

(i) Printed Pages : 3

Roll No.

(ii) Questions : 7

Sub. Code :

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Exam. Code :

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B.Sc. (Hons.) Bioinformatics 3rd Semester
(2122)

**COMPUTER OPERATIONAL SYSTEM AND
ORGANISATION**

Paper : BIN-3003

Time Allowed : Three Hours]

[Maximum Marks : 60

Note :— Attempt **FIVE** questions in all, including question No. 1 which is compulsory and selecting at least **TWO** questions from each unit.

1. Attempt the following :

- Define and explain Micro-operation.
- Discuss Von Neumann architecture.
- Explain the instruction pipelining.
- Differentiate between machine and assembly language.
- How many 16×8 memory chips are needed to provide 32×4 memory ?
- What is the need for DMA transfer ?
- What is the necessity of diagnostic software ?
- What is meant by expansion slots ?

8×1.5

UNIT—I

2. (a) Draw the basic functional units of a computer and explain each unit.
- (b) What are flip-flops ? Explain J-K flip-flop with logic diagram and truth table.
- (c) What is multiplexer ? Draw the logic diagram of 4-to-1 line multiplexer and explain its operation by means of a function table. 4+4+4
3. (a) Explain store program concept.
- (b) What are shift registers ? Explain the working of 4-bit shift register with logic diagram.
- (c) Construct 3×8 decoder with two 2×4 decoders. 3+5+4
4. (a) Why RTL is preferred for describing internal organization of digital computers ?
- (b) Represent the following conditional control statement by two register transfer statements with control functions :
If ($p = 1$) then ($R1 \leftarrow R3$) else if ($Q = 1$) then ($R1 \leftarrow R2$)
- (c) Discuss how stacks are used to handle interrupts and subroutines. 4+4+4

UNIT—II

5. (a) What is subroutine ? Explain the use of BSA instruction in assembly language program.
- (b) What is Associative Memory ? Explain its working with the help of its block diagram and hardware organization.
- (c) Explain various types of interrupts. 3+5+4
6. (a) What do you mean by virtual memory ? Discuss how paging helps in implementing virtual memory.
- (b) What do you mean by asynchronous data transfer ? Differentiate between source and destination initiated transfer using handshaking. 6+6
7. (a) List any four virus infection symptoms. What precaution should be taken to prevent virus infection ?
- (b) Give functional description of various internal cards of PC.
- (c) Name two hardware tools and two software tools used for trouble shooting of PC. 4+4+4