

# Question Paper

Exam Date & Time: 15-Jun-2023 (09:30 AM - 12:30 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

### INTERNATIONAL CENTRE FOR APPLIED SCIENCES END SEMESTER THEORY EXAMINATION-MAY 2023 IV SEMESTER B.Sc.(APPLIED SCIENCES) IN ENGG.

#### MICROCONTROLLER AND APPLICATIONS [IMET 241]

**Marks: 50**

**Duration: 180 mins.**

**Answer all the questions.**

**Missing data may be suitably assumed.**

- 1) Explain the interrupts of 8051, (5)
  - A) i) Explain the vector addresses of interrupt  
ii) Describe the default priority on reset and procedure to alter default priority
  - B) With the help of data memory and code memory organization diagrams of 8051, explain the use of MOV, MOVX and MOVC instructions of 8051. (5)
- 2) With suitable examples, explain in what way timer/counter mode 2 programming is different from mode 0 and mode 1. (5)
  - A)
  - B) Explain SCON register with an example showing the effect of all the flags during serial communication. (5)
- 3) Identify the addressing mode used in each of the following instruction of 8051 and explain the function of each instruction. Justify the correctness of each instruction. (5)
  - A) i) MOV R0, #47  
ii) MOVX A, @A+DPTR  
iii) XCH A, R0  
iv) MOV R2, R3  
v) POP 0E0H
  - B) With neat illustration, explain in detail the memory segmentation in 8051. (5)
- 4) Find the value to be loaded into the timer register to get a baud rate of 9600. Assume crystal frequency of 16 MHz. Write the steps to transmit data serially using 8051 serial port. (4)
  - A)
  - B) Describe the steps for programming counter of 8051 in mode-1. (6)  
Write an assembly language program to generate a delay of 20  $\mu$ sec using