

HS/XI/A.Sc.Com./CS/22

2022

**COMPUTER SCIENCE****( Theory )***Full Marks : 70**Time : 3 hours**The figures in the margin indicate full marks for the questions**General Instructions :**(i) Write all the answers in the Answer Script.**(ii) Attempt all the questions.***1.** Choose the correct answer from the following  $1 \times 6 = 6$ *(i) The Complementary Law, states that*

*(a)  $x + \bar{x} = 1, x.\bar{x} = 0$*

*(b)  $x + x = x, x.x = x$*

*(c)  $\bar{\bar{x}} = x$*

*(d) None of the above.**(ii) The control instruction carrying part of a system bus is called**(a) data bus**(b) control bus**(c) Address bus**(d) I/O bus.**(iii) Which of the following statements is false for List**(a) List can contain values of mixed data types.**(b) List are formed by placing a comma-separated list of expression in square brackets.**(c) List cannot grow or shrink.**(d) None of the above.**(iv) In a relational database a degree refers to**(a) A row of relation.**(b) Number of attributes in a relation.**(c) A collection of interrelated data.**(d) Set of one or more attributes to uniquely identify data.*

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(v) The process of attempting to acquire sensitive information such as username, password, etc is

- (a) Eavesdropping
- (b) Cyber Bullying
- (c) Cyber stalking
- (d) Phishing

(vi) What will be the output of the following

$a = 1$

$a, b = a + 1, a + 1$

Print (a)

Print (b)

- (a) 2, 2
- (b) 2, 1
- (c) 1, 2
- (d) 2, 4

2. Answer the following in two or more sentences:  $1 \times 6 = 6$

- (i) How does a compiler differ from an interpreter.
- (ii) If `dict1={'Name': 'suzie', 'Roll no': '46', 'Marks': '85'}`, evaluate `len(dict1)`
- (iii) How are Python variables different from other programming languages?

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(iv) What is NoSQL?

(v) What are cookies?

(vi) What is a database system?

3. Answer the following briefly:  $2 \times 5 = 10$

- (i) Draw a flowchart that checks if a given number is even or odd.
- (ii) What is Dynamic Typing? Explain with an example.
- (iii) With the help of an example show how two or more Lists can be joined together?
- (iv) What are functions? Give examples.
- (v) What do you know about Identity Operators? Give examples to show how they work.

4. (i) Write a program to enter N numbers in a tuple Num, and find the maximum and minimum values in the tuple.  $3 \times 3 = 9$

- (ii) Using an example, explain the basic string operators in python.
- (iii) What are Augmented Assignment Operators? Illustrate how they are used in Python.

5. (i) Write a program to find the factorial of an input number.

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Or

Write a program to enter a three digit number and reverse the digits.

- (ii) Write any two difference between append ( ) and extend ( ) functions. Illustrate their difference through an example.

4

6. (i) State and verify Absorption Law using the truth table.

2

- (ii) Draw Logic Circuit diagram for the following expression

2

$$F(A,B,C) = A + (B + \overline{C}) + (\overline{AC}) + AB$$

7. (i) Convert any one of the following

$2 \times 1 = 2$

(a) Convert  $(476)_8$  to binary

(b)  $(100101.110)_2 = (?)_{10}$

(c)  $(BEE)_{16} = ( )_8$

- (ii) Discuss UTF-8 encoding scheme

2

8. (i) Write down the advantages and disadvantages of NoSQL.

4

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- (ii) Consider the following relation

Employee

E_No	E_Name	Dept_No	Salary	DOJ
102	Jack	D02	17,654	2000-Jul-18
465	Igor	D03	15,078	1999-Aug-11
326	Steven	D02	20,500	1989-Oct-12
149	Jonas	D01	25,600	2002-Sep-22
136	Julio	D03	13,900	2000-Jan-12

- (a) Using the table 'Employee' write SQL commands to list the names of employees in ascending order of date of joining.

1

- (b) Write a query to find out which employee gets the highest salary.

1

- (c) Write a query to change the column name E\_Name to Emp\_Name

1

- (d) List the name of employees who gets a salary > 20,000.

1

9. Create the following tables and specify the constraints.

Customer

Cust_No	Cust_Name	Address
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1

Order

Order_No	Cust_No	Order_Item	Order_date
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1

Primary key : Order\_No, Cust\_No

1

Foreign key : Cust\_No.

**( 7 )**

**10.** Explain the two types of constraints in SQL using examples. 4

**11.** Answer the following questions:

(i) What is Cyber Stalking? 2

(ii) What is Spyware? What are the damages caused by spyware? 1 + 2

(iii) What are the methods used by Anti-spam software to get rid of spam? 3

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