

(28)

SARDAR PATEL UNIVERSITY
MCA (First Semester) Examinations
PS01CMCA22 Logical Organization of Computers
 11th April, 2019 , Thursday

No. of Printed Pages : 02

Max Marks: 70

[8]

Time: 10:00 a.m. to 1:00 p.m.

1. Choose the most appropriate option for each question:

- (i) Which of the following components is used to fetch, decode and execute instructions?
 (A) ROM (B) CPU (C) DRAM (D) None of these.
- (ii) Which of the following is an input device ?
 (A) Laser printer (B) Plotter (C) Scanner (D) None of these.
- (iii) A group of 8 bits is called a
 (A) word (B) character (C) byte (D) None of these.
- (iv) $(ABC)_{16} = (\quad)_8$
 (A) 5273 (B) 5274 (C) 5275 (D) None of these.
- (v) Physical components of a computer are called computer _____.
 (A) software (B) hardware (C) firmware (D) None of these.
- (vi) The half adder circuit can add _____ bits.
 (A) 2 (B) 3 (C) 4 (D) None of these.
- (vii) Every cell of the main memory is uniquely identified by a number called _____.
 (A) an instruction pointer (B) a cell address
 (C) a Program Counter (D) None of these.
- (viii) A NOT gate has _____ input(s) and _____ output(s).
 (A) 1,1 (B) 1,2 (C) 2,1 (D) None of these.

[14]

Q-2 Answer the following questions (Any Seven):

- (i) What is the main function of a CPU ?
- (ii) Specify two-two examples of input and output devices.
- (iii) What is a parity bit ? Explain the meaning of an even parity with an example.
- (iv) Construct a Hamming code for the character 'D' (ASCII: 68) considering odd parity.
- (v) Draw a circuit diagram for the Boolean expression $A(B+C)$.
- (vi) What is a gate ? Give examples.
- (vii) Write the steps involved in instruction execution by a CPU.
- (viii) Define : character code. Write the full form of ASCII.
- (ix) Define : an interrupt.

(P.T.O.)

(1)

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- 3.(A) Draw the diagram of a **bus-organized computer**. Write the main functions of various components of the diagram in brief. [6]
- (B) Explain the working of an **array processor** with a diagram. [6]
- OR
- (B) Discuss the **1's complement method, 2's complement method and the signed magnitude method** for representation of integers. [6]
- 4.(A) Describe the storage organization on a **CD ROM** with a diagram. What do you mean by a **pit** and a **land**? [6]
- (B) Write a short note on **hard disks**. Define : **seek time** and **rotational latency**. [6]
- OR
- (B) Write a note on the working of a **laser printer**. [6]
- 5.(A) Describe the **word comparator** with a circuit diagram. [6]
- (B) Describe the **1-of-10 decoder** with a circuit diagram. [6]
- OR
- (B) Discuss the **De Morgan's theorems**. [6]
- 6.(A) Draw and explain the working of the logic circuit of a **binary adder**. [6]
- (B) What is a **flip flop**? Explain the **clocked D flip flop** with a circuit diagram, truth table and a timing diagram. [6]
- OR
- (B) What is a multiplexer? Explain the **16-to-1 multiplexer** with a circuit diagram. [6]

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