

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP (HONOURS)**  
**FIRST SEMESTER EXAMINATION**  
**(2024 ADMISION ONWARDS)**

**MG1DSCECT100 - Emerging Electronics**

**Duration: 1.5 hours**

**Maximum Marks: 50**

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

*\*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E)*

**Part A**

Multiple Choice Questions. Answer **All** Questions  
Each question carries 1 mark

- |    |  |   |   |
|----|--|---|---|
| 1. | The temperature coefficient of resistance is   | U | 1 |
|    | (a) positive for semiconductors and insulators   |   |   |
|    | (b) negative for conductors and semiconductors   |   |   |
|    | (c) negative for semiconductors and insulators   |   |   |
|    | (d) none   |   |   |
| 2. | The pentavalent impurities like antimony and phosphorus added to intrinsic semiconductors are called | U | 1 |
|    | (a) acceptor or P-type impurities  |   |   |
|    | (b) donor or P-type impurities   |   |   |
|    | (c) acceptor or N-type impurities  |   |   |
|    | (d) donor or N-type impurities   |   |   |
| 3. | What is the consequence of exceeding a diode's PIV?  | U | 1 |
|    | (a) Improved conductivity (b) Diode breakdown  |   |   |
|    | (c) Increased efficiency (d) No effect   |   |   |
| 4. | The direction of conventional current flow in an NPN transistor is                                   | U | 2 |
|    | (a) From emitter to collector (b) From base to collector   |   |   |
|    | (c) From collector to emitter (d) From emitter to base   |   |   |
| 5. | Which voltage increases the channel size in JFET?  | U | 2 |
|    | (a) Positive $V_{gs}$ (b) Negative $V_{gs}$  |   |   |
|    | (c) Positive $V_{ds}$ (d) Negative $V_{ds}$  |   |   |
| 6. | How can you improve the output of a half-wave rectifier?   | A | 2 |
|    | (a) Increase frequency (b) Use a capacitor   |   |   |
|    | (c) Increase voltage (d) Add more diodes   |   |   |
| 7. | Where would you typically find an LDR?   | U | 3 |
|    | (a) In microphones (b) In light-sensitive circuits   |   |   |
|    | (c) In temperature sensors (d) In sound systems  |   |   |
| 8. | Which switch type is best for simple on/off control of a single device?                              | K | 3 |
|    | (a) SPST (b) DPST (c) DPDT (d) SPDT  |   |   |
| 9. | What is the role of the coil in a mechanical relay?  | U | 3 |
|    | (a) Generates heat (b) Generates motion  |   |   |

- (c) Creates a spark (d) Closes contacts
- 10 What type of protection does an MCB provide? U 3  
 (a) Over-voltage protection (b) Thermal protection  
 (c) Short-circuit protection (d) Both thermal and short-circuit protection
- 1\*10 = 10**

**Part B**

Short Answer Questions. Answer 4 Questions  
 Each question carries 5 marks

11. Compare Direct Current versus Alternating Current. U 1
12. Find the equivalent capacitance when two 10  $\mu$ F capacitors connected in series and parallel. A 1
- 13 Draw and explain the V-I characteristics of PN junction diode U 1
- 14 Based in their complexity explain the classification of IC. U 2
- 15 What is a Ripple factor? What is its value of a Half Wave and Full Wave Rectifier? U 2
- 16 How does a Miniature Circuit Breaker (MCB) protect against short circuits? U 3
- 4 \* 5 = 20**

**Part C**

Essay Questions. Answer 2 Questions  
 Each question carries 10 marks

- 17 Explain the working principle of a Zener diode as a voltage regulator, including its symbol and key components of the circuit. U 1
- 18 Compare and Contrast NPN and PNP transistor. Explain the working of NPN Transistor U 2
- 19 Describe the working of a center-tapped full-wave rectifier, including the role of each component and its advantages over a half-wave rectifier. A 2
- 20 What is an LDR? Describe the applications of Light Dependent Resistors (LDRs) in real-world devices and systems. K 3
- 2 \* 10 = 20**

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**

MGU-UGP (HONOURS)

FIRST SEMESTER EXAMINATION

(2024 ADMISION ONWARDS)

**MG1DSCECT101 - COMPUTER FUNDAMENTALS AND BASICS OF PC HARDWARE**

Duration: 1.5 hours

Maximum Marks: 50

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

*\*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)*

**Part A**

Multiple Choice Questions

Answer **All** Questions

Each question carries 1 mark

- |    |   |    |   |
|----|---|----|---|
| 1  | Identify the primary function of the Central Processing Unit (CPU) from the given list.<br>a) Data Storage b) input/output operations c) Executing instructions d) Networking   | U  | 1 |
| 2  | Identify the primary function of the ENIAC computer.<br>a) To perform simple calculations b) To solve complex mathematical problems<br>c) To store data d) To run commercial applications   | U  | 1 |
| 3  | Identify the no: of unique characters that can be represented with 7 bits in ASCII.<br>a) 64 b)128 c)256 d)512  | U  | 1 |
| 4  | Name the device which is typically used to connect different networks in a WAN.<br>a) Hub b) Switch c) Router d) Repeater   | K  | 1 |
| 5  | Identify the act of retrieving data from a memory storage location<br>a) Memory Write b) Backup c) Formatting d) Memory Read  | U  | 2 |
| 6  | Classify the secondary storage device best suited for long-term archiving of data.<br>a) RAM b)SSD c)HDD d)Optical Disc   | U  | 2 |
| 7  | Indicate which option identifies the primary function of a mouse.<br>a) To enter text b) To move the cursor and select items on the screen<br>c) To print documents d) To process images  | U  | 2 |
| 8  | Compare the advantages of SSDs over HDDs in data retrieval during multitasking.<br>a) HDDs retrieve data faster during multitasking due to their larger capacity.<br>b) SSDs and HDDs offer similar performance in multitasking environments.<br>c) SSDs have faster data retrieval, enhancing multitasking performance.<br>d) HDDs have better performance due to their mechanical components. | An | 3 |
| 9  | Examine the effects of using multiple GPUs in a system and identify the primary advantage.<br>a) It reduces the need for cooling solutions b) It enhances performance of graphics<br>c)It simplifies the system architecture d) It decreases power consumption  | An | 3 |
| 10 | Examine which type of cache writing strategy updates data in both the cache and the main memory simultaneously.<br>Cache overflow b) Cache hit c) Cache miss d) Cache bypass  | An | 3 |

**1 \* 10 = 10**

**Part B**

Short Answer Questions

Answer 4 Questions

Each question carries 5 marks

- |    |  |    |   |
|----|--|----|---|
| 11 | Discuss why memory management function of operating system is important.                                       | U  | 1 |
| 12 | Distinguish between hardware and software in a computer system.  | U  | 1 |
| 13 | Explain what registers are. Discuss the important registers used in CPU.                                       | U  | 2 |
| 14 | Describe the different types of printers available and identify the advantages and disadvantages of each type. | U  | 2 |
| 15 | Explain Green Computing with an example.   | An | 3 |
| 16 | Predict the potential benefits of neuromorphic computing in replicating human brain functions.                 | An | 3 |

**4 \* 5 = 20**

**Part C**

Essay Questions

Answer 2 Questions

Each question carries 10 marks

- |    |   |    |   |
|----|---|----|---|
| 17 | Describe the components of a computer system with a simple diagram to support your explanation.             | U  | 1 |
| 18 | Describe how the core functions of OS contribute to the overall system performance.                         | U  | 1 |
| 19 | Explain the differences between various types of USB ports & CPU Sockets.                                   | U  | 2 |
| 20 | Differentiate Virtual Reality (VR) and Augmented Reality (AR) in terms of user experience and applications. | An | 3 |

**2 \* 10 = 20**

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**

MGU-UGP (HONOURS)

FIRST SEMESTER EXAMINATION

(2024 ADMISION ONWARDS)

**MG1DSCIAM100 INTERACTIVE ROBOTIC SYSTEMS**

**Duration: 1.5 hours**

**Maximum Marks: 50**

Students should attempt atleast one question from each course outcome to enhance their overall outcome attainability.

*\*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)*

**Part A**

Multiple Choice Questions

Answer **All** Questions

Each question carries 1 mark

- |    |   |   |   |
|----|---|---|---|
| 1  | What is the microcontroller used in the Arduino Board<br>A) ATmega328p B) ATmega2560 C) ATmega32U4 D) ATmega8   | R | 1 |
| 2  | The Speed of sound in air is-----<br>A) 3m/s B) 3000m/s C) 34m/s D)343m/s   | R | 2 |
| 3  | Which is the communication protocol used by the MPU6050 to communicate with microcontrollers.<br>A) UART B) SPI C) I2C D) CAN   | R | 3 |
| 4  | ----- Function is called repeatedly in an Arduino program.<br>A) void setup() B) void loop() C) main() D) Init()  | R | 1 |
| 5  | Which Component is NOT typically found in an ultrasonic sensor?<br>A) Transmitter B) Receiver C) Amplifier D) Solar panel   | U | 2 |
| 6  | How many number of pins does the MPU6050 sensor typically have?<br>A) 4 B) 6 C) 8 D) 10   | R | 3 |
| 7  | The correct file extension for the Arduino IDE installation file is<br>A) .exe B) .zip C) .tar.gz D) .dmg   | U | 1 |
| 8  | The principle of operation of MQ 2 smoke sensor is the change of _____ in the presence of gas.<br>A) voltage B) Resistance C) Current D) Capacitance                    | U | 2 |
| 9  | Which model is commonly used to represent self-balancing robots?<br>A) Simple Pendulum Model B) Inverted Pendulum Model<br>C) Circular Motion Model D) Rotational Model | U | 3 |
| 10 | What is the typical output range of a standard servo motor when controlled via PWM?<br>A) 0-90 degrees B) 0-180 degrees C) 0-360 degrees D) 0-45 degrees                | R | 3 |

**1 \* 10 = 10**

**Part B**

Short Answer Questions

Answer **4** Questions

Each question carries 5 marks

- |    |  |   |   |
|----|--|---|---|
| 11 | Explain the difference between the void setup () and void loop () in Arduino? Give an example? | A | 1 |
| 12 | Describe the working principle of ultrasonic sensor in detail?                                 | U | 2 |
| 13 | Explain how Arduino platform contributed to the growth of the Internet of Things (IoT)?        | U | 1 |
| 14 | Explain the function of an ultrasonic sensor in RADAR mode?                                    | U | 3 |
| 15 | Explain the working principle of IR Flame sensor?  | U | 2 |
| 16 | What is the primary function of a self-balancing robotic system? Explain in detail.            | U | 3 |

**4 \* 5 = 20**

**Part C**

Essay Questions

Answer **2** Questions

Each question carries 10 marks

- |    |   |   |   |
|----|---|---|---|
| 17 | Compare void setup () and void loop () functions in Arduino programming. How do they work together to create a complete Arduino Sketch? And explain the uses of both functions? | U | 1 |
| 18 | Write a program to read the values from LDR with proper steps?  | A | 2 |
| 19 | Describe the fundamental principles that enable self-balancing robots to maintain stability. What technologies and mechanisms do these robots employ to achieve balance?        | U | 3 |
| 20 | Explain the fundamental principles behind servo motors. What are the main components of a servo system, and how do they work together to achieve precise control of movement?   | U | 2 |

**2 \* 10 = 20**

# MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS)

FIRST SEMESTER EXAMINATION

(2024 ADMISION ONWARDS)

## MG1DSCMOS100 PC Hardware and Smartphone Troubleshooting

**Duration: 1.5 hours**

**Maximum Marks: 50**

Students should attempt at least one question from each course outcome to enhance their overall *outcome attainability*.

*\*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E)*

### Part A

Multiple Choice Questions

Answer **All** Questions

Each question carries 1 mark

- |    |   |   |   |
|----|---|---|---|
| 1  | Which part of the PC stores the Operating System and user data?<br>[a] RAM [b] CPU [c] HDD [d] GPU  | U | 1 |
| 2  | Which slot type is used to install graphics card on a motherboard?<br>[a] SATA [b] PCIe [c] USB [d] PCI   | U | 1 |
| 3  | Which color wire in a SMPS connector typically represents +12V?<br>[a] red [b] yellow [c] black [d] orange  | K | 2 |
| 4  | What is the first step in a systematic troubleshooting methodology?<br>[a] identifying the problem [b] implementing a solution<br>[c] testing the solution [d] documenting the process  | A | 2 |
| 5  | What is the common symptom of a faulty SMPS?<br>[a] slow internet connection [b] no power to the device<br>[c] frequent software crash [d] no power to the device   | U | 2 |
| 6  | If you notice a loose connection on a PCB, what is the first step you should take?<br>[a] replace the entire PCB [b] tighten the connection<br>[c] Ignore it, as it's not important [d] reboot the device                       | A | 2 |
| 7  | Give the primary function of the Bluetooth unit in a cell phone?<br>[a] to connect to wi-fi network<br>[b] to process video signal<br>[c] to enable wireless communication<br>[d] to manage cellular network connections        | U | 2 |
| 8  | Which component on a smart phone motherboard is primarily responsible for power management?<br>[a] CPU [b] Battery connector [c] PMIC [d] Heat sink   | K | 3 |
| 9  | Why is the GPS antenna often located near the top edge of a smart phone?<br>[a] to be closer to the user<br>[b] to minimize the interference<br>[c] to reduce battery consumption<br>[d] to enhance the phones aesthetic design | U | 3 |
| 10 | What is the primary function of boot mode configuration in a smartphone?  | A | 2 |

- [a] manage phone contacts [b] trouble shoot and repair  
[c] improve battery life [d] increase storage capacity

**1 \* 10 = 10**

**Part B**

Short Answer Questions  
Answer any **4** Questions  
Each question carries 5 marks

- |    |  |   |   |
|----|--|---|---|
| 11 | Draw the block diagram of a PC and explain the working.  | K | 1 |
| 12 | Explain the role of voltage regulators on a motherboard.   | U | 1 |
| 13 | List the primary steps involved in a typical troubleshooting process in a PC.                          | K | 2 |
| 14 | Explain the role of the BIOS in a computer system. How does it contribute to the overall boot process? | U | 2 |
| 15 | List and explain the main sensors typically integrated into a smartphones motherboard?                 | U | 2 |
| 16 | Describe the different boot modes available in smart phones and their purposes.                        | U | 2 |

**4 \* 5 = 20**

**Part C**

Essay Questions  
Answer any **2** Questions  
Each question carries 10 marks

- |    |   |   |   |
|----|---|---|---|
| 17 | Discuss the architecture of the motherboard in a PC. What are the main features of each component?    | U | 1 |
| 18 | Explain the working principle of a Switched Mode Power Supply unit in a PC with suitable diagram.     | U | 2 |
| 19 | Explain the purpose of POST and its role in diagnosing hardware failure.                              | A | 2 |
| 20 | Explain the role of the RF unit in smartphones and discuss the types of antennas used in smartphones. | U | 3 |

**2 \* 10 = 20**



**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
MGU-UGP (HONOURS)  
FIRST SEMESTER EXAMINATION  
(2024 ADMISION ONWARDS)  
**MG1MDCECT100 Home Appliances and Troubleshooting**

**Duration: 1 hour**

**Maximum Marks: 35**

Students should attempt atleast one question from each course outcome to enhance their overall outcome attainability.

*\*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)*

Multiple Choice Questions Answer **35** Questions  
Each question carries **one** mark

1. Which device is commonly used to measure voltage? K 1  
a) Ammeter b) Voltmeter c) Ohmmeter d) Wattmeter
2. According to Ohm's Law, which of the following is true? U 1  
a)  $V = I \times R$  b)  $I = V \times R$  c)  $R = V \times I$  d)  $V = I + R$
3. In a parallel circuit, how does the voltage across each component will measure? U 1  
a) It is different for each component b) It adds up to the total voltage  
c) It is zero for all components d) It is the same for each component
4. Which of the following describes a circuit with no break? K 1  
a) Open circuit b) Closed circuit c) Short circuit d) Series circuit
5. What happens to the current in a series circuit when more resistors are added? U 1  
a) Current increases b) Current decreases  
c) Current remains the same d) Current becomes zero
6. How will increasing the length of a wire affect its resistance? U 1  
a) Resistance decreases b) Resistance increases  
c) Resistance remains the same d) Resistance becomes zero
7. Power in an electrical circuit is defined as: K 1  
a) Voltage times resistance b) Current times resistance  
c) Voltage times current d) Voltage divided by current
8. In a circuit where voltage is constant, if the resistance is halved, what happens to the power? U 1  
a) Power doubles b) Power remains the same  
c) Power quadruples d) Power decreases
9. What type of load is typically connected to a single-phase system? K 1  
a) Large industrial motors b) Residential lighting and appliances  
c) High-power machines d) Transformers
10. What is the primary purpose of earthing in electrical systems? K 1  
a) To increase voltage b) To provide a path for fault current  
c) To improve conductivity d) To reduce energy consumption
11. What is the main symptom of a phase-to-phase fault? U 1  
a) Overheating of equipment b) Flickering lights  
c) Voltage imbalance between phases d) Complete power failure

12. Which color represents the earth wire in industrial wiring? K 1  
 a) Green/Yellow    b) Red    c) Black    d) Brown
13. Which wire gauge would typically be used for lighting circuits? K 1  
 a) 10 AWG    b) 12 AWG    c) 14 AWG    d) 20 AWG
14. What type of cable accessory is used for securing cables? U 1  
 a) Cable ties    b) Glands    c) Connectors    d) Switches
15. What is the primary purpose of cable management in electrical systems? K 1  
 a) Aesthetics    b) Performance    c) Organizing cables    d) Reducing costs
16. Which of the following is NOT a benefit of good cable management? U 1  
 a) Enhanced airflow    b) Reduced signal interference  
 c) Easier troubleshooting    d) Slower data transmission
17. What does MCB stand for? K 1  
 a) Mini Control Box    b) Maximum Circuit Breaker  
 c) Miniature Circuit Breaker    d) Minor Circuit Box
18. How does an RCCB protect against electrical faults? U 1  
 a) By cutting off power when an imbalance is detected  
 b) By regulating voltage levels  
 c) By reducing the current flow    d) By stabilizing the power supply
19. What is the main difference between an ELCB and an RCCB? U 1  
 a) ELCB is older and detects leakage through earth wire  
 b) ELCB works on magnetic principles  
 c) RCCB detects overloads    d) ELCB can detect overload
20. Which tool is commonly used for insulation resistance testing during equipment inspection? K 1  
 a) Multimeter    b) Megger    c) Ammeter    d) Voltmeter
21. What type of screwdriver has a flat, straight blade that fits into a straight screw slot? K 2  
 a) Phillips screwdriver    b) Flathead screwdriver    c) Hex screwdriver    d) Torx screwdriver
22. What is the main function of opening pliers? U 2  
 a) To tighten screws and bolts    b) To grip and twist objects with adjustable jaws  
 c) To cut wires    d) To measure angles in construction
23. Which type of tweezer tip is best for handling small, delicate objects? K 2  
 a) Slanted tip    b) Flat tip    c) Fine pointed tip    d) Round tip
24. Allen keys are commonly used in which of the following applications? K 2  
 a) Furniture assembly    b) Bicycle maintenance    c) Machinery assembly    d) All of the above
25. Which part of a hammer is responsible for striking objects? K 2  
 a) The handle    b) The head or face    c) The claw    d) The grip
26. What type of motion does a jigsaw blade perform? U 2  
 a) Rotating motion    b) Back-and-forth (reciprocating) motion  
 c) Circular motion    d) Vibrational motion
27. Which material is typically used to make punches due to its hardness and durability? K 2  
 a) Aluminum    b) Plastic    c) Stainless steel    d) Copper
28. Which type of wrench is used to apply a turning force to pipe fittings? U 2  
 a) Allen wrench    b) Torque wrench    c) Pipe wrench    d) Spanner wrench
29. Which of the following materials can a scribe be used to mark? U 2

- a) Only wood b) Metal, wood, and plastic c) Only metal d) Only plastic
30. What type of voltmeter is commonly used for high voltage measurements? K 2  
 a) Analog b) Fluke c) Digital d) All of the above
31. When measuring current, how should an ammeter be connected? U 2  
 a) In series b) In parallel c) Across the load d) None of the above
32. What is the resistance should an ideal ammeter have? U 2  
 a) Infinity b) High c) Low d) Zero
33. What is the primary advantage of a clamp meter? K 2  
 a) Compact size b) Measures DC c) No need to disconnect wires d) All of the above
34. What does a very high resistance reading (e.g., "OL" or in the MΩ range) across the fuse terminals suggest? U 2  
 a) The fuse is in good condition b) The fuse has very low resistance  
 c) The multimeter is malfunctioning d) The fuse is blown
35. How do you check for continuity in a circuit? U 2  
 a) Use voltage mode b) Use resistance mode  
 c) Use current mode d) Use capacitance mode
36. If the multimeter reads 0 Ω when measuring a resistor, what does it indicate? U 2  
 a) The resistor is functioning properly b) The resistor is open  
 c) The multimeter is set to the wrong mode d) The resistor has a short circuit
37. How do you identify a failed potentiometer? K 2  
 a) No change in resistance b) Infinite resistance c) Steady voltage d) Short circuit
38. What happens to a capacitor when it is fully charged? K 2  
 a) High resistance b) Low resistance c) Infinite resistance d) Zero capacitance
39. How can you identify a shorted inductor? K 2  
 a) High resistance b) Low resistance c) High inductance d) Infinite resistance
40. How do you check a MOSFET for gate functionality? K 2  
 a) Measure voltage b) Use diode test mode c) Measure resistance d) All of the above

**1 \* 35 = 35**

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**

**MGU – UGP (HONOURS)**

**FIRST SEMESTER EXAMINATION**

**(2024 ADMISSION ONWARDS)**

**MG1MDCECT 101 FOUNDATION OF AI AUTOMATION**

**Duration : 1 Hour**

**Max.Marks: 35**

*Students should attempt at least one question from each course outcome to enhance their overall outcome attainability*

*\*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E)*

**Multiple Choice Questions**

**Answer any 35 Questions**

**Each Question carries one mark**

- |    |   |   |   |
|----|---|---|---|
| 1  | What is the Turing Test designed to measure?                                    | U | 1 |
|    | a) Machine intelligence    b) Logical reasoning                                 |   |   |
|    | c) Human interaction        d) Machine learning capabilities                    |   |   |
| 2  | Which component of the biological neuron transmits signals to other neurons?    | U | 1 |
|    | a) Dendrites        b) Axon                c) Synapse            d) Cell body   |   |   |
| 3  | What does AI stand for?   | A | 1 |
|    | a) Artificial Intelligence    b) Applied Innovation                             |   |   |
|    | c) Automated Interface    d) Artificial Integration                             |   |   |
| 4  | Which language is most commonly used for AI programming?                        | K | 1 |
|    | a) Python            b) Java                c) C++                d) JavaScript |   |   |
| 5  | How does Narrow AI differ from General AI?                                      | A | 1 |
|    | a) It can perform any task    b) It specializes in tasks                        |   |   |
|    | c) It has human emotions    d) It thinks independently                          |   |   |
| 6  | What defines the tasks of Narrow AI?  | K | 1 |
|    | a) General application        b) Specific application                           |   |   |
|    | c) Philosophical reasoning    d) Emotional intelligence                         |   |   |
| 7  | In the context of AI, what does 'generation' mean?                              | U | 1 |
|    | a) Recognizing patterns in data    b) Creating entirely new content             |   |   |
|    | c) Labeling data                d) Improving data accuracy                      |   |   |
| 8  | What is machine learning?   | U | 1 |
|    | a) A method for automating tasks  |   |   |
|    | b) A way for computers to learn from data                                       |   |   |
|    | c) A process to manage large data   |   |   |
|    | d) A method to enhance human learning   |   |   |
| 9  | Which type of machine learning requires labeled data?                           | U | 1 |
|    | a) Reinforcement learning    b) Supervised learning                             |   |   |
|    | c) Unsupervised learning        d) Deep learning                                |   |   |
| 10 | What is the primary purpose of the input layer in a neural network?             |   |   |
|    | a) To process the output        b) To feed the input data into the network      |   |   |
|    | c) To adjust weights            d) To calculate gradients                       |   |   |
| 11 | Which of the following is NOT a challenge in using AI in healthcare?            | U | 2 |
|    | a) Data privacy concerns        b) High-quality data availability               |   |   |
|    | c) Regulatory hurdles            d) Cost-effectiveness                          |   |   |
| 12 | Which of the following is a common application of AI in finance?                | K | 2 |
|    | a) Fraud detection                b) Automated trading                          |   |   |
|    | c) Credit scoring                 d) All of the above                           |   |   |

- 13 AI can assist in financial market prediction by: A 2  
a) Analyzing historical data and market trends  
b) Generating random forecasts  
c) Manually reviewing all stock transactions  
d) Replacing human traders entirely
- 14 Which AI technology is commonly used to generate realistic special effects in movies? K 2  
a) Natural Language Processing (NLP)  
b) Generative Adversarial Networks (GANs)  
c) Decision Trees  
d) Support Vector Machines (SVM)
- 15 Which AI technique is commonly used in traffic management systems? K 2  
a) Reinforcement learning      b) Neural networks  
c) Natural language processing   d) Genetic algorithms
- 16 What does POS tagging refer to in NLP? U 2  
a) Predicting the sentiment of a sentence  
b) Parsing and splitting paragraphs  
c) Identifying parts of speech in a sentence  
d) Creating new words from a root word
- 17 What is a language model in content generation? K 2  
a) A model used to summarize images  
b) A model designed to predict or generate coherent text sequences  
c) A model that generates audio content  
d) A model used for processing video data
- 18 What does the DALL·E model specialize in generating? K 2  
a) Music tracks      b) Text summaries  
c) High-quality images based on text descriptions   d) Video content
- 19 What is the role of chatbots in office automation? K 2  
a) Analyzing financial data  
b) Providing real-time support for employee inquiries, customer service, and FAQs  
c) Printing documents  
d) Scheduling backups
- 20 Which of the following is crucial for tool compatibility? K 2  
a) Ease of use      b) Technical support  
c) Integration with existing systems   d) Cost structure
- 21 Who developed ChatGPT? K 2  
a) Google      b) Microsoft      c) OpenAI      d) IBM
- 22 What type of prompt is likely to get a step-by-step guide? A 2  
a) "Tell me about."   b) "Can you give me a step-by-step guide to baking a cake?"   c) "How to cook?"   d) "Explain cooking."
- 23 Can ChatGPT provide explanations of the generated code? U 2  
a) No, it only generates code  
b) Yes, it can explain the purpose and functionality  
c) Only for specific programming languages  
d) Only for complex code
- 24 What type of images can Playground AI generate? U 2  
a) Only abstract art      b) Only illustrations  
c) Both real and imaginative subjects   d) Only textures
- 25 How does DALL-E learn to generate images? U 2  
a) User- uploaded photos   b) Text prompts  
c) Existing artworks      d) 3D scans
- 26 How does DALL-E learn to generate images? U 2  
a) Through manual input from artists

- b) By analysing existing images and text descriptions  
c) By using user feedback only  
d) Through gaming techniques
- 27 Which type of images are not supported by MidJourney? U 2  
a) Abstract art b) Portraits  
c) Live-action photographs d) Conceptual illustrations
- 28 What is Supervised Learning? U 3  
a) Learning with labelled data b) Learning without data  
c) Learning from mistakes d) Learning from actions
- 29 What is clustering? K 3  
a) A way to sort data b) A way to group similar data points  
c) A way to label data d) A way to predict outcomes
- 30 What is a "reward"? E 3  
a) A prize for winning b) A signal to help learning  
c) A mistake made d) A type of data
- 31 Why is ethics important in AI? E 3  
a) To make AI faster b) To ensure fairness and safety  
c) To make AI more complicated d) To save money
- 32 How does AI help social media? E 3  
a) By creating more ads b) By personalizing user experiences  
c) By making users stay longer d) By reducing content
- 33 What is "responsible AI" U 3  
a) AI that always makes the best choices  
b) AI that considers ethical implications in decisions  
c) AI that operates without any rules  
d) AI that is difficult to understand
- 34 What is one societal impact of AI? K 3  
a) Creating more jobs b) Reducing decision- making speed  
c) Changing how people interact d) Increasing manual work
- 35 What is the importance of ethical training for AI developers? E 3  
a) To increase costs  
b) To ensure they understand the impact of their work  
c) To complicate the development process  
d) To limit creativity
- 36 Supervised learning works best with: K 3  
a) Labeled data b) Random data c) No data d) Sorted data
- 37 Which of these is NOT an unsupervised learning method? E 3  
a) K-Means b) Hierarchical Clustering  
c) Logistic Regression d) DBSCAN
- 38 What is user privacy? A 3  
a) Keeping user information safe b) Sharing all user data  
c) Making users register for everything d) Ignoring user preferences
- 39 What does "responsible AI use" mean? A 3  
a) Using AI for profit only b) Ensuring AI benefits society  
c) Ignoring ethical concerns d) Making AI more complicated
- 40 What is the goal of ethical considerations in AI? A 3  
a) To make AI systems more complex  
b) To ensure technology benefits all users  
c) To maximize data usage  
d) To ignore public opinion

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**

**MGU – UGP (HONOURS)**

**FIRST SEMESTER EXAMINATION**

(2024 ADMISSION ONWARDS)

**MG1MDCECT102 Data Analytics**

**Duration: 1 Hour**

**Max.Marks:35**

*Students should attempt at least one question from each course outcome to enhance their overall outcome attainability*

*\*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)*

**Multiple Choice Questions Answer 35 Questions**

**Each question carries one mark**

- |    |  |   |   |
|----|--|---|---|
| 1  | What is the primary purpose of data visualization in analytics?<br>a) To increase data storage      b) To make data easier to understand<br>c) To reduce the amount of data    d) To generate random data  | U | 2 |
| 2  | Which type of visualization is best suited for showing trends over time?<br>a) Pie chart      b) Histogram      c) Line chart      d) Box plot   | K | 2 |
| 3  | What type of data is most suitable for visualizing using a line chart?<br>a) Nominal data      b) Ordinal data<br>c) Continuous data      d) Categorical data  | U | 2 |
| 4  | Which is the best practice for labeling the lines in a line chart?<br>a) Use generic names      b) Use abbreviations<br>c) Label each line clearly with a legend      d) Do not label them at all  | U | 2 |
| 5  | Which of the following is NOT a tool commonly used for diagnostic analytics?<br>a) SQL      b) A/B testing      c) Decision trees      d) Regression analysis  | U | 1 |
| 6  | What is the primary goal of diagnostic data analytics?<br>a) To predict future outcomes      b) To understand why something happened<br>c) To optimize decision-making processes      d) To collect raw data   | U | 1 |
| 7  | What is the difference between "Save" versus "Save As"?<br>a) "Save" creates a backup copy<br>b) "Save As" allows you to rename the file or change its format<br>c) "Save" always prompts for a location<br>d) There is no difference; they are the same | U | 1 |
| 8  | In the "Save As" dialog, which option allows you to change the file's format?<br>a) Save      b) File type dropdown      c) Filename box      d) None of the above   | A | 1 |
| 9  | Which of the following formats cannot be imported into Excel?<br>a) .xml      b) .jpg      c) .txt      d) .xlsx   | U | 1 |
| 10 | What is the primary function of the "Export" option in Excel?<br>a) To delete a file      b) To save a workbook in a different format or location<br>c) To print a workbook      d) To share a workbook via email  | A | 1 |
| 11 | What is the primary purpose of data analytics?<br>a) Storing data      b) Predicting future trends<br>c) Visualizing data only      d) Collecting data   | U | 1 |
| 12 | Which of the following tools is commonly used for data visualization in data analytics?<br>a) Python      b) Excel      c) Tableau      d) Microsoft word  | K | 1 |

- 13 Which sector has significantly benefited from data analytics in recent years K 1  
a) Only healthcare b) Only retail  
c) All sectors, including healthcare, finance, and marketing  
d) Only manufacturing
- 14 Which of the following tools is commonly used in computerized data analytics? K 1  
a) Microsoft Word b) Google Chrome c) SQL d) Adobe Photoshop
- 15 What type of data can computerized data analytics process? U 1  
a) Only structured data b) Only unstructured data  
c) Both structured and unstructured data d) Only text-based data
- 16 Identify the three main components of the "3 Vs" of big data K 1  
a) Volume, Velocity, Variety b) Value, Variability, Visualization  
c) Volume, Variability, Validity d) Velocity, Value, Visualization
- 17 Recognize a method used for analyzing big data. U 1  
a) Manual sorting b) Predictive analytics  
c) Hand calculations d) Simple averaging
- 18 Recognize a source from where raw data is commonly collected K 1  
a) Reports b) Surveys c) Data warehouses d) Dashboards
- 19 Identify the role of raw data in data analytics U 1  
a) It is the final result b) It serves as the initial input for analysis  
c) It is used only for data storage d) It replaces processed data
- 20 Identify a tool commonly used for storing and managing structured data K 1  
a) Microsoft Excel b) Adobe Photoshop  
c) PowerPoint d) Notepad
- 21 Name the structure that organizes data in a relational database K 1  
a) Files b) Tables c) Images d) Directories
- 22 Name the graphical representation commonly used for discrete data K 1  
a) Histogram b) Line graph c) Bar chart d) Scatter plot
- 23 Recognize a discrete type of variable U 1  
a) The number of books in a library b) The speed of a car  
c) The time spent running d) The volume of water in a bottle
- 24 Name the type of data that represent continuous data K 1  
a) Discrete values b) Countable values  
c) Measurable values that can take any value within a range d) Categorical values
- 25 Name the graphical representation commonly used for continuous data K 1  
a) Pie chart b) Bar chart c) Line graph d) Scatter plot
- 26 Select the best method for collecting continuous data U 1  
a) By counting distinct items in a set  
b) By measuring with a device like a ruler or thermometer  
c) By asking yes/no questions  
d) By grouping data into categories
- 27 Name a secondary data source K 1  
a) Surveys conducted by the researcher  
b) Online databases of research papers  
c) Observations made during an experiment  
d) Data collected through personal interviews
- 28 Name a common source of secondary data for businesses K 1  
a) Customer interviews b) Published industry reports  
c) Focus group discussions d) In-house surveys
- 29 What is qualitative data? U 1



- a) Data that is numerical and can be measured.  
 b) Data that is always continuous.  
 c) Data collected through scientific instruments.  
 d) Data that describes characteristics or categories.
- 30 What is the main purpose of using quantitative data? U 1  
 a) To explore meanings and experiences  
 b) To describe personal opinions  
 c) To measure and compare quantities  
 d) To analyze behaviours in a descriptive, non-numerical way
- 31 Which of the following is numerical data type? U 1  
 a) Customer feedback b) Age of individuals  
 c) Favourite food d) Gender
- 32 Which of the following is a type of navigation data commonly used in GPS systems? U 1  
 a) Satellite signals b) Sales transactions  
 c) Weather forecasts d) Social media metrics
- 33 Which of the following can be a source for importing data into Excel? U 2  
 a) CSV files b) Web pages c) Databases d) All of the above
- 34 What is the main purpose of conditional formatting in Excel? A 2  
 a) Change font style b) Highlight data  
 c) Change colour d) Import data
- 35 The result of the formula = MIN(1,2,3,4) is A 2  
 a) 1 b) 2 c) 3 d) 4
- 36 What is a survey in the context of data collection? U 2  
 a) A method of observing behavior in real-time  
 b) A tool for collecting large amounts of data via questions  
 c) A technique for conducting experiments  
 d) A process for collecting secondary data
- 37 Which of these is a common survey question format? U 2  
 a) Coding tasks b) Multiple-choice questions  
 c) Experimental observations d) Mathematical equations
- 38 Which of the following is a qualitative data collection method? U 2  
 a) Survey b) Interview c) Questionnaire d) Data mining
- 39 Which of the following is a common method of collecting data in observational research? U 2  
 a) Surveys b) Interviews c) Video recording d) Data mining
- 40 What does the term "outlier" refer to in data analysis? U 2  
 a) A duplicate data entry  
 b) A missing value in a dataset  
 c) A data point that significantly differs from the majority of the data  
 d) The mean of the dataset

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP (HONOURS)**

**FIRST SEMESTER EXAMINATION**

(2024 ADMISION ONWARDS)

**MG1MDCECT103 - Audio Electronics**

**Duration: 1 hour**

**Maximum Marks: 35**

**Answer any 35 questions**

Each Question Carry ONE Mark

Students should attempt atleast one question from each course outcome to enhance their overall outcome attainability.

\* *Understand (U), Apply (A), Analyse (An), Create (C), Skill (S)*

- 1 What property of sound is measured in decibels (dB) U 1  
A) Wavelength B) Amplitude C) Frequency D) Velocity
- 2 What is the term for the quality of a sound that distinguishes it from other sounds of the same pitch and volume? U 1  
A) Dynamics B) Timbre C) Harmony D) Resonance
- 3 What phenomenon occurs when sound waves reflect off a surface? U 1  
A) Echo B) Absorption C) Diffraction D) Interference
- 4 Which property of sound determines its pitch? U 1  
A) Amplitude B) Frequency C) Wavelength D) Velocity
- 5 Which of the following factors can affect the speed of sound in a medium? U 1  
A) Temperature B) Density of the medium C) Humidity D) All of the above
- 6 Which of the following describes the frequency of a sound wave? U 1  
A) The loudness of the sound B) The speed of sound C) The number of cycles per second  
D) The duration of the sound
- 7 What is an interval in music? U 1  
A) The duration of a note B) The distance between two pitches  
C) The speed of sound D) The loudness of a note
- 8 Which term describes a sound wave that consists of a fundamental frequency and its multiples? U 1  
A) Interval B) Harmonics C) Timbre D) Phase
- 9 How many semitones are there in an octave? U 1  
A) 5 B) 7 C) 12 D) 14
- 10 If the frequency of a sound is doubled, what happens to its pitch? U 1  
A) It remains the same B) It decreases C) It increases D) It becomes inaudible
- 11 What is the primary function of a preamplifier in an audio system? U 2  
A) To amplify low-level audio signals to a usable level  
B) To convert audio signals into digital format  
C) To mix multiple audio signals into one output  
D) To provide power to the speakers
- 12 Which of the following statements about power amplifiers is true? U 2  
A) They are used primarily for signal processing  
B) They can drive speakers directly to produce sound  
C) They only work with digital audio signals.  
D) They have a lower power output than preamplifiers

- 13 In an audio system, where is the preamplifier typically located? U 2  
A) After the power amplifier B) Before the signal reaches the power amplifier  
C) Inside the speakers D) In the recording device only
- 14 What is a common characteristic of a power amplifier? U 2  
A) It typically has a low gain compared to a preamplifier.  
B) It operates at higher voltages and currents.  
C) It is designed to modify audio signals significantly.  
D) It is always built into the audio source device.
- 15 What type of signals do preamplifiers usually handle? U 2  
A) High-level speaker signals.  
B) Low-level audio signals from sources like microphones and instruments.  
C) Digital audio signals only.  
D) Radio frequency signals.
- 16 What is a digital amplifier primarily used for? U 2  
A) To amplify audio signals using analog components.  
B) To convert digital audio signals into analog for playback.  
C) To directly amplify digital signals without converting them to analog.  
D) To process video signals in television systems.
- 17 What is the term used to describe the process by which a digital amplifier adjusts its output based on the incoming signal? U 2  
A) Modulation B) Sampling C) Feedback D) Encoding
- 18 Which of the following describes a key advantage of digital amplifiers compared to traditional analog amplifiers? U 2  
A) Higher power consumption. B) Increased distortion at high volumes.  
C) Greater efficiency and reduced heat generation. D) More complex circuitry.
- 19 Which type of digital amplifier is known for high efficiency and low distortion? U 2  
A) Class A amplifier B) Class B amplifier  
C) Class D amplifier D) Class AB amplifier
- 20 Digital amplifiers often use which technology to convert signals? U 2  
A) Class A amplification B) Pulse Width Modulation (PWM)  
C) Linear voltage regulation D) Frequency modulation
- 21 Which connector is often used for professional audio applications and provides a balanced signal to reduce noise? U 2  
A) HDMI B) SPDIF C) XLR D) RCA
- 22 MIDI is primarily used for what type of communication? U 2  
A) Transmitting video signals B) Connecting microphones to mixers  
C) Sending digital music performance data D) Streaming high-definition audio
- 23 What is the primary purpose of the SPDIF connector? U 2  
A) To connect speakers to an amplifier.  
B) To transmit digital audio signals over short distances.  
C) To interface musical instruments with computers.  
D) To provide video and audio signals simultaneously.
- 24 Which of the following connectors is capable of carrying both audio and video signals? U 2  
A) TRS B) HDMI C) XLR D) RCA
- 25 What does TRS stand for in the context of audio connectors? U 2  
A) Twin Ring Socket B) Tip-Ring-Sleeve  
C) Transistor-Resistor-Speaker D) Tone-Resonance-Signal
- 26 What is the main advantage of using balanced cables over unbalanced cables? U 2  
A) They are cheaper to manufacture.  
B) They have a higher impedance.  
C) They reduce noise and interference over long distances.  
D) They are easier to connect.

- 27 Which of the following connectors is typically associated with balanced wiring? U 2  
 A) RCA B) TRS C) XLR D) Both B and C
- 28 In an unbalanced cable, which of the following typically carries the audio signal? U 2  
 A) Positive wire only B) Positive and negative wires  
 C) Ground wire only D) Shield wire only
- 29 In a typical audio mixer block diagram, which component is responsible for adjusting the volume of each channel? U 2  
 A) Equalizer B) Fader C) Bus D) Master Output
- 30 What is the purpose of a bus in a mixer? U 2  
 A) To amplify individual channels.  
 B) To combine multiple audio signals into one output.  
 C) To provide a visual representation of sound levels.  
 D) To isolate channels from one another.
- 31 At which frequency range is the human ear most sensitive? U 1  
 A) 20-500 Hz B) 500 Hz - 4 kHz C) 10 kHz - 20 kHz D) 100 Hz - 10 kHz
- 32 What is the main function of the ossicles in the middle ear? U 1  
 A) To convert sound into electrical signals  
 B) To amplify and transmit sound from the outer ear to the inner ear  
 C) To filter out low-frequency noise  
 D) To protect the cochlea from loud sounds
- 33 Which phenomenon describes the ear's reduced sensitivity to low- and high-frequency sounds compared to mid-frequency sounds at low volumes? U 1  
 A) Acoustic masking B) Equal loudness contour  
 C) Phase cancellation D) Doppler effect
- 34 Which term is used to describe a condition where specific frequencies sound less intense due to interference from other frequencies? U 1  
 A) Loudness adaptation B) Acoustic reflex  
 C) Auditory masking D) Frequency tuning
- 35 In audiometry, the 'threshold of hearing' refers to: U 1  
 A) The quietest sound the human ear can detect at a specific frequency  
 B) The loudest sound before pain occurs  
 C) The range between the softest and loudest sounds detected  
 D) The range of frequencies detected by the ear
- 36 What is the typical role of the auditory nerve in the human ear? U 1  
 A) To filter out background noise B) To convert mechanical vibrations into electrical signals  
 C) To carry electrical signals from the cochlea to the brain D) To amplify sound
- 37 Which of the following is a common use for digital amplifiers? U 2  
 A) Home theatre systems B) Medical imaging equipment  
 C) Oscilloscopes D) Signal generators
- 38 In a digital amplifier, which component is primarily responsible for converting the digital signal to an amplified audio output? U 2  
 A) Digital-to-Analog Converter (DAC) B) Modulator  
 C) Output stage D) Transistor array
- 39 Which of the following is generally a limitation of digital amplifiers compared to analog amplifiers? U 2  
 A) Reduced efficiency at lower power outputs B) Limited audio fidelity at very high frequencies  
 C) Increased heat generation D) Larger physical size
- 40 Digital amplifiers are often categorized under which class of amplifiers? U 2  
 A) Class A B) Class B C) Class D D) Class AB

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP (HONOURS)**

FIRST SEMESTER EXAMINATION  
(2024 ADMISION ONWARDS)

**MG1MDCECT104- Creative Robotics**

**Duration: 1 hour**

**Maximum Marks: 35**

**Answer any 35 questions**

*Each Question carries ONE mark*

Students should attempt atleast one question from each course outcome to enhance their overall outcome attainability.

*\*Remember (K), Understand (U), Apply (A), Analyse (An)*

- 1 Which of the following is a microcontroller used in Arduino?  
a) ATmega328P b) PIC16F84A c) ARM Cortex M3 d) 8051 K 1
- 2 How many digital I/O pins are available on the Arduino Uno board?  
a) 14 b) 10 c) 12 d) 16 K 1
- 3 Which of the following pins is not an analog pin on the Arduino Uno?  
a) A0 b) A1 c) A5 d) D13 K 1
- 4 What is the purpose of the Vin pin on an Arduino board?  
a) To supply external power b) To ground the circuit c) To output voltage d) To reset U 1
- 5 In Arduino, the setup() function:  
a) Runs once when the program starts b) Runs repeatedly c) Defines logic d) Initializes K 1
- 6 Which software is used for writing Arduino programs?  
a) Arduino IDE b) Atmel Studio c) MPLAB d) Proteus K 1
- 7 Which function is used to configure a pin as INPUT or OUTPUT?  
a) pinMode() b) digitalWrite() c) analogRead() d) Serial.begin() K 2
- 8 Which of the following is a valid pin mode?  
a) INPUT\_PULLDOWN b) HIGH c) OUTPUT d) LOW K 2
- 9 The function digitalWrite(pin, value) is used to:  
a) Write analog signals b) Set a digital pin c) Read digital pin d) Start serial U 2
- 10 Which pin would you use with digitalWrite() to turn on an LED on pin 13?  
a) digitalWrite(13, HIGH) b) digitalWrite(A0, HIGH) c) digitalWrite(0, HIGH) d) A5 U 2
- 11 What is the maximum value for analogWrite() on a PWM pin?  
a) 1023 b) 255 c) 4096 d) 128 K 2
- 12 Which pins on the Arduino Uno support PWM?  
a) 3, 5, 6, 9, 10, 11 b) 0, 1, 2, 3 c) A0-A3 d) 2, 4, 7, 8 K 2
- 13 Which function is used to read an analog input?  
a) digitalRead() b) analogWrite() c) analogRead() d) digitalWrite() K 2
- 14 The voltage divider formula is used to:  
a) Divide the input voltage b) Multiply the output voltage c) Measure current d) Read U 2
- 15 Which function initializes serial communication in Arduino?  
a) Serial.begin() b) Serial.print() c) Serial.read() d) Serial.end() K 2
- 16 What is the default baud rate for Serial.begin()?  
a) 4800 b) 9600 c) 115200 d) 14400 K 2
- 17 What does a FOR loop do in Arduino?  
a) Repeats code b) Executes once c) Waits for input d) Skips program U 1
- 18 In a FOR loop, which is the correct syntax to increment by 1?  
a) i-- b) i++ c) i+=2 d) i-=2 K 1

- 19 A WHILE loop will continue to execute until: K 1  
 a) The condition is false b) The condition is true c) Time passes d) 100 iterations
- 20 Which of the following is the correct syntax for a WHILE loop? K 1  
 a) while (condition) b) for (condition) c) if (condition) d)while(increment)
- 21 Which pin is commonly used to connect an LED on the Arduino Uno? K 1  
 a) A0 b) D13 c) Vin d) GND
- 22 What resistor value is typically used with an LED to limit current? U 1  
 a) 100Ω b) 220Ω c) 1kΩ d) 10Ω
- 23 Which function must be called to configure an LED pin as an output? K 1  
 a) pinMode() b) digitalWrite() c) analogRead() d) delay()
- 24 The purpose of the setup() function is to: K 1  
 a) Define all configurations b) Contain main logic c) Run in loop d) Stop the program
- 25 Which function is used to add a delay in Arduino? K 1  
 a) delay() b) wait() c) pause() d) stop()
- 26 How many milliseconds are in one second for the delay function? K 1  
 a) 100 b) 1000 c) 10 d) 500
- 27 Which loop can be used to blink an LED repeatedly? U 1  
 a) FOR loop b) IF statement c) SWITCH d) DO-WHILE
- 28 In a FOR loop, how can you control the delay between LED blinks? U 1  
 a) Using delay() b) Using pinMode() c) Using Serial.print() d) Without delay
- 29 What is the purpose of an ultrasonic sensor in Arduino projects? K 2  
 a) Measure temperature b) Detect light c) Measure distance d) Detect sound
- 30 Which pins are used to connect an ultrasonic sensor to an Arduino? U 2  
 a) Trig & Echo b) GND & VCC c) SDA & SCL d) RX & TX
- 31 Which sensor is used to detect flame in Arduino projects? K 2  
 a) IR sensor b) Ultrasonic sensor c) Flame sensor d) Temperature sensor
- 32 The MQ2 sensor is used to detect: K 2  
 a) Smoke b) Temperature c) Humidity d) Sound
- 33 What does an LDR (Light Dependent Resistor) do? U 2  
 a) Measures light intensity b) Measures distance c) Detects temperature d) Reads sound
- 34 What happens to an LDR's resistance as light intensity increases? U 2  
 a) Increases b) Decreases c) Remains constant d) Fluctuates
- 35 Which motor type is used in a simple robotic arm? K 2  
 a) Servo motor b) Stepper motor c) DC motor d) Brushless motor
- 36 Which signal is used to control a servo motor in Arduino? U 2  
 a) PWM b) Analog c) Digital d) Serial
- 37 What is the purpose of a DC motor driver module in Arduino projects? U 2  
 a) Control DC motors b) Control stepper motors c) Control servo motors d) Control LEDs
- 38 Which pins are commonly used to connect a DC motor to a motor driver module? U 2  
 a) IN1, IN2 b) VCC, GND c) SDA, SCL d) Trig, Echo
- 39 What is the primary function of a geared DC motor? U 2  
 a) Increase torque b) Increase speed c) Increase resistance d) Decrease current
- 40 Which command can stop the motion of a DC motor connected to a driver module? U 2  
 a) digitalWrite(pin, LOW) b) analogWrite(pin, HIGH) c) Serial.end() d) pinMode(pin, INPUT)