65523

V Semester B.C.A. Degree Examination, April/May 2023
(CBCS) (F+R)
COMPUTER SCIENCE
BCA 503T : Computer Architecture

Time : 3 Hours Max. Marks : 100

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

SECTION – A

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

1) State De-Morgan's theorem.
2) Distinguish between RAM and ROM.
3) Define Flip-flop.
4) What is weighted code ? Give example.
5) Subtract $(24)_{10}$ from $(13)_{10}$ using 2's compliment method.
6) Define Opcode and Operand.
7) Explain BSA instruction.
8) What is parity bit ?
9) What is PSW ?
10) What is polling ?
11) What are different types of interrupts ?
12) What is meant by memory mapped IO ?

SECTION – B

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

13) Explain steps involved in design of sequential circuit.
14) Explain PIPO shift register with a neat diagram.
15) Explain Input-Output instruction.

P.T.O.

16) Explain operations of Interrupt cycle with a flow chart.

17) Explain different modes of data transfer.

18) Write a note on Cache memory.

19) Explain DMA controller with a block diagram.

20) Write a note on Isolated VS Memory mapped I/O.

SECTION – C

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

21) a) Simplify F(ABCD) = $\sum m(1, 3, 7, 11, 15) + \sum d(0, 2, 5)$ using K-map. **7**
b) What is half adder ? Design half adder using only NAND gates. **8**

22) a) Explain parity checker and parity generator. **7**
b) Explain design of basic computer with flowchart. **8**

23) a) Explain register reference instructions. **7**
b) Explain timing and control unit with a neat diagram. **8**

24) a) Explain types of CPU organisation. **7**
b) Explain source-initiated data transfer using handshaking. **8**

25) a) Explain Memory hierarchy in a computer system. **7**
b) Explain working of Associative memory. **8**

SECTION – D

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

26) a) Explain 8 × 3 priority encoder. **5**
b) Distinguish between FGI and FGO. **5**

27) Explain common bus system with neat diagram. **10**