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ISO 9001 : 2015 Certified

M4-R5.1:

Internet of Things & It's Applications

Viva Questions

Ques 1. What is the default baud rate for serial communication in Arduino?

Ans. 9600

Ques 2. What is the difference between int and float in Arduino?

Ans. int is used for integers (whole numbers), and float is used for floating-point numbers (numbers with decimals).

Ques 3. What software is used to program the Arduino Uno?

Ans. Arduino IDE (Integrated Development Environment).

Ques 4. What language is used to program the Arduino Uno?

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Ans. A simplified version of C++.

Ques 5. What is a smart home?

Ans. A home equipped with IoT devices that automate and control lighting, heating, security, and other systems.

Ques 6. LCD full form.

Ans. Liquid Crystal Display.

Ques 7. What are actuators used for?

Ans. They are used in various applications like opening valves, moving robotics arms, and adjusting seats.

Ques 8. What are different communication models in iot?

Ans. ● Request-Response Model

- Publisher-Subsciber Model
- Push-Pull Model
- Exclusive-Pair Model

Ques 9. How does a motion sensor work?

Ans. It detects movement in an area.

Ques 10. What is a servo motor?

Ans. A rotary actuator that allows for precise control of angular position**,** often used in robotics.

Ques 11. What is a sketch in Arduino?

Ans. A program written for Arduino.

Ques 12. What is a light sensor?

Ans. A sensor that detects light levels.

Ques 13. How many layers are there in OSI model?

Ans. 7

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Ques 14. How many layers are there in TCP/IP model?

Ans. 4

Ques 15. What is an Arduino Uno?

Ans. A popular microcontroller board used for building electronic projects.

Ques 16. What are the two main functions in an Arduino sketch?

Ans. setup() and loop().

Ques 17. What microcontroller does the Arduino Uno use?

Ans. ATmega328P

Ques 18. How many digital I/O pins does the Arduino Uno have?

Ans. 14 digital I/O pins.

Ques 19. How many of the digital I/O pins on the Arduino Uno can be used as PWM outputs?

Ans. 6 pins(3,5,6,9,10,11).

Ques 20. How do you create a comment in an Arduino sketch ?

Ans. Single-line comment : // comment

Multiline comment : /*comment*/.

Ques 21. Name any three sensors?

Ans. Proximity, Gyroscope, Pressure Sensor.

Ques 22. How many main elements are there in Open-IOT Architecture?

Ans. 7

Ques 23. What does a temperature sensor do?

Ans. It measures how hot or cold something is.

Ques 24. On which layer does the router work?

Ans. Network Layer

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Ques 25. IPv4 address is how many bits long is :

Ans. 32 bits.

Ques 26. What is an actuator?

Ans. A device that converts energy into motion.

Ques 27. What are some common types of actuators?

Ans. Electric, hydraulic, pneumatic, and mechanical actuators.

Ques 28. What is IOT?

Ans. Internet of Things, a network of physical objects connected to the internet, collecting and exchanging data.

Ques 29. What is an IOT protocol?

Ans. A set of rules that allow electronic devices to communicate with each other in an IoT network.

Ques 30. What are some common iot protocols?

Ans. MQTT, CoAP, HTTP, LoRaWAN, Zigbee, Bluetooth, and Z-Wave.

Ques 31. What is microcontroller?

Ans. A small computer on a single integrated circuit that includes a processor, memory, and input/output peripherals.

Ques 32. What are the main components of microcontrollers?

Ans. CPU, memory(RAM and ROM), and input/output ports.

Ques 33. How many bits long is an IPv6 address?

Ans. 128 bits.

Ques 34. How many bits long is an MAC address?

Ans. 48 bits.

Ques 35. Which Micro Controller is used in Arduino Uno?

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Ans. ATmega328P.

Ques 36. What does a pressure sensor do?

Ans. It measures the force of a liquid or gas on a surface.

Ques 37. What is a flash memory in a microcontroller?

Ans. Non-volatile meamory used to store the program code.

Ques 38. What is the function of the CPU in a microcontroller?

Ans. To execute instructions and process data.

Ques 39. What are I/O ports in a microcontroller?

Ans. Pins used to connect the microcontroller to external devices.

Ques 40. What is the purpose of the setup() function?

Ans. To initialize variables, pin modes, and start using libraries. It runs once when the program starts.

Ques 41. What is the purpose of the loop() function?

Ans. To run the main code repeatedly.

Ques 42. What is an analog-to-digital converter (ADC)?

Ans. A component that converts analog signals to digital data.

Ques 43. What is an digital-to-analog converter (DAC)?

Ans. A component that converts digital data to analog signals.

Ques 44. Tell about loop() and setup().

Ans. When Sketch starts, the Setup() function is called. And the Setup() function runs only once.

Ques 45. What is the main function of an actuator?

Ans. To move or control a mechanism or system.

Ques 46. What is a sensor?

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Ans. A device that detects changes is the environment and sends information to other electronics.

Ques 47. What does the pinMode() function do?

Ans. The pinMode() function configures the input/output pins.

Ques 48. What is the range of values for analogread()?

Ans. 0 to 1023.

Ques 49. What is the function of delay() function?

Ans. The delay() function is used to delay the program line. And its value is in milliseconds.

Ques 50. What is a proximity sensor?

Ans. It detects how close an object is without touching it.

Ques 51. What is a thermistor?

Ans. A temperature sensor that changes resistance with temperature.

Ques 52. What is an ultasonic sensor?

Ans. A sensor that uses sound waves to detect objects and measure distance.

Ques 53. How many milliseconds are in 1 sec?

Ans. 1000 millisecond.

Ques 54. Why use digitalwrite()?

Ans. Outputs the value on the digitalwrite() pin.

Ques 55. What is serialmonitor?

Ans. Serialmonitor is a tool. It is used as a debugging tool for testing or for direct communication with the Arduino board.

Ques 56. When and by Whom was Arduino made?

Ans. Arduino introduced in 2005 by Massimo Banzi.

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Ques 57. How many analog input pins are there on the Arduino Uno?

Ans. 6 analog input pins (A0 to A5).

Ques 58. What is the operating voltage of the Arduino Uno?

Ans. 5V

Ques 59. Full Form of MQTT.

Ans. Message Queuing Telemetry Transport.

Ques 60. On which layer does MQTT operate?

Ans. Application Layer.

Ques 61. Full Form of HTTP.

Ans. Hypertext Transfer Protocol.

Ques 62. What is protocol?

Ans. Internet Protocol is a "set of rules" for exchanging data from one computer to another over the internet and other networks.

Ques 63. What is the clock speed of the Arduino Uno?

Ans. 16 MHz.

Ques 64. Name of translator.

Ans. Assembler, Compiler, Interpreter.

Ques 65. What is the full form of IIOT and WOT?

Ans. IIOT:- Industrial Internet of Things.

WOT:- Web of Things.

Ques 66. What is internet?

Ans. Internet is a network of networks. In which private, public, business and government networks have been connected through cable, satellite, router, gateway etc.

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Ques 67. What is Variable?

Ans. A variable is a storage area used to store data. Variables are used to contain data which can be changed at any time at the time of program execution.

Ques 68. What is an operator?

Ans. The operator is a symbol. Whose task is to do mathematical and logical operations.

Ques 69. What is Function?

Ans. Function is such a block of code, with the help of which we perform a specific task in our program.

Ques 70. What are the fundamental components of iot?

Ans. ● Sensors/Devices

- Connectivity
- Data Processing
- User Interface

Ques 71. What is difference between IOT and IIOT?

Ans. IOT

- The full form of IoT is the Internet of Things.
- A service model is human-centric.
- It supports customer-oriented applications.

IIOT

- The full form of IIoT is the Industrial Internet of Things.
- A service model is machine-centric.
- It supports industry-oriented applications.

Ques 72. What are mostly used iot protocols?

Ans. XMPP, AMQP, Very Simple Control Protocol (VSCP), Data Distribution Service (DDS), MQTT protocol, WiFi, Simple Text Oriented Messaging Protocol (STOMP), Zigbee.

Ques 73. What is the full form of WSN?

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Ans. Wireless Sensor Network.

Ques74: What are data types in C?

Ans: int, float, char, double, etc.

Q75: What is the use of 'void setup()' in Arduino?

A: It runs once when the program starts; used for initialization.

Q76: What is the use of 'void loop()' in Arduino?

A: It runs repeatedly; contains the main logic of the program.

Q78: What is a constant?

A: A value that does not change during program execution.

Q79: What is the syntax of 'if' statement?

A: if(condition) { //code }

Q80: What is a function?

A: A block of code that performs a specific task.

Q81: What is the use of 'digitalWrite()'?

A: Sends HIGH or LOW signal to a digital pin.

Q82: What does 'pinMode()' do?

A: Sets the pin as INPUT or OUTPUT.

Q83: What is the use of 'delay()' function?

A: Pauses the program for a specific time in milliseconds.

Q84: What is an array?

A: A collection of similar data items stored under one name.

Q85: What is the difference between '==' and '='?

A: '==' checks equality, '=' assigns value.

Q86: What does 'Serial.begin(9600)' do?

A: Starts serial communication at 9600 baud rate.

Q87: What is a loop?

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A: A control structure to repeat a block of code.

Q88: What is the difference between 'while' and 'for' loop?

A: 'for' is used when number of iterations is known, 'while' is used when condition is known.

Q89: What is the use of 'analogRead()'?

A: Reads analog input from a specified pin.

Q90: What is the difference between analog and digital signals?

A: Analog is continuous; digital is binary (0 or 1).

Q91: How do you define a function in Arduino?

A: ReturnType functionName() { //code }

Q92: What is the use of comments in code?

A: To explain code; ignored by compiler.

Q93: What are libraries in Arduino?

A: Pre-written codes to simplify hardware control.

Core IoT & Arduino

Q1: What is IoT?
A: A network of physical 'things' with sensors/electronics that collect and exchange data over the internet.

Q2: What are the 4 main parts of an IoT system?
A: Sensors/devices, connectivity, data processing, user interface.

Q3: Give an example of an IoT device.
A: Smartwatch, smart home thermostat, fitness tracker.

Q4: What are some development boards used for IoT projects?
A: Arduino, Raspberry Pi, ESP32, etc.

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Hardware & Circuits

Q1: What do you need to blink an LED with Arduino?

A: An Arduino board, an LED, a resistor, and wires.

Q2: What does a resistor do in an LED circuit?

A: Limits current to stop the LED from burning out.

Q3: What is PWM and where is it used?

A: Pulse- Width Modulation: used to control LED brightness, motor speed, etc., in Arduino.

Arduino Programming Basics

Q1: What does setup() do in an Arduino sketch?

A: Initializes pins, starts communication, and runs once.

Q2: What is the loop() function for?

A: Holds the main logic and runs repeatedly after setup().

Q3: What is a 'sketch'?

A: The name Arduino uses for a program or code.

Q4: What is the Serial Monitor?

A: A tool in Arduino IDE to send/receive data from the board.

Q5: How do you include a library in code?

A: Use #include <LibraryName.h> at the top of the sketch.

Q6: What does analogRead() do?

A: Reads a voltage value from an analog pin.

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Q7: What does pinMode() set?

A: Configures a pin as input or output.

Q8: Why is the GND pin important?

A: It completes the circuit—acts as the reference ground.

Communication & Protocols

Q1: Name communication protocols used in IoT.

A: MQTT, CoAP, HTTP, I^2C, SPI, UART.

Q2: Which protocol is considered 'lightweight'?

A: MQTT – uses publish/subscribe to reduce overhead.

Q3: What's the architecture of MQTT?

A: Publish–Subscribe based (not client–server).

Networking & System Concepts

Q1: What is the purpose of a relay module in IoT?

A: Acts as an electrically- controlled switch—controls high-power devices via Arduino.

Q2: Role of a microcontroller in IoT?

A: The device "brain" that processes sensor data and controls actions.

Q3: What are "Things" in IoT?

A: Physical devices with unique IDs that sense, act, or communicate.

Security, Challenges & Applications

Q1: Mention key concerns in IoT security.

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A: Data breaches, hacking, privacy, weak authentication.

Q2: Some challenges in deploying IoT systems?

A: Cost, compatibility, scalability, data storage, interoperability.

Q3: Real-world IoT applications?

A: Smart homes, agriculture (moisture sensors), healthcare monitoring, smart cities.

Q4: Difference between edge computing and cloud?

A: Edge processes data locally on device/gateway; cloud processes centrally.

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