (B) 64 bytes
 (C) 128 bytes (D) 256 bytes
9. A set of homogenous data stored in consecutive memory locations is called :
 (A) List (B) Structure
 (C) Array (D) Union
10. _____ is heart of Computer system.
 (A) Memory (B) I/O
 (C) Counter (D) Processor
11. What type of speaker looks into the eyes of the audience ?
 (A) Confident (B) Impatient
 (C) Rude (D) Impolite
12. Which rule is used to decide the direction of rotation of DC motor ?
 (A) Coulomb's Law
 (B) Lenz's Law
 (C) Fleming's Right-hand Rule
 (D) Fleming's Left-hand Rule
13. Which of the following must be present in a microcontroller ?
 (A) CPU, ROM, I/O ports and timers
 (B) RAM, ROM, I/O ports and timers
 (C) CPU, RAM, I/O ports and timers
 (D) CPU, RAM, ROM, I/O ports and timers

14. 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
15. Which of the following is false about IoT devices ?
- (A) Use internet for collecting and sharing data
 - (B) Need microcontrollers
 - (C) Use wireless technology
 - (D) Are completely safe
16. Which of the following is used to upload the Arduino Sketches to the board ?
- (A) avrgcc (B) g++
 - (C) cpython (D) avrdude
17. What is the real example of a smart grid device in IoT ?
- (A) Mobile phone (B) Television
 - (C) Smart Speaker (D) Smart Meters
18. Identify the polite method of beginning a business letter.
- (A) We are forced to refuse
 - (B) We demand to know from you
 - (C) We find it difficult to believe
 - (D) We appreciate your prompt reply
19. MQ-135 is a type of _____.
- (A) Humidity sensor
 - (B) Gas sensor
 - (C) Light sensor
 - (D) Temperature sensor
20. What is the use of the Interrupt Service Routine in an Arduino ?
- (A) To boot up the Arduino
 - (B) To exit any code that is running
 - (C) To automate functions
 - (D) To make more memory
21. How to research and enquire about the company ?
- (A) Website
 - (B) Company Directories
 - (C) Annual Report
 - (D) All of these
22. The process of removing certain band of frequencies from a signal while permitting other is called as _____.
- (A) Attenuation
 - (B) Distortion
 - (C) Filtering
 - (D) None of the above
23. The stress management technique based on mental exercises which to produces the relaxation response :
- (A) Autogenic Technique
 - (B) Eating
 - (C) Sleeping
 - (D) Medicine intake
24. Major Component of IoT is/are _____.
- (A) Sensors
 - (B) Actuators
 - (C) Smart Applications
 - (D) All of the Above
25. During embedded design, which design considers both hardware and software ?
- (A) Memory Design
 - (B) Software / hardware Design
 - (C) Platform-based Design
 - (D) Peripheral Design

26. The IoT networks that has a very short range is :
- (A) WAN
 - (B) LAN
 - (C) Fox
 - (D) Short-range Wireless Network
27. Predict the output of the following code if the object is moving away from the sensor :
- ```
int op = 7;
int isBarrier = HIGH;
void setup() {
pinMode(op, INPUT);
Serial.begin(9600);
}
void loop() {
isBarrier = digitalRead(op);
if (isBarrier == LOW) {
Serial.println("1+");
}
else {
Serial.print("clear+");
}
delay(100);
}
```
- (A) clear+clear+1+1
  - (B) 1+1+clear+clear
  - (C) clear+clear+clear+clear
  - (D) 1+1+clear+1
28. In the IoT network, Secure Shell (SSH) is :
- (A) Gateway
  - (B) Secure network protocol
  - (C) Router
  - (D) Firewall
29. What is Arduino ?
- (A) Programming language
  - (B) Image editing software
  - (C) Open-source electronics platform
  - (D) Text editor
30. In IoT, Transport layer set up connections without handshakes/acknowledgements using :
- (A) UDP
  - (B) TCP
  - (C) FTP
  - (D) HTTP
31. How should the tone of a speaker be like ?
- (A) Loud
  - (B) Clear
  - (C) Low
  - (D) Soft
32. Functions can pass information in which of the following ways ?
- (A) Value
  - (B) Reference
  - (C) Stack
  - (D) Both (A) and (B)
33. Sensor effectiveness depends on which of the following parameters ?
- (A) Radiation
  - (B) Resistivity
  - (C) Sensitivity
  - (D) All of the above
34. Which of the following challenge arises when we use many devices on the same network ?
- (A) Signaling
  - (B) Security
  - (C) Power Detection
  - (D) Power Consumption
35. How many times does the setup() function run on every startup of the Arduino System ?
- (A) 4
  - (B) 5
  - (C) 2
  - (D) 1
36. What is the process to check whether previous stages of reading have been followed properly ?
- (A) Survey
  - (B) Question
  - (C) Reading
  - (D) Review

37. What will be the output of the following code ?
- ```
#include <stdio.h>
void solve() {
int b = 4;
int res = b++ + ++b + ++b;
printf("%d", res);
}
int main() {
solve();
return 0;
}
```
- (A) 12 (B) 15
(C) 17 (D) 20
38. _____ is a combination of hardware and software to perform a specific task.
- (A) IoT System
(B) Embedded System
(C) Grid System
(D) Cloud System
39. What indicates to the reader the purpose of a letter ?
- (A) Subject (B) Body
(C) Address (D) Salutation
40. What is the efficiency of the DC motor at maximum power ?
- (A) 90% (B) 100%
(C) Around 80% (D) Less than 50%
41. How can you throw an error with preprocessor directives to Arduino Compiler, forcing to stop compilation ?
- (A) #warning (B) #stop
(C) #cut (D) #error
42. What is the resolution of the micros() function on the Arduino Nano ?
- (A) 7 Microseconds (B) 4 Microseconds
(C) 6 Microseconds (D) 2 Microseconds
43. Which of the following prevents someone from denying the accessed resource ?
- (A) Accounting
(B) Non-repudiation
(C) Sniffing
(D) Authorization
44. TCP stands for :
- (A) Transmission Control Protocol
(B) Telecommunication Control Protocol
(C) Temperature Control Protocol
(D) Transmission and Communication Protocol
45. What language is the Arduino IDE built on ?
- (A) Java (B) HTML
(C) C/C++ (D) Python
46. What is the use of the IR Sensor ?
- (A) Humidity Detection
(B) Image Processing
(C) Object Detection
(D) GPS
47. How power supply is done to Raspberry Pi ?
- (A) USB connection (B) Internal battery
(C) Charger (D) Adapter
48. The scope that hacker can use to break into a system is called as :
- (A) Attack surface
(B) Defense
(C) Principle of least privilege
(D) Risk mitigation
49. Reports are usually utilized to present the outcome of :
- (A) Experiment (B) Inquiry
(C) Investigation (D) All of these

50. IoT devices can easily lead to catastrophe without _____.
- (A) Software
(B) Devices
(C) Cloud
(D) Management system
51. Which of the following devices are specifically being used for converting serial to parallel and from parallel to serial respectively ?
- (A) microcontroller (B) timers
(C) counters (D) registers
52. Which of these does not enhance listening skills ?
- (A) Attention
(B) Clear perception
(C) Frankness
(D) Ignoring
53. What is the correct execution process of an Arduino code ?
- (A) Preprocessor->Editor->Compiler
(B) Editor->Preprocessor->Compiler
(C) Compiler->Preprocessor->Editor
(D) Editor->Compiler->Preprocessor
54. Which of the following is the property of embedded C language ?
- (A) Hardware independent
(B) Used for web applications
(C) Used with limited resources
(D) Used for native development
55. Predict the output of the following code if the object is moving towards the sensor.
- ```
int op = 6;
int isBarrier = HIGH;
void setup() {
 pinMode(op, INPUT);
 Serial.begin(9600);
}
void loop() {
 isBarrier = digitalRead(op);
 if (isBarrier == LOW) {
 Serial.println("1+");
 }
 else {
 Serial.print("clear+");
 }
 delay(100);
}
```
- (A) clear+clear+1+1  
(B) 1+1+clear+1  
(C) 1+1+clear+clear  
(D) clear+clear+clear+clear
56. Which processor helps in carrying out floating point calculations ?
- (A) microprocessor (B) coprocessor  
(C) microcontroller (D) controller
57. Which of the following process is used to keep track of user's activity ?
- (A) Authentication  
(B) Authoring  
(C) Authorization  
(D) Accounting
58. Which one of these is not threat modelling methodology ?
- (A) NANO (B) STRIDE  
(C) OCTAVE (D) PASTA

59. What is the objective of the code given below if it is executed on the Arduino Uno ?
- ```
#include<EEPROM.h>
int pin=13;
void setup() {
pinMode(pin,OUTPUT);
Serial.begin(9600);
}
void loop() {
for(int i=0; i<EEPROM.length(); i++) {
EEPROM.write(i, 1);
}
digitalWrite(pin,HIGH);
exit(0);
}
```
- (A) Clear EEPROM
(B) Fill EEPROM with 1's
(C) Export EEPROM data
(D) Fill EEPROM with 0's
60. Which of the following is the basic functions of a timer ?
- (A) Control the compare, capture mode
(B) Act as a counter
(C) Provide a time delay
(D) All of these
61. If 1 means an object is detected and 0 meaning no object is detected, then considering the sensor stationary, what can be the possible movement of object if the output by the sensor is observed as 111000 ?
- (A) Object is stationary
(B) Object is oscillating side by side
(C) Object is moving away
(D) Object is moving closer
62. Which one is not Leading Cloud Services for IoT Deployments ?
- (A) AWS (B) IBM Watson
(C) Microsoft Azure (D) Google Drive
63. The purpose of communication is to help officials to _____ the employees.
- (A) Eliminate (B) Motivate
(C) Threaten (D) Apprise
64. IoT and cloud computing has what kind of relationship ?
- (A) Physical
(B) Complementary
(C) Graphical
(D) Coding
65. How are comments denoted in Embedded C ?
- (A) # (B) %
(C) ; (D) //
66. HC-05 is a Bluetooth module that can communicate in which mode ?
- (A) Simplex (B) Duplex
(C) Full-Duplex (D) None of these
67. Using lecturers and handouts, information is acquired via _____ whereas by using tutorials and conversations, information is acquired through _____.
- (A) Students, tutors
(B) Other sources, tutors
(C) Tutors, fellow learners
(D) None of the above
68. Which of the following is an established set of rules that determines how data is transmitted between different device in the same network ?
- (A) Network connection
(B) TCP IP protocol
(C) Network protocol
(D) TCP protocol

69. The process of assessment of the speaker's content while listening is called _____.
- (A) Critical listening
(B) Dialogic listening
(C) Comprehensive listening
(D) Systematic listening
70. Which of the following is the key to an effective presentation ?
- (A) Image
(B) Styles
(C) Limited words and key phrases
(D) Layouts
71. What is the outcome of the following Arduino code ?
- ```
void setup() {
 Serial.begin(9600);
}
void setup() {
 Serial.write(20);
}
```
- (A) Send a signal to pin 20 on the Arduino board  
(B) Send a octal number of 20 through the Serial pins  
(C) Send a byte with value 20 through the Serial pins  
(D) Send a hexadecimal number of 20 through the Serial pins
72. What is the effect of performing AND operation of R with 0xFE ?
- (A) Setting a selected bit of R  
(B) Clearing a selected bit of R  
(C) Complement selected bit of R  
(D) None of these
73. The Atmega 168 is an \_\_\_\_\_ bit chip.
- (A) 32 (B) 64  
(C) 8 (D) 16
74. Which of the following method is better for task swapping in the embedded systems ?
- (A) time slice  
(B) RMS  
(C) cooperative multitasking  
(D) pre-emptive
75. What are Arduino Codes are referred to ?
- (A) sketches (B) drawings  
(C) links (D) notes
76. Spring Boot Actuator exposes operational information about running application using \_\_\_\_\_ endpoints.
- (A) TCP (B) HTTP  
(C) IP (D) FTP
77. What is the bit size used in 8051 ?
- (A) 4-bit (B) 8-bit  
(C) 16-bit (D) 32-bit
78. \_\_\_\_\_ allow data processing close to device.
- (A) Edge Computing  
(B) Cloud Computing  
(C) Fog Computing  
(D) Grid Computing
79. Which one is the most discussed challenge in IoT ?
- (A) Standard (B) Security  
(C) Regulation (D) Internet
80. While presenting using projectors, information line can be revealed by using an \_\_\_\_\_ sheet to over the \_\_\_\_\_.
- (A) Transparent, slide  
(B) Translucent, transparency  
(C) Opaque, flip chart  
(D) Opaque, transparency

81. What will be the output of the following code ?
- ```
#include <stdio.h>
void solve() {
    char ch[5] = "abcde";
    int ans = 0;
    for(int i = 0; i < 5; i++) {
        ans += (ch[i] - 'a');
    }
    printf("%d", ans);
}
int main() {
    solve();
    return 0;
}
```
- (A) 5 (B) 20
(C) 40 (D) 10
82. Which memory storage is widely used in Embedded Systems ?
- (A) EEPROM (B) DRAM
(C) Flash memory (D) SRAM
83. The actuators used in IoT applications are :
- (A) Relay (B) Servo Motors
(C) DC Motors (D) All of these
84. Which type of variables are retained for use throughout the program in RAM and not reallocated during program execution ?
- (A) Automatic (B) Static
(C) Dynamic (D) All of these
85. Which of the following is used to capture data from the physical world in IoT devices ?
- (A) Sensors
(B) Actuators
(C) Microprocessors
(D) Microcontrollers
86. What type of signal does the analogWrite() function output ?
- (A) Pulse Code Modulated Signal
(B) Frequency Modulated Signal
(C) Pulse Width Modulated Signal
(D) Pulse Amplitude Modulated Signal
87. How are multiline comments denoted in Embedded C ?
- (A) ## (B) /* */
(C) %% (D) //
88. Most sensors have what type of transfer function ?
- (A) Zero (B) Infinity
(C) Linear (D) Non-linear
89. Which of these may convey arrogance ?
- (A) Shoulder shrug
(B) Jointed fingertips
(C) Hands swinging loosely
(D) Pointed finger
90. Which one is not a control structure ?
- (A) While (B) If..else
(C) #define (D) Case
91. How many analog pins are used in Arduino Mega board ?
- (A) 12 (B) 16
(C) 8 (D) 14
92. These applications take data or input from various devices and convert it into viable actions or clear patterns for human analysis _____.
- (A) Real Time Analytics
(B) Data Collection
(C) Device Integration
(D) Real Time Collection

93. Embedded C is :
- (A) A subset of traditional C
 - (B) An extension of traditional C
 - (C) A superset of traditional C
 - (D) Same as traditional C
94. Which of the following is NOT a data type ?
- (A) sbit (B) dbit
 - (C) bit (D) unsigned int
95. LDR sensor works on the principle of :
- (A) Resistivity
 - (B) Photoconductivity
 - (C) Conductivity
 - (D) Both (A) and (C)
96. What is the number of elements in open IoT architecture ?
- (A) Four (B) Five
 - (C) Six (D) Seven
97. What is the feeling of competence to cope with life's challenges and of being worthy of happiness called ?
- (A) Arrogance
 - (B) Self-esteem
 - (C) Self-efficacy
 - (D) Wishful thinking
98. What is the output of the following program ?
- ```
for(;;)
{
 Statements
}
```
- (A) Error
  - (B) Statements will run forever
  - (C) This an infinite loop
  - (D) Both (B) and (C)
99. \_\_\_\_\_ is meant for a specific group of people while \_\_\_\_\_ may be aimed for the general public.
- (A) circular, notice    (B) notice, memo
  - (C) notice, circular    (D) memo, circular
100. What are the functions preprocessor directive in Embedded C programming ?
- (A) Tell compiler where to find symbols that are not present in program
  - (B) Give compiler instructions to compile the program
  - (C) Define variables
  - (D) Define functions

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SPACE FOR ROUGH WORK

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