Class: XII Session: 2022-23

Computer Science (083)

Sample Question Paper (Theory)

Maximum Marks: 70   Time Allowed: 3 hours

General Instructions:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q35 against part c only.
8. All programming questions are to be answered using Python Language only.

	SECTION A	
1.	State True or False "Variable declaration is implicit in Python."	1
2.	Which of the following is an invalid datatype in Python? (a) Set (b) None (c)Integer (d)Real	1

3.	Given the following dictionaries
	
	`dict_exam={"Exam":"AISSCE", "Year":2023}`
	`dict_result={"Total":500, "Pass_Marks":165}`
	
	Which statement will merge the contents of both dictionaries?
	    a. `dict_exam.update(dict_result)`
	    b. `dict_exam + dict_result`
	    c. `dict_exam.add(dict_result)`
	    d. `dict_exam.merge(dict_result)`
		1

4.	Consider the given expression:
	`not True and False or True`
	Which of the following will be correct output if the given expression is evaluated?
	
	    (a) True
	    (b) False
	    (c) NONE
	    (d) NULL
		1

5.	Select the correct output of the code: `a = "Year 2022 at All the best"`	1

```
a = a.split('2')
b = a[0] + ". " + a[1] + ". " + a[3]
print (b)
```

(a) Year . 0. at All the best
(b) Year 0. at All the best
(c) Year . 022. at All the best
(d) Year . 0. at all the best

6.	Which of the following mode in file opening statement results or generates an error if the file does not exist? (a) a+ (b) r+ (c) w+ (d) None of the above	1
7.	Fill in the blank: _____ command is used to remove primary key from the table in SQL. (a) update (b)remove (c) alter (d)drop	1
8.	Which of the following commands will delete the table from MYSQL database? (a) DELETE TABLE (b) DROP TABLE (c) REMOVE TABLE (d) ALTER TABLE	1

9.	Which of the following statement(s) would give an error after executing the following code?
	
	 `S="Welcome to class XII"    # Statement 1`
	 `print(S)                    # Statement 2`
	 `S="Thank you"               # Statement 3`
	 `S[0]= '@'                    # Statement 4`
	 `S=S+"Thank you"             # Statement 5`
	
	 (a) Statement 3
	 (b) Statement 4
	 (c) Statement 5
	 (d) Statement 4 and 5
		1

10.	Fill in the blank: _____ is a non-key attribute, whose values are derived from the primary key of some other table. (a) Primary Key (b) Foreign Key (c) Candidate Key	1

	(d) Alternate Key	
11.	The correct syntax of seek() is: (a) file_object.seek(offset [, reference_point]) (b) seek(offset [, reference_point]) (c) seek(offset, file_object) (d) seek.file_object(offset)	1
12.	Fill in the blank: The SELECT statement when combined with _____ clause, returns records without repetition. (a) DESCRIBE (b) UNIQUE (c) DISTINCT (d) NULL	1
13.	Fill in the blank: _____is a communication methodology designed to deliver both voice and multimedia communications over Internet protocol. (a) VoIP (b) SMTP (c) PPP (d)HTTP	1
14.	What will the following expression be evaluated to in Python? print(15.0 / 4 + (8 + 3.0)) (a) 14.75 (b)14.0 (c) 15 (d) 15.5	1
15.	Which function is used to display the total number of records from table in a database? (a) sum(*) (b) total(*) (c) count(*) (d) return(*)	1
16.	To establish a connection between Python and SQL database, connect() is used. Which of the following arguments may not necessarily be given while calling connect() ? (a) host (b) database (c) user (d) password	1
Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as (a) Both A and R are true and R is the correct explanation for A		

(b) Both A and R are true and R is not the correct explanation for A
(c) A is True but R is False
(d) A is false but R is True

17.	Assertion (A):- If the arguments in function call statement match the number and order of arguments as defined in the function definition, such arguments are called positional arguments. Reasoning (R):- During a function call, the argument list first contains default argument(s) followed by positional argument(s).	1
18.	Assertion (A): CSV (Comma Separated Values) is a file format for data storage which looks like a text file. Reason (R): The information is organized with one record on each line and each field is separated by comma.	1

<div align="center">SECTION B</div>

19.	Rao has written a code to input a number and check whether it is prime or not. His code is having errors. Rewrite the correct code and underline the corrections made.
	
	``
	def prime():
	  n=int(input("Enter number to check :: ")
	  for i in range (2, n//2):
	    if n%i=0:
	      print("Number is not prime \n")
	    break
	    else:
	      print("Number is prime \n')
	``
		2

20.	Write two points of difference between Circuit Switching and Packet Switching. **OR** Write two points of difference between XML and HTML.	2

21.	(a) Given is a Python string declaration:
	       `myexam="@@CBSE Examination 2022@@"`
	
	       Write the output of: `print(myexam[::-2])`
	
	(b) Write the output of the code given below:
	       `my_dict = {"name": "Aman", "age": 26}`
	       `my_dict['age'] = 27`
	       `my_dict['address'] = "Delhi"`
	       `print(my_dict.items())`
		1
		
		1

22.	Explain the use of 'Foreign Key' in a Relational Database Management System. Give example to support your answer.	2

23.	(a) Write the full forms of the following: (i) SMTP (ii) PPP (b) What is the use of TELNET?	2
| 24. | Predict the output of the Python code given below:<br><br>```python
def Diff(N1,N2):
    if N1>N2:
        return N1-N2
    else:
        return N2-N1

NUM= [10,23,14,54,32]
for CNT in range (4,0,-1):
    A=NUM[CNT]
    B=NUM[CNT-1]
    print(Diff(A,B),'#', end=' ')
```<br><br><div align="center">OR</div><br>Predict the output of the Python code given below:<br><br>```python
tuple1 = (11, 22, 33, 44, 55 ,66)
list1 =list(tuple1)
new_list = []
for i in list1:
    if i%2==0:
        new_list.append(i)
new_tuple = tuple(new_list)
print(new_tuple)
``` | 2 |
| 25. | Differentiate between count() and count(*) functions in SQL with appropriate example.

<div align="center">OR</div>
Categorize the following commands as DDL or DML:
INSERT, UPDATE, ALTER, DROP | 2 |
| | <div align="center">**SECTION C**</div> | |
26.	(a) Consider the following tables – Bank_Account and Branch: Table: Bank_Account 	ACode	Name	Type
A01	Amrita	Savings
A02	Parthodas	Current
A03	Miraben	Current		1+2

Table: Branch

ACode	City
A01	Delhi
A02	Mumbai
A01	Nagpur

What will be the output of the following statement?

```
SELECT * FROM Bank_Account NATURAL JOIN Branch;
```

(b) Write the output of the queries (i) to (iv) based on the table, TECH_COURSE given below:

Table: TECH_COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	Animation and VFX	12000	2022-07-02	101
C202	CADD	15000	2021-11-15	NULL
C203	DCA	10000	2020-10-01	102
C204	DDTP	9000	2021-09-15	104
C205	Mobile Application Development	18000	2022-11-01	101
C206	Digital marketing	16000	2022-07-25	103

```
(i)     SELECT DISTINCT TID FROM TECH_COURSE;
(ii)    SELECT TID, COUNT(*), MIN(FEES) FROM
   TECH_COURSE GROUP BY TID HAVING COUNT(TID)>1;
(iii)   SELECT CNAME FROM TECH_COURSE WHERE
 FEES>15000 ORDER BY CNAME;
(iv)    SELECT AVG(FEES) FROM TECH_COURSE WHERE
 FEES BETWEEN 15000 AND 17000;
```

27. Write a method COUNTLINES() in Python to read lines from text file 'TESTFILE.TXT' and display the lines which are not starting with any vowel.

Example:

If the file content is as follows:

An apple a day keeps the doctor away.
We all pray for everyone's safety.
A marked difference will come in our country.

The COUNTLINES() function should display the output as:

3

The number of lines not starting with any vowel - 1

OR

Write a function ETCount() in Python, which should read each character of a text file "TESTFILE.TXT" and then count and display the count of occurrence of alphabets E and T individually (including small cases e and t too).

Example:

If the file content is as follows:

Today is a pleasant day.
It might rain today.
It is mentioned on weather sites

The ETCount() function should display the output as:
E or e: 6
T or t : 9

---

28. (a) Write the outputs of the SQL queries (i) to (iv) based on the relations Teacher and Placement given below:

Table : Teacher

T_ID	Name	Age	Department	Date_of_join	Salary	Gender
1	Arunan	34	Computer Sc	2019-01-10	12000	M
2	Saman	31	History	2017-03-24	20000	F
3	Randeep	32	Mathematics	2020-12-12	30000	M
4	Samira	35	History	2018-07-01	40000	F
5	Raman	42	Mathematics	2021-09-05	25000	M
6	Shyam	50	History	2019-06-27	30000	M
7	Shiv	44	Computer Sc	2019-02-25	21000	M
8	Shalakha	33	Mathematics	2018-07-31	20000	F

Table : Placement

P_ID	Department	Place
1	History	Ahmedabad
2	Mathematics	Jaipur
3	Computer Sc	Nagpur

```
(i)    SELECT Department, avg(salary) FROM Teacher
       GROUP BY Department;
ii)    SELECT MAX(Date_of_Join),MIN(Date_of_Join) FROM
       Teacher;
ii)    SELECT Name, Salary,  T.Department, Place FROM
       Teacher T, Placement P WHERE T.Department =
       P.Department AND Salary>20000;

iv)    SELECT Name, Place FROM Teacher T, Placement P
```

3

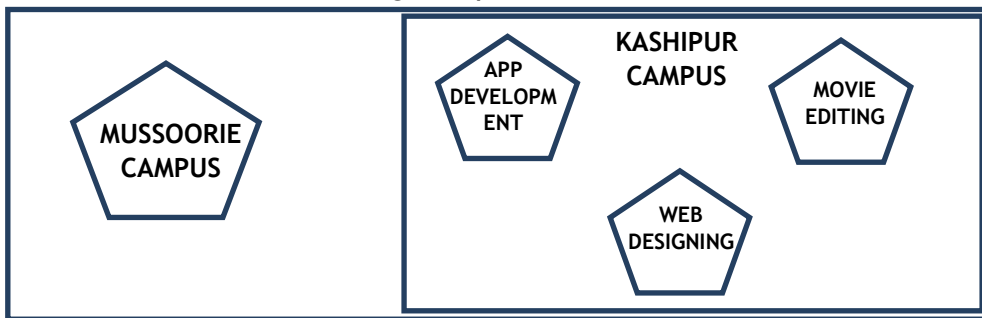|		
	`WHERE Gender ='F' AND T.Department=P.Department;` (b) Write the command to view all tables in a database.	
29.	Write a function INDEX_LIST(L), where L is the list of elements passed as argument to the function. The function returns another list named 'indexList' that stores the indices of all Non-Zero Elements of L. For example: If L contains [12,4,0,11,0,56] The indexList will have - [0,1,3,5]	3

30.	A list contains following record of a customer:
	[Customer_name, Phone_number, City]
	
	Write the following user defined functions to perform given operations on the stack named '**status**':
	    (i) Push_element() - To Push an object containing name and Phone number of customers who live in Goa to the stack
	    (ii) Pop_element() - To Pop the objects from the stack and display them. Also, display "Stack Empty" when there are no elements in the stack.
	
	For example:
	If the lists of customer details are:
	
	["Gurdas", "99999999999","Goa"]
	["Julee", "8888888888","Mumbai"]
	["Murugan","77777777777","Cochin"]
	["Ashmit", "1010101010","Goa"]
	
	The stack should contain
	["Ashmit","1010101010"]
	["Gurdas","9999999999"]
	
	The output should be:
	["Ashmit","1010101010"]
	["Gurdas","9999999999"]
	Stack Empty
	
	 OR
	Write a function in Python, Push(SItem) where , SItem is a dictionary containing the details of stationary items– {Sname:price}.
	The function should push the names of those items in the stack who have price greater than 75. Also display the count of elements pushed into the stack.
	For example:
	If the dictionary contains the following data:
		3

Ditem={"Pen":106,"Pencil":59,"Notebook":80,"Eraser":25}

The stack should contain
Notebook
Pen

The output should be:
The count of elements in the stack is 2

SECTION D

31. MakeInIndia Corporation, an Uttarakhand based IT training company, is planning to set up training centres in various cities in next 2 years. Their first campus is coming up in Kashipur district. At Kashipur campus, they are planning to have 3 different blocks for App development, Web designing and Movie editing. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for issues/problems raised in question nos. (i) to (v), keeping in mind the distances between various blocks/locations and other given parameters.

Distance between various blocks/locations:

Block	Distance
App development to Web designing	28 m
App development to Movie editing	55 m
Web designing to Movie editing	32 m
Kashipur Campus to Mussoorie Campus	232 km

Number of computers

Block	Number of Computers
App development	75
Web designing	50
Movie editing	80

(i) Suggest the most appropriate block/location to house the SERVER in the Kashipur campus (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.   1

(ii) Suggest a device/software to be installed in the Kashipur Campus to take care of data security.   1

(iii) Suggest the best wired medium and draw the cable layout (Block   1

	to Block) to economically connect various blocks within the Kashipur Campus.	

	(iv) Suggest the placement of the following devices with appropriate reasons:
	        a. Switch / Hub
	        b. Repeater
		1

	(v) Suggest a protocol that shall be needed to provide Video Conferencing solution between Kashipur Campus and Mussoorie Campus.	1
| 32. | (a) Write the output of the code given below:<br><br>```
p=5
def sum(q,r=2):
    global p
    p=r+q**2
    print(p, end= '#')


a=10
b=5
sum(a,b)
sum(r=5,q=1)
```<br><br>(b) The code given below inserts the following record in the table Student:<br><br>      RollNo – integer<br>      Name – string<br>      Clas – integer<br>     Marks – integer<br><br>Note the following to establish connectivity between Python and MYSQL:<br>    • Username is root<br>    • Password is tiger<br>    • The table exists in a MYSQL database named `school`.<br>    • The details (`RollNo`, `Name`, `Clas` and `Marks`) are to be accepted from the user.<br><br>Write the following missing statements to complete the code:<br>Statement 1 – to form the cursor object<br>Statement 2 – to execute the command that inserts the record in the table Student.<br>Statement 3- to add the record permanently in the database<br><br>```
import mysql.connector as mysql
def sql_data():
    con1=mysql.connect(host="localhost",user="root",
``` | 2+3 |

```
password="tiger", database="school")
    mycursor=_____              #Statement 1
    rno=int(input("Enter Roll Number :: "))
    name=input("Enter name :: ")
    clas=int(input("Enter class :: "))
    marks=int(input("Enter Marks :: "))
    querry="insert into student
values({},'{}',{},{})".format(rno,name,clas,marks)
    _____              #Statement 2
                                              # Statement 3
    _____
    print("Data Added successfully")
```

OR

(a) Predict the output of the code given below:

```
s="welcome2cs"

n = len(s)
m=""
for i in range(0, n):
    if (s[i] >= 'a' and s[i] <= 'm'):
        m =   m +s[i].upper()
    elif (s[i] >= 'n' and s[i] <= 'z'):
        m = m +s[i-1]
    elif (s[i].isupper()):
        m = m + s[i].lower()
    else:
        m = m +'&'
print(m)
```

(b) The code given below reads the following record from the table named `student` and displays only those records who have marks greater than 75:
    RollNo – integer
    Name – string
    Clas – integer
    Marks – integer

Note the following to establish connectivity between Python and MYSQL:
- **Username is root**
- **Password is tiger**
- **The table exists in a MYSQL database named** `school`.

Write the following missing statements to complete the code:
Statement 1 – to form the cursor object
Statement 2 – to execute the query that extracts records of those students whose marks are greater than 75.
Statement 3- to read the complete result of the query (records whose

marks are greater than 75) into the object named `data`, from the table `student` in the database.

```
import mysql.connector as mysql
def sql_data():

    con1=mysql.connect(host="localhost",user="root",
    password="tiger", database="school")
    mycursor=_____          #Statement 1
    print("Students with marks greater than 75 are :
")
    _____       #Statement 2
    data=_____          #Statement 3
    for i in data:
        print(i)
    print()
```

| 33. | What is the advantage of using a csv file for permanent storage? Write a Program in Python that defines and calls the following user defined functions:

 (i) ADD() – To accept and add data of an employee to a CSV file 'record.csv'. Each record consists of a list with field elements as `empid, name` and `mobile` to store employee id, employee name and employee salary respectively.
 (ii) COUNTR() – To count the number of records present in the CSV file named 'record.csv'.

<div align="center">OR</div>
 Give any one point of difference between a binary file and a csv file. Write a Program in Python that defines and calls the following user defined functions:

 (i)   add() – To accept and add data of an employee to a CSV file 'furdata.csv'. Each record consists of a list with field elements as `fid, fname` and `fprice` to store furniture id, furniture name and furniture price respectively.
 (ii)   search()- To display the records of the furniture whose price is more than 10000. | 5 |

<div align="center">SECTION E</div>

| 34. | Navdeep creates a table RESULT with a set of records to maintain the marks secured by students in Sem 1, Sem2, Sem3 and their division. After creation of the table, he has entered data of 7 students in the table. | 1+1+2 |

ROLL_NO	SNAME	SEM1	SEM2	SEM3	DIVISION
101	KARAN	366	410	402	I
102	NAMAN	300	350	325	I

103	ISHA	400	410	415	I
104	RENU	350	357	415	I
105	ARPIT	100	75	178	IV
106	SABINA	100	205	217	II
107	NEELAM	470	450	471	I

Based on the data given above answer the following questions:

   (i)   Identify the most appropriate column, which can be considered
         as Primary key.
   (ii) If two columns are added and 2 rows are deleted from the table
         result, what will be the new degree and cardinality of the
         above table?
   (iii) Write the statements to:
             a. Insert the following record into the table
                Roll No- 108, Name- Aadit, Sem1- 470, Sem2-444, Sem3-
                475, Div – I.
             b. Increase the SEM2 marks of the students by 3% whose
                name begins with 'N'.

                       OR (Option for part iii only)

   (iii) Write the statements to:
             a. Delete the record of students securing IV division.
             b. Add a column REMARKS in the table with datatype as
                `varchar` with 50 characters

---

35. Aman is a Python programmer. He has written a code and created a
binary file `record.dat` with employeeid, ename and salary. The file
contains 10 records.
He now has to update a record based on the employee id entered by
the user and update the salary. The updated record is then to be
written in the file `temp.dat`. The records which are not to be
updated also have to be written to the file `temp.dat`. If the
employee id is not found, an appropriate message should to be
displayed.
As a Python expert, help him to complete the following code based on
the requirement given above:

```
import _____                                #Statement 1
def update_data():
   rec={}
   fin=open("record.dat","rb")
   fout=open("_____")                 #Statement 2
   found=False
   eid=int(input("Enter employee id to update their
```

```
      salary :: "))
    while True:
      try:
        rec=_____           #Statement 3
        if rec["Employee id"]==eid:
            found=True
            rec["Salary"]=int(input("Enter new salary
      :: "))
            pickle._____         #Statement 4
        else:
            pickle.dump(rec,fout)
      except:
        break
    if found==True:
      print("The salary of employee id  ",eid,"  has
      been updated.")
    else:
      print("No employee with such id is not found")
    fin.close()
    fout.close()
```

(i)   Which module should be imported in the program? (Statement 1)

(ii) Write the correct statement required to open a temporary file named `temp.dat`. (Statement 2)

(iii) Which statement should Aman fill in Statement 3 to read the data from the binary file, `record.dat` and in Statement 4 to write the updated data in the file, `temp.dat`?