Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttaraknand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Odd) Semester Examination November 2025

Roll no.....

Name of the Course and semester: BCA and Vth semester
Name of the Paper: Introduction to Microcontrollers
Paper Code: TBC 503
Time: 3 hour Maximum Marks: 100

Note:

(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1. (2X10=20 Marks)

a. What is the difference between microprocessor and Microcontroller? (CO1)
b. Compare the RISC and CISC processor architectures, highlighting their primary differences, advantages, and limitations. (CO1)
c. Explain the difference between PIC, AVR and ARM sensors. (CO1)

Q2. (2X10=20 Marks)

a. Explain the addressing modes of 8051 microcontroller with examples. (CO2)
b. Describe the architecture of the 8051micro controller, including its main components and features. (CO2)
c. List the various instruction categories for the 8051, and describe the following with examples: (CO3)
(i) Arithmetic instructions
(ii) Logical instructions

Q3. (2X10=20 Marks)

a. Explain Flash memory in detail. (CO3)
b. Describe the features and differences of Arduino Uno, Mega, and Nano boards. (CO3)
c. Explain output devices and their interfacing with microcontroller with an example. (CO3)

Q4. (2X10=20 Marks)

a. What are the different communication protocols in microcontrollers? (CO4)
b. Discuss digital and analog input/output operations in Arduino, including practical examples. (CO4)
c. What is an Arduino? Explain its IDE. (CO4)

Q5. (2X10=20 Marks)

a. Write an Arduino code example for blinking of an LED.(CO5,CO6)
b. Write an Arduino code example for analog read serial. (CO5,CO6)
c. Write an Arduino code example for PIR Motion Sensor. (CO5,CO6)