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V Semester B.C.A. Examination, March/April 2021
(CBCS) (F+R) (Y2K14)
COMPUTER SCIENCE
BCA 503 : Computer Architecture

Time : 3 Hours

Max. Marks : 100

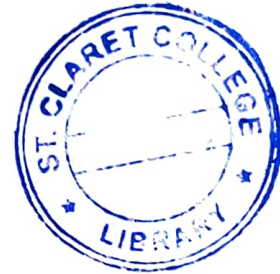
Instruction : Answer *all* Sections.

SECTION – A

I. Answer **any ten** questions.

(10×2=20)

- 1) What is universal gate ? Mention.
- 2) What is a sequential circuit ?
- 3) List the applications of shift registers.
- 4) What is MUX ?
- 5) Convert $AB2.234_{(16)}$ to Binary.
- 6) Add $+25_{10}$ and $-10_{(10)}$ using 2's complement method.
- 7) What is the function of OTR and Accumulator ?
- 8) Differentiate BON and BSA instructions.
- 9) What are the 3 types of CPU organisation ?
- 10) What is PSW ?
- 11) Define Hand shaking.
- 12) Define seek time.



SECTION – B

II. Answer **any five** questions.

(5×5=25)

- 13) Give the comparison between von-neuman and Harvard architecture.
- 14) Explain 3 to 8 line decoder.
- 15) What is sequential circuit ? What are the steps involved in design of sequential circuit ?
- 16) Explain stored program organization of basic computer.

P.T.O.



- 17) Explain Direct and Indirect Address instruction.
- 18) Explain any five addressing modes.
- 19) With a block diagram explain DMA controller.
- 20) Write a note on Associative memory.

SECTION – C

III. Answer **any three** questions.

(3×15=45)

- 21) a) Simplify the following Boolean function using K-map.
 $F(ABCD) = \sum m (1,3,7,11,15) + \sum d (0,2,5)$ 7
 - b) What is shift register ? Explain Bidirectional shift register with a neat diagram. 8
- 22) a) Explain common bus system with a neat diagram. 8
 - b) Explain Input-Output configuration with a neat diagram. 7
- 23) a) Explain timing and control unit of basic computer with neat diagram. 8
 - b) Give the comparison between RISC and CISC architecture. 7
- 24) Mention the classifications of computer instruction. And explain the different types of data transfer instructions. 15
- 25) a) Explain Handshaking in detail. 8
 - b) What is virtual memory ? Explain address space and memory space in detail. 7

SECTION – D

IV. Answer **any one** question.

(1×10=10)

- 26) a) Explain working of JK-Master slave Flip Flop. 5
 - b) Write a note on floating-point data representation. 5
 - 27) What is virtual memory ? Discuss how paging helps in implementing virtual memory. 10
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