

[21]

SEAT No. \_\_\_\_\_

No. of Printed Pages : 2

**SARDAR PATEL UNIVERSITY**  
**MCA ( First Semester ) Examinations**  
**PS01CMCA22 Logical Organization of Computers**  
**Saturday 24<sup>th</sup> November, 2018**

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

**Max Marks:** 70

**1. Choose the most appropriate option for each question:**

**[8]**

(i) A group of 8-bits is called a \_\_\_\_\_

(A) nibble (B) byte (C) word (D) None of these.

(ii) 1's complement of the binary number 0100 is

(A) 1011 (B) 1010 (C) 0101 (D) None of these.

(iii)  $(110001)_2 = (\text{_____})_8$

(A) 63 (B) 61 (C) 43 (D) None of these.

(iv)  $(1011)_2 + (1111)_2 =$

(A) 11010 (B) 10110 (C) 1111 (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 full adder circuit can add \_\_\_\_\_ bits at a time.

(A) 2 (B) 3 (C) 4 (D) None of these.

(vii) Which of the following is a primary memory ?

(A) Pen drive (B) Hard disk (C) Mixture of RAM and ROM (D) None of these.

(viii) A NAND gate is equivalent to a bubbled \_\_\_\_\_ gate.

(A) XOR (B) OR (C) AND (D) None of these.

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

**[14]**

(i) What is the main function of a CPU ?

(ii) What is a character code ? Write the full form of ASCII and EBCDIC.

(iii) What is a Hamming distance between two given binary numbers ?

(iv) Construct a Hamming code for the character 'B' (ASCII: 66) considering odd parity.

(1)

(P.T.O.)

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- (v) Draw a **circuit diagram** for the Boolean expression  $ABC + BC$ .
- (vi) What is a **gate** ? Give examples.
- (vii) Write the **steps** involved in **instruction execution** by a CPU.
- (viii) Specify two-two examples of **input and output devices**.
- (ix) How can we compute the **storage capacity** of a **hard disk** ? Define : **seek time**.

3.(A) Draw the **block diagram** of a **simple computer**. Write the main functions of various components of the diagram in brief. [6]

(B) Explain the working of a **pipeline machine** with a diagram. [6]

OR

(B) Write a note IEEE Floating Point representation. Find out **IEEE single-precision floating-point representation** for the decimal number 64.125. [6]

4.(A) Write a short note on **hard disks**. [6]

(B) Write a short note on a **CD-ROM**. [6]

OR

(B) Explain the **design criteria** for **instruction formats**. [6]

5.(A) What do you mean by an **add parity** ? Give examples. [6]  
Describe the **odd parity generator** with a circuit diagram.

(B) Discuss the **De Morgan's theorems**. [6]

OR

(B) What is a **multiplexer** ? Explain the **16-to-1 multiplexer** with a circuit diagram. [6]

6.(A) What is a **half adder** ? What is a **full adder** ? Draw and explain the working of the logic circuit of a **binary adder**. [6]

(B) Explain the **RS NOR Latch** with a circuit diagram, truth table and a timing diagram. [6]

OR

(B) Describe the **1-of-10 decoder** with a circuit diagram. [6]

