

**JK Lakshmipat University Jaipur**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**

End Term Examination (Regular), Dec 2023

BCA, Semester III

Roll No.....

EE1119: Arduino based Embedded System Design

Time: 2 hours

Max. Marks: 30

**Instructions to students:**

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.
4. Use of Programmable Calculator is not allowed.

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|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Q.1 | Answer Following Questions. Each Question carry one mark.<br><br>a) What is the full form of EEPROM?<br>b) What is Flash memory? Explain<br>c) What is PWM? Explain.<br>d) Which solution is used to remove the unwanted copper part from the PCB.<br>e) What do you understand with "Microcontroller"?       | 05<br><br>(CO1<br>to<br>CO4) |
| Q.2 | a) Explain Compiler, Assembler, and Interpreter.<br>b) Write any four differences between RISC and CISC Architecture?<br>c) Explain the I <sup>2</sup> C protocol in details with suitable sketches.                                                                                                          | 06<br>(CO1<br>to<br>CO4)     |
| Q.3 | a) Write an Arduino program to blink internal LED of Arduino nano. LED on time should be 2 seconds and off time should be 1 second. Also draw the circuit diagram.<br>b) You have to print the heart shape (special character) on the LCD. Draw the diagram and write the hexadecimal sequence for the shape. | 03+03<br>(CO2,<br>CO3)       |
| Q.4 | Design a system to detect the distance of an object and turn on the buzzer for 3 seconds when object comes near 70 cm in range. Explain the sensor required<br>Also write the code with proper circuit diagram.                                                                                               | 05<br>(CO3)                  |
| OR  |                                                                                                                                                                                                                                                                                                               |                              |
| Q.4 | Design a system to detect the temperature of surrounding and turn on the led for 2 seconds when temp goes above 24-degree C. Explain the sensor required<br>Also write the code with proper circuit diagram.                                                                                                  | 05<br>(CO3)                  |

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| Q.5 | Design a smart lighting system for your home, where lights (230 V) must be turn on when darkness is detected in the evening. List all the components required properly. Draw circuit diagram, explain sensor, and write the Arduino program/pseudo code for the system. | 08<br><br>(CO3,<br>CO4) |
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