Nirma University
Institute of Technology
Semester End Examination (IR), December - 2021
B. Tech. in ME / EE / IC / CSE, Semester-VII
2ECOE53 Arduino for Engineers

Roll No.

Supervisor's initial with date:

Time: 2 Hours   Max. Marks: 50

Instructions: *1. Attempt all questions.*
2. Figures to right indicate full marks.
3. Draw neat sketches wherever necessary.
4. Assume suitable data wherever necessary and clearly indicate it.

Q-1.	**Answer the following**	**[10]**
[A] CO1,BL2	Differentiate between RISC and CISC.	[5]

OR

[A] CO1,BL2	Differentiate between Von-Neuman and Harvard Architecture.	[5]
[B] CO1,BL4	State the functionality of the given functions I. pinMode() II. lcd.home() III. randomSeed() IV. detachinterrupt() V. myservo.attach(9)	[5]
Q-2.	**Answer the following**	**[15]**
[A] CO2,BL4	Develop a logic (in term of flowchart) to design an Arduino based solar tracking system. Identify and list the components required to design it and write a code for your design.	[10]

OR

[A] CO2,BL4	Develop a logic to make an autonomous obstacle avoidance and front and back falling sensing robot. Your design should able to sound the buzzer in case of detection of the obstacle, front and back falling edge of the surface. Draw a flow chart and write a code for the same.	[10]
[B] CO2,BL2	Discuss the permanent magnet and variable reluctance stepper motor.	[5]
Q-3. CO3,BL3	Compare the I2C and SPI protocol and discuss the start-stop bit and acknowledgement methods of I2C protocol.	**[10]**
Q-4. CO4,BL5	You have been appointed as an engineer in one of the IOT based company. You have been given different sensors (ultrasonic, gas, moisture, and smoke), servo motor and Arduino uno to prepare a model for a smart waste management. Develop a logic (in form block diagram) and prepare a flow chart for the working of your model and write a code to build the smart waste management system.	**[15]**