



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL
B.Sc. Programme 1st Semester Examination, 2021

DSC1/2/3-P1-COMPUTER SCIENCE
COMPUTER SYSTEM ARCHITECTURE

Time Allotted: 2 Hours

Full Marks: 60

The figures in the margin indicate full marks.

GROUP-A

Answer any four questions

3×4 = 12

1. Discuss the methods to represent signed binary numbers with examples.
2. Convert the following in decimal number system
(2A)₁₆
3. Which logic gates are called universal gates?
4. Explain multiplexer.
5. Consider the following function
 $f(A, B, C, D) = \Sigma(0, 2, 3, 6, 7, 8, 10, 11, 12, 15)$
Obtain the sum of product expression of the above given function.
6. Explain the working of JK flip-flop.

GROUP-B

Answer any four questions

6×4 = 24

7. What is a full adder? Draw the block diagram and circuit diagram of a full adder and explain it.
8. Construct a full adder using two half adders.
9. State and prove De Morgan's Theorem.

10. Differentiate between RISC and CISC architectures.
11. Discuss any five addressing modes to fetch operands.
12. Draw and explain the working of a 2 bit magnitude comparator circuit.

GROUP-C

Answer any *two* questions

12×2 = 24

- 13.(a) What is a tri-state buffer and what are its uses? 6+6
(b) Explain instruction cycle with the help of a flowchart.
- 14.(a) What is stack organization? How can stack be implemented in a computer? 6+6
(b) Explain K-map with the help of examples.
- 15.(a) Explain combinational circuit. 4+4+4
(b) Explain the working of counters with the help of examples.
(c) Explain decoders.
- 16.(a) Explain different addressing modes with the help of examples. 8+4
(b) Write a short note on cache memory.

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