TDC (CBCS) Even Semester Exam., 2023

COMPUTER SCIENCE

(2nd Semester)

Course No. : CSCDSC/GE–201T

(Computer System Architecture)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

SECTION—A

Answer any *twenty* questions : 1×20=20

1. What do you mean by combinational circuit?
2. What is register?
3. Draw the logic gate of exclusive NOR.
4. Define maxterm and minterm.
5. What is Boolean function?
6. Write the BCD code of 8.

7. What is ASCII character code?
8. Find the 2's complement of 10010100.
9. Convert 251 into its equivalent octal code.
10. What is memory read operation?
11. Define interrupt.
12. What is effective address?
13. What is circular shift micro-operation?
14. What is an instruction?
15. What is odd function?
16. What is RISC?
17. What is stack?
18. What do you mean by cache memory?
19. Define assembly language.
20. Define handshaking.
21. What is I/O interface?
22. Name any four peripherals.
23. Define I/O processor.
24. What is programmed I/O?
25. What is multiprogramming?

SECTION—B

Answer any *five* of the following questions : 2×5=10

26. Simplify the Boolean expression
$$xyz + x'yz + xyz'$$
27. What is half adder? Draw the block diagram of half adder.
28. $(2F \cdot A)_{16} = (?)_{10} = (?)_2$
29. How is a signed binary number represented?
30. What do you mean by instruction set completeness?
31. What is the significant start bit?
32. Define microprogrammed control and hardwired control organization.
33. Differentiate between isolated I/O and memory mapped I/O.
34. What do you mean by priority interrupt?
35. Explain control word.

SECTION—C

Answer any *five* questions : 8×5=40

36. What is multiplexer? Explain 8 to 1 line multiplexer with logic diagram, block diagram and truth table. 2+6=8

37. *(a)* What is flip-flop? Explain JK flip-flop. 4

(b) What is don't care condition? What is its use? 4

38. Multiply –15 and 12 using Booth's multiplication algorithm. 8

39. *(a)* Subtract $(011000)_2$ from $(1011100)_2$ using 1's complement. 3

(b) Explain the hardware for signed 2's complement addition and subtraction. Also draw the flowchart. 5

40. Discuss the different registers of a basic computer. 8

41. *(a)* Explain different steps of instruction cycle. 4

(b) Explain the control unit of basic computer. 4

42. Explain different addressing modes. 8

43. *(a)* Write some features of CISC. 4

(b) Explain the memory hierarchy. 4

44. Explain the working of DMA controller. 8

45. Explain the communication between I/O bus interface modules with neat diagram. 8

★ ★ ★