

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 : **22**

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.
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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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Name of Candidate : _____ Signature of Candidate : _____

1. In the IoT network, Secure Shell (SSH) is :
 (A) Gateway
 (B) Secure network protocol
 (C) Router
 (D) Firewall
2. How are multiline comments denoted in Embedded C ?
 (A) ## (B) /* */
 (C) %% (D) //
3. What are the major categories of communications ?
 (A) Speech, writing
 (B) Printing
 (C) Electronic communication
 (D) All of the above
4. Which of the following is used to capture data from the physical world in IoT devices ?
 (A) Sensors
 (B) Actuators
 (C) Microprocessors
 (D) Microcontrollers
5. What is the size of RAM memory in 8051 ?
 (A) 32 bytes (B) 64 bytes
 (C) 128 bytes (D) 256 bytes
6. Which one is the most discussed challenge in IoT ?
 (A) Standard (B) Security
 (C) Regulation (D) Internet
7. 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
8. 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
9. _____ is a combination of hardware and software to perform a specific task.
 (A) IoT System
 (B) Embedded System
 (C) Grid System
 (D) Cloud System
10. 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
11. Spring Boot Actuator exposes operational information about running application using _____ endpoints.
 (A) TCP (B) HTTP
 (C) IP (D) FTP
12. The stress management technique based on mental exercises which to produces the relaxation response :
 (A) Autogenic Technique
 (B) Eating
 (C) Sleeping
 (D) Medicine intake

13. 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

14. TCP stands for :

- (A) Transmission Control Protocol
- (B) Telecommunication Control Protocol
- (C) Temperature Control Protocol
- (D) Transmission and Communication Protocol

15. 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

16. What type of speaker looks into the eyes of the audience ?

- (A) Confident (B) Impatient
- (C) Rude (D) Impolite

17. Which of the following is NOT a data type ?

- (A) sbit (B) dbit
- (C) bit (D) unsigned int

18. 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

19. The purpose of communication is to help officials to _____ the employees.

- (A) Eliminate (B) Motivate
- (C) Threaten (D) Apprise

20. How can you throw an error with preprocessor directives to Arduino Compiler, forcing to stop compilation ?

- (A) #warning (B) #stop
- (C) #cut (D) #error

21. _____ allow data processing close to device.
- (A) Edge Computing
 (B) Cloud Computing
 (C) Fog Computing
 (D) Grid Computing
22. Which of these may convey arrogance ?
- (A) Shoulder shrug
 (B) Jointed fingertips
 (C) Hands swinging loosely
 (D) Pointed finger
23. 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
24. How many analog pins are used in Arduino Mega board ?
- (A) 12 (B) 16
 (C) 8 (D) 14
25. 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
26. 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
27. IoT devices can easily lead to catastrophe without \_\_\_\_\_.
- (A) Software  
 (B) Devices  
 (C) Cloud  
 (D) Management system
28. 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
29. What is Arduino ?
- (A) Programming language  
 (B) Image editing software  
 (C) Open-source electronics platform  
 (D) Text editor

30. What are Arduino Codes are referred to ?  
 (A) sketches (B) drawings  
 (C) links (D) notes
31. 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
32. Which of the following helps to collaborate in IoT development ?  
 (A) physical computing  
 (B) chemical computing  
 (C) mechanism  
 (D) cloud computing
33. What is the bit size used in 8051 ?  
 (A) 4-bit (B) 8-bit  
 (C) 16-bit (D) 32-bit
34. 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
35. 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
36. How should the tone of a speaker be like ?  
 (A) Loud (B) Clear  
 (C) Low (D) Soft
37. What is the resolution of the micros() function on the Arduino Nano ?  
 (A) 7 Microseconds (B) 4 Microseconds  
 (C) 6 Microseconds (D) 2 Microseconds
38. What is the process to check whether previous stages of reading have been followed properly ?  
 (A) Survey (B) Question  
 (C) Reading (D) Review
39. 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
40. 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
41. HC-05 is a Bluetooth module that can communicate in which mode ?  
 (A) Simplex (B) Duplex  
 (C) Full-Duplex (D) None of these

42. 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
43. How to research and enquire about the company ?  
 (A) Website  
 (B) Company Directories  
 (C) Annual Report  
 (D) All of these
44. How are comments denoted in Embedded C ?  
 (A) # (B) %  
 (C) ; (D) //
45. Which of the following process is used to keep track of user's activity ?  
 (A) Authentication  
 (B) Authoring  
 (C) Authorization  
 (D) Accounting
46. The advantages of using functions is \_\_\_\_\_.  
 (A) Partition larger task into smaller tasks  
 (B) Code reusability  
 (C) Manage complexity  
 (D) All of these
47. Which of the following is the key to an effective presentation ?  
 (A) Image  
 (B) Styles  
 (C) Limited words and key phrases  
 (D) Layouts
48. The Atmega 168 is an \_\_\_\_\_ bit chip.  
 (A) 32 (B) 64  
 (C) 8 (D) 16
49. What indicates to the reader the purpose of a letter ?  
 (A) Subject (B) Body  
 (C) Address (D) Salutation
50. Major Component of IoT is/are \_\_\_\_\_.  
 (A) Sensors  
 (B) Actuators  
 (C) Smart Applications  
 (D) All of the Above
51. \_\_\_\_\_ 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
52. 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
53. 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
54. 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

55. 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
56. Reports are usually utilized to present the outcome of :  
 (A) Experiment (B) Inquiry  
 (C) Investigation (D) All of these
57. 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)
58. MQ-135 is a type of \_\_\_\_\_.  
 (A) Humidity sensor  
 (B) Gas sensor  
 (C) Light sensor  
 (D) Temperature sensor
59. In IoT, Transport layer set up connections without handshakes/acknowledgements using :  
 (A) UDP (B) TCP  
 (C) FTP (D) HTTP
60. A good presenter and communicator should :  
 (A) Follow good sequencing of ideas  
 (B) Manage time properly  
 (C) Clear doubts  
 (D) All of these
61. During embedded design, which design considers both hardware and software ?  
 (A) Memory Design  
 (B) Software / hardware Design  
 (C) Platform-based Design  
 (D) Peripheral Design
62. Which one is not a control structure ?  
 (A) While (B) If..else  
 (C) #define (D) Case
63. 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
64. What language is the Arduino IDE built on ?  
 (A) Java (B) HTML  
 (C) C/C++ (D) Python
65. Functions can pass information in which of the following ways ?  
 (A) Value (B) Reference  
 (C) Stack (D) Both (A) and (B)
66. How power supply is done to Raspberry Pi ?  
 (A) USB connection (B) Internal battery  
 (C) Charger (D) Adapter

67. Which one is not Leading Cloud Services for IoT Deployments ?  
 (A) AWS (B) IBM Watson  
 (C) Microsoft Azure (D) Google Drive
68. 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
69. 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
70. Which processor helps in carrying out floating point calculations ?  
 (A) microprocessor (B) coprocessor  
 (C) microcontroller (D) controller
71. What is the efficiency of the DC motor at maximum power ?  
 (A) 90% (B) 100%  
 (C) Around 80% (D) Less than 50%
72. IoT and cloud computing has what kind of relationship ?  
 (A) Physical  
 (B) Complementary  
 (C) Graphical  
 (D) Coding
73. A set of homogenous data stored in consecutive memory locations is called :  
 (A) List (B) Structure  
 (C) Array (D) Union
74. 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
75. Which of these does not enhance listening skills ?  
 (A) Attention  
 (B) Clear perception  
 (C) Frankness  
 (D) Ignoring
76. 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



77. Which memory storage is widely used in Embedded Systems ?  
 (A) EEPROM (B) DRAM  
 (C) Flash memory (D) SRAM
78. An IoT network is a collection of \_\_\_\_\_ devices.  
 (A) Signal  
 (B) Machine to machine  
 (C) Interconnected  
 (D) Network
79. \_\_\_\_\_ is heart of Computer system.  
 (A) Memory (B) I/O  
 (C) Counter (D) Processor
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. 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
82. 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
83. Most sensors have what type of transfer function ?  
 (A) Zero (B) Infinity  
 (C) Linear (D) Non-linear
84. Which of the following prevents someone from denying the accessed resource ?  
 (A) Accounting  
 (B) Non-repudiation  
 (C) Sniffing  
 (D) Authorization
85. The IoT networks that has a very short range is :  
 (A) WAN  
 (B) LAN  
 (C) Fox  
 (D) Short-range Wireless Network
86. What is the use of the IR Sensor ?  
 (A) Humidity Detection  
 (B) Image Processing  
 (C) Object Detection  
 (D) GPS
87. 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
88. What is the number of elements in open IoT architecture ?  
 (A) Four (B) Five  
 (C) Six (D) Seven
89. Which of the following is used to upload the Arduino Sketches to the board ?  
 (A) avrgcc (B) g++  
 (C) cpython (D) avrdude

90. 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
91. The actuators used in IoT applications are :
- (A) Relay                      (B) Servo Motors
  - (C) DC Motors              (D) All of these
92. How many times does the setup() function run on every startup of the Arduino System ?
- (A) 4                              (B) 5
  - (C) 2                              (D) 1
93. 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
94. Which one of these is not threat modelling methodology ?
- (A) NANO                      (B) STRIDE
  - (C) OCTAVE                  (D) PASTA
95. 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
96. LDR sensor works on the principle of :
- (A) Resistivity
  - (B) Photoconductivity
  - (C) Conductivity
  - (D) Both (A) and (C)
97. Sensor effectiveness depends on which of the following parameters ?
- (A) Radiation                  (B) Resistivity
  - (C) Sensitivity                (D) All of the above
98. 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
99. 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
100. What is the real example of a smart grid device in IoT ?
- (A) Mobile phone      (B) Television
  - (C) Smart Speaker      (D) Smart Meters

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SPACE FOR ROUGH WORK

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