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Reg. No..............................

Name.....................................

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, MAY 2024

Fourth Semester

Core Course—MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

(For B.Sc. Computer Science)

[2013 to 2016 Admissions]

Time : Three Hours   Maximum : 80 Marks

Part A

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

1. Name the primary function of a microprocessor in a computer system.

2. What are the main registers in the 8085 microprocessors ?

3. Define the term 'bus' in the context of the 8086 microprocessor.

4. What is the role of condition flags in the 8086 ?

5. What is the purpose of the CALL instruction in 8086 assembly language ?

6. What is the purpose of the PUSH instruction ?

7. What are interrupts in the 8086 microprocessor ?

8. Define RISC architecture.

9. How many bits does the Intel 80386 microprocessor support ?

10. What is one key difference between RISC and CISC architectures ?

$(10 \times 1 = 10)$

Part B

Answer any **eight** *questions.*
Each question carries 2 *marks.*

11. What are microprocessor-initiated operations ? Provide an example.

12. Describe the role of the instruction register in the 8085 microprocessor.

13. What are string instructions in the 8086, and how are they used?

14. Define unconditional jump instructions and provide an example.

15. How is the POP instruction used in 8086 assembly language ?

16. Define the stack in the context of the 8086 microprocessor.

Turn over

17. Explain the difference between the Read and Write machine cycles in the 8086.

18. What are the address lines in the 8085 microprocessor used for ?

19. What is the difference between memory-mapped I/O and peripheral-mapped I/O ?

20. Explain the operation of the 8085 microprocessor during the fetch and execute cycles of an instruction.

21. Explain Source Index in 8086.

22. What is a macro in 8086 ?

(8 × 2 = 16)

Part C
Answer any **six** *questions.*
Each question carries 4 marks.

23. Discuss the architecture of the 8085 microprocessor, including its major components and their functions.

24. Discuss the significance of the stack pointer and program counter in the 8085 architecture.

25. Describe the different types of 8086 instructions, focusing on data transfer, arithmetic, and bit manipulation instructions, with examples of each.

26. Provide a detailed explanation of the different types of interrupts in the 8086 microprocessor, including hardware interrupts, software interrupts, and exceptions.

27. Discuss the detailed operational modes of the 8254 programmable timer/counter, explaining how to program and implement each mode.

28. What is the significance of the stack pointer (SP) in managing procedure calls in 8086 ?

29. What is a data transfer instruction in the 8086-assembly language ?

30. How does the 8086 microprocessor perform arithmetic operations ?

31. List the types of operations initiated by the microprocessor ?

(6 × 4 = 24)

Part D
Answer any **two** *questions.*
Each question carries 15 marks.

32. Analyze the various instruction types supported by the 8085 microprocessor and how they relate to its architecture and operations.

33. Provide a detailed overview of the internal architecture of the 8086 microprocessor. including its functional units and how they interact.

34. Provide a detailed examination of the Intel 8257 DMA controller, including its architecture, operation, circuit connections, and timing diagrams.

35. Analyze the architecture of the Intel 80286 microprocessor in detail.

(2 × 15 = 30)