15523

Reg. No. ☐☐☐☐☐☐☐☐

V Semester B.C.A. Degree Examination, March - 2021
COMPUTER SCIENCE
Computer Architecture
(CBCS Scheme)

Time : 3 Hours   Maximum Marks : 100

Instructions to Candidates:

Answer All the Sections.

SECTION - A

I.   Answer any **Ten** questions.   (10×2=20)

1.   Write the logic symbol, expression and truth table of xor gate.

2.   What is excitation table and give the excitation table of SR flip flop.

3.   Draw the logical diagram of the boolean function F = AB +A'B.

4.   Subtract 155 from 215 using 9's complement method.

5.   What is self complementing code and give an example?

6.   Distinguish between Memory reference and Input - output Instruction, with respect to their instruction formats.

7.   Explain BUN instruction.

8.   Distinguish between FGI and FGO.

9.   What is PSW?

10. Define synchronous and Asynchronous data transfer.

11. Define Hit Ratio.

12. Mention the types of control organizations.

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SECTION - B

II. Answer any **Five** questions. (5×5=25)

13. Explain Octal to Binary Encoder with a diagram.

14. Design a 4-to-1 multiplexer.

15. Discuss briefly about Error Detection and Error correction code.

16. Explain Data transfer instructions of basic computer.

17. Explain the operation of Interrupt cycle with a flowchart.

18. Explain Source - initiated data transfer using handshaking.

19. Explain DMA controller with a block diagram.

20. Write a note on memory hierarchy in a computer system.

SECTION - C

III. Answer any **Three** questions. (3×15=45)

21. a) Explain the full adder circuit with truth table.
    b) Simplify $F(A,B,C,D) = \Sigma m(1,3,7,11,15) + \Sigma d(0,2,5)$ using K-map.

22. a) Explain the working of 3-bit odd parity generator and checker with logic diagram.
    b) Explain the procedure to perform 2's complement subtraction with relevant example.

23. a) Explain the timing and control unit of basic computer with a neat diagram.
    b) Explain register reference instructions.

24. a) Explain the types of Computer Instructions based on number of addresses.
    b) Compare the RISC and CISC architectures.

25. a) Explain the working of Associative memory.
    b) What is a subroutine? Explain CALL and RETURN instruction.

SECTION - D

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

26. a) Explain the Universal property of NAND gate.
    b) Explain the working of J-K Flipflop.

27. Explain the bus system organization for CPU registers with a neat diagram.