65523

Fifth Semester B.C.A. Degree Examination, March/April 2021

(CBCS Scheme)

Computer Science

Paper IX – COMPUTER ARCHITECTURE

Time : 3 Hours] *[Max. Marks : 100*

Instructions to Candidates : Answer all Sections.

SECTION – A

I. Answer any **TEN** questions. Each question carries **2** marks : **(10 × 2 = 20)**

1. State and Prove Demorgan's theorem.
2. Distinguish between RAM and ROM.
3. Define shift registers.
4. What are the three control input for registers?
5. Convert $1001001_{(2)}$ to grey code.
6. What is PSW?
7. Mention the major components of CPU.
8. What is BUN instruction?
9. What is meant by memory mapped I/O?
10. What is Cache memory?
11. What is internal interrupt?
12. Define Hit Ratio.

SECTION – B

II. Answer any **FIVE** questions. Each question carries **5** marks : **(5 × 5 = 25)**

13. Explain the steps involved in design of combinational circuits.
14. Discuss an error detection and correction codes briefly.
15. Explain Decoder with a neat diagram.

16. Explain the operation of interrupt cycle with a flow chart.

17. With a block diagram explain how BSA instruction executes.

18. Write a note on Virtual Memory.

19. Explain the source-initiated data transfer using Handshaking with block diagram.

20. Explain any five registers reference instruction.

SECTION – C

III. Answer any **THREE** questions. Each question carries **15** marks : **(3 × 15 = 45)**

21. (a) Define *K*-map. Simplify the following Boolean form using *K*-map :

$F(A\,B\,C\,D) = (0, 2, 4, 6, 10, 11, 12, 13, 14, 15)$. **(9)**

(b) Explain different binary codes. **(6)**

22. (a) Explain I/O interface with a neat diagram. **(8)**

(b) Write a note on isolated verses memory mapped I/O. **(7)**

23. Explain the different types of data manipulation instructions. **(15)**

24. (a) Explain the timing and control unit with a neat diagram. **(8)**

(b) Explain the basic computer registers. **(7)**

25. (a) Explain the types of program interrupt. **(9)**

(b) Explain NAND and NOR gate with symbol and truth table. **(6)**

SECTION – D

IV. Answer any **ONE** question : **(1 × 10 = 10)**

26. (a) Explain the working of RS-flip flop. **(5)**

(b) Explain direct address and indirect address. **(5)**

27. Explain the common bus system. **(10)**

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