

23P408

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Name:

Reg.No:

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2025

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P PHY4 E20 - MICROPROCESSORS, MICROCONTROLLERS AND APPLICATIONS

(Physics)

(2019 Admission onwards)

Time : 3 Hours

Maximum : 30 Weightage

Section A

Answer *all* questions. Each question carries 1 weightage.

1. How control signals are generated for interfacing of memory and I/O devices?
2. Discuss the operating principle of a A/D converter.
3. What is an embedded system? How microcontrollers are used as embedded systems?
4. Explain AVR microcontroller data RAM, EEPROM, I/O pins and peripherals.
5. Explain LDI instruction and ADD instruction in AVR microcontroller using example program.
6. How instructions are used to address AVR status registers?
7. Explain unsigned char, unsigned int, signed char and signed int in data types of AVR.
8. Explain I/O ports and bit addressability in AVR.

(8 × 1 = 8 Weightage)

Section B

Answer any *two* questions. Each question carries 5 weightage.

9. With suitable examples discuss the instruction set of Intel 8085. Bring out the concept of addressing modes of the instructions.
10. Explain the different interfacing in INTEL 8085 using 74LS138.
11. How the control word registers of 8253 is programmed? Discuss the various operating modes of 8253.
12. Discuss the internal structure and functions of AVR microcontroller.

(2 × 5 = 10 Weightage)

Section C

Answer any *four* questions. Each question carries 3 weightage.

13. Discuss an Assembly Language Program for adding two multi byte numbers stored memory.
14. Draw and explain the timing diagram for I/O write operation.
15. Briefly explain the features of programmable interrupt controller in 8085.

16. Describe 7 - segment LED display ? How alphabets and numericals are displayed by this scheme?
17. Write an AVR assembly language program to (a) clear R20 (b) add 3 to R20 ten times and (c) send sum to PORT B .Use the zero flag and BRNE. Draw the flow chart.
18. Write an AVR C program to toggle all the bits of PORT B 200 times.
19. Write an AVR c program to get a byte of data from Port C. if it is less than 100, send it to Port B: Otherwise send it to Port D.

(4 × 3 = 12 Weightage)
