CDOE
BACHELOR OF COMPUTER APPLICATIONS (CBCS-2019 COURSE)
B.C.A. SEM - II : WINTER :- 2021
SUBJECT: COMPUTER ORGANIZATION & ARCHITECTURE

Day : Monday

Date 7/2/2022   **W-21857-2021**

Time : 10:00 AM-01:00 PM

Max. Marks: 60

N.B.:
1) Q 4 from Section-I is COMPULSORY.
2) Answer ANY TWO questions from Q 1, 2, 3 in Section-I.
3) Answer ANY TWO questions from Q 5, 6, 7 in Section-II.
4) All question CARRY EQUAL marks.
5) Answers to Both the sections to be written in SAME answer book.
6) Draw a labeled diagram WHEREVER necessary.

SECTION -I

Q.1) Answer the following: (6 Marks X 2 = 12)
   a) Explain working of 4 bit adder-subtractor with help of diagram.
   b) Draw the circuit of 4 bit synchronous binary counter and give its functioning.

Q.2) Answer the following: (6 Marks X 2 = 12)
   a) What is instruction cycle? Explain instruction cycle with help of flowchart.
   b) Discuss the different mapping techniques used in cache memories with their relative merits and demerits.

Q.3) Explain the following: (6 Marks X 2 = 12)
   a) What is an addressing mode? Describe various addressing modes that exist in a modern processor.
   b) Explain asynchronous data transfer with strobe control and handshaking method.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)
   a) Assembler
   b) Need of interface
   c) RISC
   d) Instruction formats
   e) Multiplexer

SECTION - II

Q.5) Answer the following: (12 Marks X 1 = 12)
   The sequential circuit has two D flip flops A and B, two inputs x and y, and one output z. The flip-flop input equations and circuit output is as follows.

$$D_A = x'A + y'B'$$
$$D_B = y'B + xA$$
$$z = xy + x'B$$

   i) Draw logic diagram.
   ii) Tabulate state table.

Q.6) Answer the following: (6 Marks X 2 = 12)
   a) Draw the circuit diagram and tabulate the truth table.
       $(A + C)(AD + AD') + AC + C$
   b) Solve the following.
       i. Find 2's complement of : 01111100
       ii. 10000010 - 01010101 using 2's complement method.
       iii. 110 *110

Q.7) Explain the following: (12 Marks X 1 = 12)
   Draw the block diagram of 4 bit arithmetic circuit and explain the functioning of it.

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