V Semester B.C.A. Examination, December - 2019  
(CBCS) (F+R) (Y2K14)  
COMPUTER SCIENCE  
BCA503T: Computer Architecture

Time: 3 Hours  
Max. Marks: 100

**Instruction:** Answer all the Sections.

**SECTION - A**

I. Answer any ten questions.  

1. State any two basic rules of Boolean Algebra.  

2. What is a Combinational Circuit?  

3. What is a bidirectional register?  

4. Add \(-15_{10}\) and \(-35_{10}\) using 2's complement method.  

5. Convert 10101\(_2\) to Gray code.  

6. What are the three control input for registers?  

7. What is the function of INPR?  

8. Explain LHLD Operation.  

9. What is a recursive subroutine?  

10. Mention the types of CPU Organization.  

11. What is an Interrupt Vector?  

12. Define Hit ratio.

P.T.O.
SECTION - B

II. Answer any five questions.

13. Explain NAND and NOR gate with logic symbol and truth table.

14. Explain 8x3 Priority Encoder.

15. Explain SISO shift register.

16. Write a note on hamming code.

17. Discuss error detection and error correction codes briefly.

18. Explain DMA controller with a block diagram.

19. Explain the levels of cache memory.

20. Write a note on RAM.

SECTION - C

III. Answer any three questions.

21. (a) Simplify the following Boolean function using k-Map.
      \[ F(A, B, C, D) = \Sigma (0, 2, 4, 8, 9, 10, 11, 12, 13) \]
      (b) Explain the full adder circuit with truth table.

22. (a) Explain the basic computer registers.
      (b) Write a note on: (i) BUN (ii) BSA (iii) ISZ

23. Explain the different types of Data Manipulation Instructions.

24. (a) Explain the timing and control unit with a neat diagram.
      (b) Compare the RISC and CISC architectures.

25. (a) Explain Magnetic tape storage.
      (b) Explain the associative memory with a neat block diagram.

SECTION - D

IV. Answer any one question.

26. (a) Explain the working of T and D flipflop.
      (b) Write a note on the different modes of data transfer.

27. (a) Explain interrupt cycle with a neat diagram.
      (b) Explain various Input output instructions.

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