CS – 498

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V Semester B.C.A. Degree Examination, March 2023
(CBCS) (F+R) (Y2K14)
COMPUTER SCIENCE
BCA 503 : Computer Architecture

Time : 3 Hours Max. Marks : 100

Instruction *: Answer* ***all*** *Sections.*

SECTION – A

I. Answer **any ten** questions. **Each** carries **two** marks. **(10×2=20)**

1) Write the logic symbol, expression and truth table of EX-OR gate.
2) List the various types of TTL family.
3) What is a minterm ? Give example.
4) Define Multiplexer and Demultiplexer.
5) Convert $FACE_{(16)}$ to decimal.
6) List out the types of shift registers.
7) What is a BSA instruction ?
8) Mention two applications of register transfer language.
9) What is PSW ?
10) Name the two types of computer architecture based on registers.
11) What is Handshaking ?
12) What is virtual memory ?

SECTION – B

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

13) Explain Von Neumann architecture with a neat diagram.
14) State and prove De Morgan's theorems.
15) Prove that unweighted excess 3 code is a self complementing code.
16) Explain various input output instructions.

P.T.O.

17) Explain the design of accumulator logic with a neat diagram.

18) Write a note on addressing modes.

19) Explain DMA controller with a block diagram.

20) Write a note on cache memory.

SECTION – C

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

21) a) Simplify F(A, B, C, D) = Σm (1, 3, 7, 11, 15) + Σd (0, 2, 5) using K-map. **8**

b) Explain full adder with a neat logic diagram. **7**

22) a) Design a octal to binary encoder. **8**

b) Explain the steps involved in the design of the sequential circuits. **7**

23) Explain the design of basic computer with flow chart. **15**

24) a) Explain data transfer instructions. **8**

b) Differentiate between CISC and RISC. **7**

25) a) Explain memory hierarchy. **8**

b) Explain the working of associative memory. **7**

SECTION – D

IV. Answer **any one** question. **Each** question carries **ten** marks. **(1×10=10)**

26) a) Explain LDA and STA instructions. **5**

b) Explain the working of JK flip-flop. **5**

27) a) Explain common bus system. **5**

b) List the applications of EEPROM. **5**