

BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2018 COURSE)
B.C.A. Sem-II : WINTER : 2021
SUBJECT: COMPUTER ORGANIZATION & ARCHITECTURE

Day : Monday
Date : 17-01-2022

W-18759-2021

Time : 02:00 PM-05:00 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) Draw the Half adder and full adder circuit and explain its functioning.
- b) Draw the circuit of 3 to 8 line NAND gate decoder. Give its functioning.

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) Explain the working of Interrupt cycle with help of flowchart.
- b) Analyze the memory hierarchy in terms of speed, size and Cost.

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) What is the need of virtual memory? Discuss the working of virtual memory in brief.
- b) With a neat diagram explain the working of DMA.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Fixed point representation
- b) Shift Registers
- c) Machine language
- d) CISC
- e) IOP

SECTION - II

Q.5) Answer the following: (12 Marks X 1 = 12)

- a) The sequential circuit has two D flip-flops A and B, two inputs x, y and one output z. The flip-flop input equations and circuit output is as follows.
$$D_A = x'y + xA$$
$$D_B = x'B + yA$$
$$z = yA + x'B'$$
 - 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.
$$xy + (x'y + xy')z + (x + z)$$
- b) Solve the following.
 - i. Find 2's complement of : 10101010
 - ii. 10000000 - 01100110 using 2's complement method.
 - iii. 101 * 101

Q.7) Explain the following: (6 Marks X 2 = 12)

- a) Draw the block diagram of 4 bit bidirectional shift register with parallel load and give the truth table of it.
- b) Simplify by using Boolean algebra.
 - i. $A'B + ABC' + ABC$
 - ii. $(BC' + A'D)(AB + CD')$
