HS/XII/A.Sc.Com/CSc/NC/21

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COMPUTER SCIENCE

(New Course)

(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 multiple choice questions and very short answer-type questions serially.

(iii) Attempt *all* parts of a question together at one place.

1. Choose the correct option for the following :   1×6=6

   (a) What is the output of this code?

         >>> int ("3" + "4")

      (i) "7"

      (ii) "34"

      (iii) 34

      (iv) 7

(b) A variable defined inside a function referred to as
   (i) a static variable
   (ii) a global variable
   (iii) a local variable
   (iv) an automatic variable

(c) Which function is used to read all the characters?
   (i) read ( )
   (ii) read characters ( )
   (iii) read all ( )
   (iv) read char ( )

(d) The terms Push and Pop are related to
   (i) queue
   (ii) stack
   (iii) Both *(i)* and *(ii)*
   (iv) None of the above

(e) A relational database consists of a collection of
   (i) tables
   (ii) fields
   (iii) records
   (iv) keys

(f) Which of the following SQL statements is incorrect?
   (i) SELECT * FROM Employee WHERE
                                   emp_id = 1000;
   (ii) SELECT emp_id FROM Employee WHERE
                                     emp_id = 1000;
   (iii) SELECT emp_id FROM Employee WHERE
                                     emp_id > 1000;
   (iv) SELECT * FROM Employee WHERE emp_id is
       1000;

(3)

2. Answer the following questions in not more than *2* (two)
   or *3* (three) sentences : 1×6=6

   (a) What is string slice?

   (b) What is scope?

   (c) How is file open ( ) function different from close ( )
   function?

   (d) What is Python module?

   (e) What is primary key?

   (f) What is SQL join?

3. Answer the following questions : 2×6=12

   (a) What are pickling and unplicking processes in the
   context of binary file?

   (b) What is the significance of having functions in a
   program?

   (c) What are the advantages of saving data in binary
   form?

   (d) Compare positional arguments with keyword
   arguments.

   (e) What are docstrings? What is their significance?

   (f) Write the expressions to generate the random integers
   between 20 to 50 using function random ( ).

4. Answer the following questions : 2×2=4

   (a) What is bandwidth? How is it measured?

   (b) Differentiate between Hub and Switch.

   Or

   Differentiate between a web browser and a web
   server.

(4)

5. Answer the following questions :   2×3=6

   (a) What is the difference between WHERE clause and HAVING clause of SQL SELECT statement?

   (b) Explain, with example, the following aggregate functions :

       (i) Sum ( )

       (ii) Max ( )

   (c) Sweety is using a table 'STUDENT'. It has the following columns (fields) :

   Admno, Name, Agg, Stream

   [column Agg contains Aggregate marks]

   She wants to display the highest Aggregate marks obtained in each stream. She wrote the following command :

   SELECT Stream, MAX (Agg) FROM STUDENT;

   But she did not get the desired result. Rewrite the above query with necessary changes to help her get the desired result.

6. Answer the following questions :   3×4=12

   (a) Write a Python program to test a year is a leap year or not.

                          Or

   Write a Python program to input temperature in Fahrenheit and convert it to Celsius. [C = (F – 32)*1·8]

(b) Trace the flow of execution for the following program by writing the integer given against each line in order.

```
1   def power (b, p) :
2          r = b**p
3          return r
4
5   def cal_square (a) :
6          a = power (a, 2)
7          return a
8
9   n = 5
10  result = cal_square (n)
11  print (result)
```

(c) Give postfix form of the following infix expression :

$$A * (B + (C + D) * (E + F)/G) * H$$

Or

How can you return multiple values from a function? Explain with the help of an example.

(d) Write a Python program to display the number of lines present in a data file.

Or

Write the different types of Files Access Modes with their usage.

7. Answer the following questions : 3×2=6

(a) Briefly explain the types of network on the basis of geographical spread.

Or

Briefly explain the different network topologies.

(6)

(b) What is virus? Mention the three types of viruses. How can you prevent them?

Or

Write short notes on the following :

  (i) HTTP

  (ii) FTP

8. Answer the following questions :   3×2=6

(a) What is the significance of GROUP BY clause in a SQL Query? Write a query to display the number of employees with same job from the 'EMP' table.

(b) Consider the following tables Orders, OrderItems and Product. Write a query to list all orders with product names, quantities and prices arranged orderId wise :

ORDERS
OrderId (Primary key)
OrderDate
CustomerId
TotalAmount

ORDERITEMS
OrderId (Primary key)
ProductID
Quantity

PRODUCT
ProductId (Primary key)
ProductName
SupplierId
UnitPrice

Or

What is the use of ORDER BY clause? Write a query that sorts the data of a table 'STUDENT' on the basis of Project-Group (in ascending order), Section (in descending order), Marks (in descending order).

(7)

9. Answer the following questions : 4×2=8

(a) What is the procedure to create own library/package in Python?

Or

Write a function that takes amount in dollars and convert to rupee. Create the function in both void and non-void forms.

(b) Write a program to get item details (code, description and price) for multiple items from the user and create a CSV file by writing all the items details in one go.

Or

Convert the following infix expression into postfix expression :

$$(A + B) * C + (D/E * * F) – G$$

10. Write a Python code to connect to MySQL database namely 'SCHOOL' and then fetches all those records from table 'STUDENT' where marks >70. 4

Or

Given the following table :

Table : STUDENT

No.	Name	Stipend	Stream	Avg. Mark	Grade	Class
1	Karan	400·00	Medical	78·5	B	12B
2	Divakar	450·00	Commerce	89·2	A	11C
3	Divya	300·00	Commerce	68·6	C	12C
4	Arun	350·00	Humanities	73·1	B	12C
5	Sabina	500·00	Non-medical	90·6	A	11A
6	John	400·00	Medical	75·4	B	12B
7	Robert	250·00	Humanities	64·4	C	11A
8	Rubina	450·00	Non-medical	88·5	A	12A
9	Vikas	500·00	Non-medical	92·0	A	12A
10	Mohan	300·00	Commerce	67·5	C	12C

Give the output of following SQL statements :

(a) SELECT MIN (AvgMark) FROM STUDENT WHERE AvgMark < 75;

(b) SELECT SUM(Stipend) FROM STUDENT WHERE Grade = 'B';

(c) SELECT Avg(Stipend) FROM STUDENT WHERE Class = '12A';

(d) SELECT COUNT(DISTINCT Stream) FROM STUDENT;

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