



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 1st Semester Examination, 2021-22

CMSACOR02T-COMPUTER SCIENCE (CC2)

COMPUTER SYSTEM ARCHITECTURE

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.*

Answer Question No. 1 and any *four* questions from the rest

1. Answer any *four* questions from the following: 2×4 = 8
- (a) What is flip-flops?
 - (b) What do you mean by addressing mode?
 - (c) What is latch?
 - (d) What do you mean by instruction cycle?
 - (e) Draw a Half Adder circuit using NOR gates only.
 - (f) Subtract $(5C)_{16}$ from $(3F)_{16}$.
 - (g) Differentiate between buffer and tri-state buffer.
 - (h) What are the advantages and disadvantages of using a variable length instruction format?
2. (a) Write down the difference between combinational and sequential circuit. 4+4 = 8
(b) State and prove De Morgan's theorem.
3. (a) Design a BCD to Excess-3 code converter. 4+4 = 8
(b) Minimize the following logic function and realize using NOR gates:
$$f(A,B,C,D) = \prod (1, 2, 3, 8, 9, 10, 11, 14)$$
4. Write a program to evaluate the arithmetic statement: 4+4 = 8
$$X = A * (B + C) + D/E * F + G$$
 - (a) Using a general register computer with three operand instructions.
 - (b) Using a general register computer with two operand instructions.

5. (a) What do you mean by direct and indirect addressing? 4+2+2 = 8
(b) What is the requirement of common bus System?
(c) What is interrupt in Computer system architecture?
6. Design a counter with a counting sequence of 0-2-7-5-6-0 ... using all JK flip flop and basic logic gates. 8
7. (a) Define I-O port. Difference between serial port and parallel port. (2+2)+4=8
(b) Compare between Daisy Chaining and Vector interrupt technique.
8. Write short notes on any *two* of the following topics: 4×2 = 8
(a) Shift register
(b) Main memory
(c) Universal Gate
(d) Instruction set.

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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