

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 <pre>dict_exam={"Exam":"AISSCE", "Year":2023} dict_result={"Total":500, "Pass_Marks":165}</pre> 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: <pre>not True and False or True</pre> 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: <pre>a = "Year 2022 at All the best"</pre>	1

	<pre>a = a.split('2') b = a[0] + "." + a[1] + "." + a[3] print (b)</pre> (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? <pre>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</pre> (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		

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: <pre>def Diff(N1,N2): if N1>N2: return N1-N2 else: return N2-N1</pre> 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: <pre>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)</pre>	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 <table border="1"> <thead> <tr> <th>ACode</th><th>Name</th><th>Type</th></tr> </thead> <tbody> <tr> <td>A01</td><td>Amrita</td><td>Savings</td></tr> <tr> <td>A02</td><td>Parthodas</td><td>Current</td></tr> <tr> <td>A03</td><td>Miraben</td><td>Current</td></tr> </tbody> </table>	ACode	Name	Type	A01	Amrita	Savings	A02	Parthodas	Current	A03	Miraben	Current	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.

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

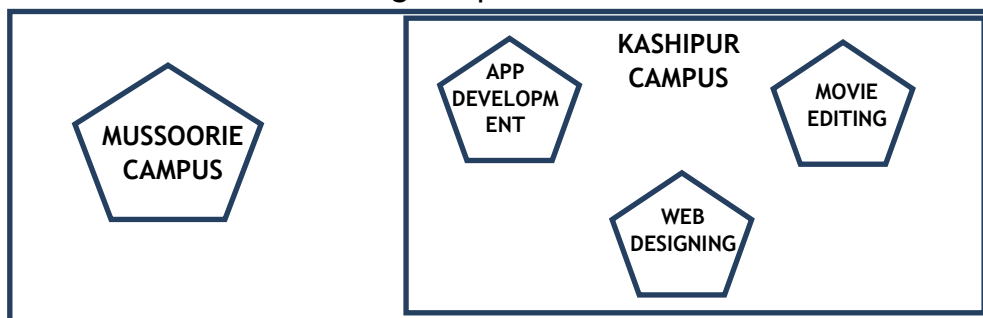
	The number of lines not starting with any vowel - 1 OR Write a function ETCount() in Python, which should read each character of a text file “TESTFILE.TXT” and then count and display the count of occurrence of alphabets E and T individually (including small cases e and t too). Example: If the file content 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 <table><tr><th>T_ID</th><th>Name</th><th>Age</th><th>Department</th><th>Date_of_join</th><th>Salary</th><th>Gender</th></tr><tr><td>1</td><td>Arunan</td><td>34</td><td>Computer Sc</td><td>2019-01-10</td><td>12000</td><td>M</td></tr><tr><td>2</td><td>Saman</td><td>31</td><td>History</td><td>2017-03-24</td><td>20000</td><td>F</td></tr><tr><td>3</td><td>Randeep</td><td>32</td><td>Mathematics</td><td>2020-12-12</td><td>30000</td><td>M</td></tr><tr><td>4</td><td>Samira</td><td>35</td><td>History</td><td>2018-07-01</td><td>40000</td><td>F</td></tr><tr><td>5</td><td>Raman</td><td>42</td><td>Mathematics</td><td>2021-09-05</td><td>25000</td><td>M</td></tr><tr><td>6</td><td>Shyam</td><td>50</td><td>History</td><td>2019-06-27</td><td>30000</td><td>M</td></tr><tr><td>7</td><td>Shiv</td><td>44</td><td>Computer Sc</td><td>2019-02-25</td><td>21000</td><td>M</td></tr><tr><td>8</td><td>Shalakha</td><td>33</td><td>Mathematics</td><td>2018-07-31</td><td>20000</td><td>F</td></tr></table> Table : Placement <table><tr><th>P_ID</th><th>Department</th><th>Place</th></tr><tr><td>1</td><td>History</td><td>Ahmedabad</td></tr><tr><td>2</td><td>Mathematics</td><td>Jaipur</td></tr><tr><td>3</td><td>Computer Sc</td><td>Nagpur</td></tr></table> (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	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	P_ID	Department	Place	1	History	Ahmedabad	2	Mathematics	Jaipur	3	Computer Sc	Nagpur	3
T_ID	Name	Age	Department	Date_of_join	Salary	Gender																																																																							
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	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", "9999999999", "Goa"] ["Julee", "8888888888", "Mumbai"] ["Murugan", "7777777777", "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	
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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.
- (ii) Suggest a device/software to be installed in the Kashipur Campus to take care of data security.
- (iii) Suggest the best wired medium and draw the cable layout (Block

1
1
1

	to Block) to economically connect various blocks within the Kashipur Campus. (iv) Suggest the placement of the following devices with appropriate reasons: - Switch / Hub - 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: <pre> 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) </pre> (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 <pre> import mysql.connector as mysql def sql_data(): con1=mysql.connect(host="localhost",user="root", </pre>	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 :: "))
    query="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. <pre>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()</pre>																			
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’. 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.	5																		
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. <table><tr><th>ROLL_NO</th><th>SNAME</th><th>SEM1</th><th>SEM2</th><th>SEM3</th><th>DIVISION</th></tr><tr><td>101</td><td>KARAN</td><td>366</td><td>410</td><td>402</td><td>I</td></tr><tr><td>102</td><td>NAMAN</td><td>300</td><td>350</td><td>325</td><td>I</td></tr></table>	ROLL_NO	SNAME	SEM1	SEM2	SEM3	DIVISION	101	KARAN	366	410	402	I	102	NAMAN	300	350	325	I	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
```

	<pre> 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() </pre>	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)	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?	