

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> <p>(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</p> | |
| 6. | <p>Which of the following mode in file opening statement results or generates an error if the file does not exist?</p> <p>(a) a+ (b) r+ (c) w+ (d) None of the above</p> | 1 |
| 7. | <p>Fill in the blank:</p> <p>_____ command is used to remove primary key from the table in SQL.</p> <p>(a) update (b) remove (c) alter (d) drop</p> | 1 |
| 8. | <p>Which of the following commands will delete the table from MYSQL database?</p> <p>(a) DELETE TABLE (b) DROP TABLE (c) REMOVE TABLE (d) ALTER TABLE</p> | 1 |
| 9. | <p>Which of the following statement(s) would give an error after executing the following code?</p> <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> <p>(a) Statement 3 (b) Statement 4 (c) Statement 5 (d) Statement 4 and 5</p> | 1 |
| 10. | <p>Fill in the blank:</p> <p>_____ is a non-key attribute, whose values are derived from the primary key of some other table.</p> <p>(a) Primary Key (b) Foreign Key (c) Candidate Key</p> | 1 |

| | | |
|---|---|---|
| | (d) Alternate Key | |
| 11. | <p>The correct syntax of seek() is:</p> <p>(a) file_object.seek(offset [, reference_point])</p> <p>(b) seek(offset [, reference_point])</p> <p>(c) seek(offset, file_object)</p> <p>(d) seek.file_object(offset)</p> | 1 |
| 12. | <p>Fill in the blank:</p> <p>The SELECT statement when combined with _____ clause, returns records without repetition.</p> <p>(a) DESCRIBE</p> <p>(b) UNIQUE</p> <p>(c) DISTINCT</p> <p>(d) NULL</p> | 1 |
| 13. | <p>Fill in the blank:</p> <p>_____ is a communication methodology designed to deliver both voice and multimedia communications over Internet protocol.</p> <p>(a) VoIP (b) SMTP (c) PPP (d) HTTP</p> | 1 |
| 14. | <p>What will the following expression be evaluated to in Python?</p> <pre>print(15.0 / 4 + (8 + 3.0))</pre> <p>(a) 14.75 (b) 14.0 (c) 15 (d) 15.5</p> | 1 |
| 15. | <p>Which function is used to display the total number of records from table in a database?</p> <p>(a) sum(*)</p> <p>(b) total(*)</p> <p>(c) count(*)</p> <p>(d) return(*)</p> | 1 |
| 16. | <p>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() ?</p> <p>(a) host</p> <p>(b) database</p> <p>(c) user</p> <p>(d) password</p> | 1 |
| <p>Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as</p> <p>(a) Both A and R are true and R is the correct explanation for A</p> | | |

| 23. | <p>(a) Write the full forms of the following: (i) SMTP (ii) PPP</p> <p>(b) What is the use of TELNET?</p> | 2 | | | | | | | | | | | | |
|------------------|--|---------|------|------|-----|--------|---------|-----|-----------|---------|-----|---------|---------|-----|
| 24. | <p>Predict the output of the Python code given below:</p> <pre>def Diff(N1,N2): if N1>N2: return N1-N2 else: return N2-N1</pre> <p>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=' ')</p> <p style="text-align: center;">OR</p> <p>Predict the output of the Python code given below:</p> <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. | <p>Differentiate between count() and count(*) functions in SQL with appropriate example.</p> <p style="text-align: center;">OR</p> <p>Categorize the following commands as DDL or DML: INSERT, UPDATE, ALTER, DROP</p> | 2 | | | | | | | | | | | | |
| SECTION C | | | | | | | | | | | | | | |
| 26. | <p>(a) Consider the following tables - Bank_Account and Branch:</p> <p>Table: Bank_Account</p> <table border="1" data-bbox="268 1906 783 2051"> <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:

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`

| | | |
|-----|--|---|
| | <p>WHERE Gender ='F' AND T.Department=P.Department;</p> <p>(b) Write the command to view all tables in a database.</p> | |
| 29. | <p>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.</p> <p>For example:</p> <p>If L contains [12,4,0,11,0,56]</p> <p>The indexList will have - [0,1,3,5]</p> | 3 |
| 30. | <p>A list contains following record of a customer: [Customer_name, Phone_number, City]</p> <p>Write the following user defined functions to perform given operations on the stack named 'status':</p> <p>(i) Push_element() - To Push an object containing name and Phone number of customers who live in Goa to the stack</p> <p>(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.</p> <p>For example: If the lists of customer details are:</p> <p>["Gurdas", "9999999999", "Goa"] ["Julee", "8888888888", "Mumbai"] ["Murugan", "7777777777", "Cochin"] ["Ashmit", "1010101010", "Goa"]</p> <p>The stack should contain ["Ashmit", "1010101010"] ["Gurdas", "9999999999"]</p> <p>The output should be: ["Ashmit", "1010101010"] ["Gurdas", "9999999999"] Stack Empty</p> <p style="text-align: center;">OR</p> <p>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.</p> <p>For example: If the dictionary contains the following data:</p> | 3 |

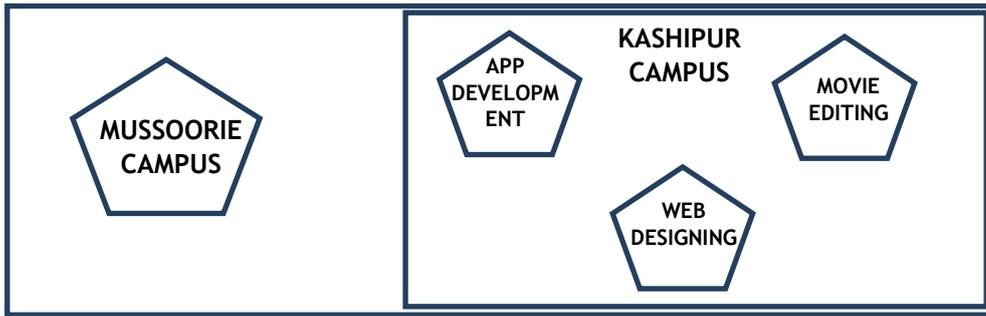
Ditem={"Pen":106,"Pencil":59,"Notebook":80,"Eraser":25}

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

| | | |
|-----|--|-------------------|
| | <p>to Block) to economically connect various blocks within the Kashipur Campus.</p> <p>(iv) Suggest the placement of the following devices with appropriate reasons:</p> <ol style="list-style-type: none"> a. Switch / Hub b. Repeater <p>(v) Suggest a protocol that shall be needed to provide Video Conferencing solution between Kashipur Campus and Mussoorie Campus.</p> | <p>1</p> <p>1</p> |
| 32. | <p>(a) Write the output of the code given below:</p> <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> <p>(b) The code given below inserts the following record in the table Student:</p> <p style="padding-left: 40px;">RollNo - integer Name - string Clas - integer Marks - integer</p> <p>Note the following to establish connectivity between Python and MYSQL:</p> <ul style="list-style-type: none"> • 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. <p>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</p> <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.

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'.

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.

| 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> | |
| (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) | 1 |
| (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 |