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
	SECTION B	

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:
	
	`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=' ')`
	
	OR
	
	Predict the output of the Python code given below:
	
	`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. OR Categorize the following commands as DDL or DML: INSERT, UPDATE, ALTER, DROP	2
	SECTION C	
26.	(a) Consider the following tables - Bank_Account and Branch: Table: Bank_Account	1+2

ACode	Name	Type
A01	Amrita	Savings
A02	Parthodas	Current
A03	Miraben	Current

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. [3]

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:

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: 3

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

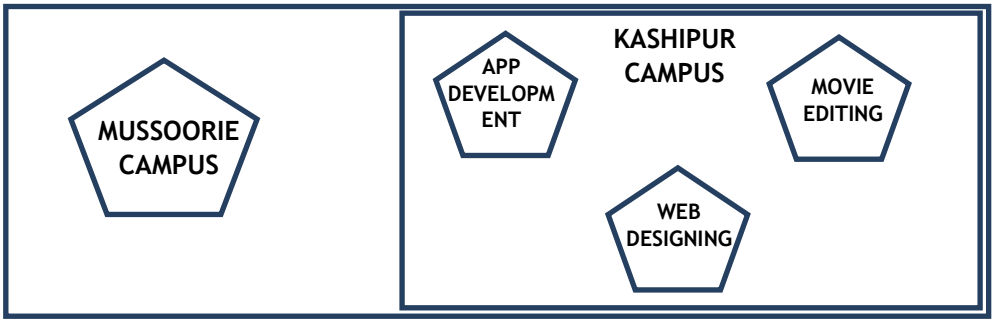
P_ID	Department	Place
1	History	Ahmedabad
2	Mathematics	Jaipur
3	Computer Sc	Nagpur

```
(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
```

	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 (v) Suggest a protocol that shall be needed to provide Video Conferencing solution between Kashipur Campus and Mussoorie Campus.	1 1

32.	(a) Write the output of the code given below:
	
	`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)`
	
	(b) The code given below inserts the following record in the table Student:
	
	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`.
	• The details (`RollNo, Name, Clas` and `Marks`) are to be accepted from the user.
	
	Write the following missing statements to complete the code:
	Statement 1 - to form the cursor object
	Statement 2 - to execute the command that inserts the record in the table Student.
	Statement 3- to add the record permanently in the database
	
	`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: **5**

(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'.

OR

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.

SECTION E

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()
```

1

(i) Which module should be imported in the program? (Statement 1) — 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`? — 2