

SuperNova-Learnpython
COMPUTER SCIENCE (083)
CLASS: XII (SESSION: 2023-24)

Sample Paper - 2

TIME: 3 HOURS

MAXIMUM MARKS: 70

General Instructions:

- Please check this question paper contains 35 questions.
- The paper is divided into 4 Sections- A, B, C, D and E.
- Section A, consists of 18 questions (1 to 18). Each question carries 1 Mark.
- Section B, consists of 7 questions (19 to 25). Each question carries 2 Marks.
- Section C, consists of 5 questions (26 to 30). Each question carries 3 Marks.
- Section D, consists of 2 questions (31 to 32). Each question carries 4 Marks.
- Section E, consists of 3 questions (33 to 35). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.

SECTION A		
1.	State True or False: A function can return multiple values by separating them with commas in a single return statement.	1
2.	In Python, identifiers cannot begin with: a. A digit b. An underscore c. An uppercase letter d. A lowercase letter	1
3.	What is the output of the following code snippet? my_tuple = (1, 2, 3) my_tuple[1] = 5 print(my_tuple) a. [1, 5, 3] b. (1, 5, 3) c. Raises an Error d. None of the above	1
4.	What is the result of the expression $5 + 3 * 2$? a. 16 b. 11 c. 13 d. 26	1

5.	<p>What is the output of the following code?</p> <pre>nested_list = [[1, 2, 3], [4, 5, 6], [7, 8, 9]] result = nested_list[2][1] print(result)</pre> <p>a. 2 b. 5 c. 8 d. 9</p>	1
6.	<p>What is the purpose of the file mode 'a'?</p> <p>a. Append b. Access c. Adjust d. Aggregate</p>	1
7.	<p>Fill in the blank: _____ command is used to change the structure of a table.</p> <p>a. ALTER TABLE b. MODIFY TABLE c. CHANGE TABLE d. UPDATE TABLE</p>	1
8.	<p>What does the SQL command WHERE do in a SELECT statement?</p> <p>a. Specifies the columns to be retrieved b. Filters rows based on a condition c. Groups rows by a specified column d. Arranges rows in ascending or descending order</p>	1
9.	<p>Which of the following data types can be used as keys in a Python dictionary?</p> <p>a. Lists b. Sets c. Tuples d. All of these</p>	1
10.	<p>What possible outputs(s) will be obtained when the following code is executed?</p> <pre>import random myNumber = random.randint(0, 3) CITIES = ["NEW YORK", "PARIS", "TOKYO", "LONDON"] for I in range(1, myNumber): print(CITIES[I], end="*") print()</pre> <p>a. LONDON* PARIS* TOKYO*</p> <p>b. PARIS* TOKYO*</p> <p>c. PARIS* PARIS*</p>	1

	TOKYO* TOKYO* d. NEW YORK* PARIS*PARIS* TOKYO* TOKYO* TOKYO*	
11.	The correct syntax of open() function of CSV file is: a. open(file_mode, file_name, [new line character]) b. open(file_name, [new line character], file_mode) c. open([new line character], file_mode, file_name) d. open(file_name, file_mode, [new line character])	1
12.	Fill in the blank: _____ command with the SELECT command returns records in ascending or descending order. a. GROUP BY b. ARRANGE BY c. ORDER BY d. SORT BY	1
13.	In this technique, first the complete physical connection between two computers is established and then data is transmitted from the source computer to the destination computer. a. Packet Switching b. Circuit Switching c. Message Switching d. IP Switching	1
14.	What will the following expression be evaluated to in Python? print(13 % 4 - (8 ** 3)) a. -511 b. -23 c. -10 d. -1	1
15.	Which function is used to display the total number of column values ignoring NULL from table in a database? a. Recount(column_name) b. Recount(*) c. Count(*) d. Count(column_name)	1
16.	What will be the output of the given code? fruit_count = 5 def eat_fruit(): global fruit_count fruit_count -= 2 eat_fruit() print(fruit_count) a. 5 b. 3 c. 4 d. 2	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): The <code>pickle.dump()</code> function is used to serialise Python objects and store them in a file. Reason (R): Serialisation is the process of converting a Python object into a byte stream, and <code>pickle.dump()</code> facilitates this process by writing the serialized data to a file.	1
18.	Assertion (A): Keyword arguments are the named arguments with assigned values being passed in the function call statement. Reason (R): We can give keyword arguments in any order provided their names are same as that of parameters.	1
SECTION B		
19.	Observe the following code very carefully and rewrite it after removing all syntactical errors with each correction underlined. <pre> DEF execmain(): x = input("Enter a number:") if(abs(x) = x): Print("You entered a positive number:") else: x = *-1 print("Number made positive:"x) execmain () </pre>	2
20.	Write two advantages and disadvantages of computer network. OR Write difference between Hub and Switch.	2
21.	a. Given is a Python string declaration: <pre>message = "Welcome to the Python world!"</pre> Write the output of: <pre>print('-'.join(message.split(' ')))</pre> b. Write the output of the code given below: <pre>my_list = [3, 7, 1, 4, 6] my_list.append(9) my_list.extend([2, 8]) my_list.insert(2, 5) print(sorted(my_list))</pre>	1 1
22.	Explain how constraints in an RDBMS contribute to referential integrity.	2
23.	a. Write the full forms of the following: (i) POP (ii) TCP/IP b. Explain the role of a firewall in network security.	1 1
24.	Differentiate between having and where clause in MySQL with appropriate example. OR Explain DDL and DML commands by giving example.	2

25.	<p>Predict the output of the Python code given below:</p> <pre> p = 1 q = 6 def change_values(): global p q = 5 p = p + q return p change_values() print(p, q) </pre>	2																																																								
Section - C																																																										
26.	<p>Write the output of the code given below:</p> <pre> def switchover(A, N, split1): for K in range(0, N): if K < split1: A[K] = A[K] + K else: A[K] = A[K] * K def display(A, N): for K in range(0, N): if K % 2 == 0: print(A[K], '%', end=' ') else: print(A[K]) H = [30, 40, 50, 20, 10, 5] switchover(H, 6, 3) display(H, 6) </pre>	3																																																								
27.	<p>Consider the table Student given below and write the output of the SQL queries that follow.</p> <p>Table: Student</p> <table border="1" data-bbox="212 1346 1235 1646"> <thead> <tr> <th>SID</th> <th>SNAME</th> <th>AGE</th> <th>GENDER</th> <th>COURSE</th> <th>GRADE</th> <th>ENROLL_DATE</th> </tr> </thead> <tbody> <tr> <td>101</td> <td>John</td> <td>22</td> <td>Male</td> <td>Computer Sci.</td> <td>A</td> <td>2022-02-15</td> </tr> <tr> <td>102</td> <td>Maria</td> <td>23</td> <td>Female</td> <td>Biology</td> <td>B</td> <td>2022-02-10</td> </tr> <tr> <td>103</td> <td>Raj</td> <td>21</td> <td>Male</td> <td>Physics</td> <td>C</td> <td>2021-12-05</td> </tr> <tr> <td>104</td> <td>Eshaan</td> <td>24</td> <td>Male</td> <td>Math</td> <td>A</td> <td>2022-03-20</td> </tr> <tr> <td>105</td> <td>Aakriti</td> <td>22</td> <td>Female</td> <td>Chemistry</td> <td>B</td> <td>2022-01-02</td> </tr> <tr> <td>106</td> <td>Pooja</td> <td>23</td> <td>Female</td> <td>Biology</td> <td>A</td> <td>2021-11-18</td> </tr> <tr> <td>107</td> <td>Jyoti</td> <td>21</td> <td>Female</td> <td>Computer Sci</td> <td>C</td> <td>2022-04-08</td> </tr> </tbody> </table> <p>(i) SELECT SID, SNAME, COURSE, GRADE, ENROLL_DATE FROM Student WHERE ENROLL_DATE BETWEEN '2021-12-01' AND '2022-02-16';</p> <p>(ii) SELECT SID, SNAME, COURSE, GRADE FROM Student WHERE SNAME LIKE 'J%';</p> <p>(iii) SELECT SNAME, GENDER, COURSE FROM Student WHERE GENDER='Male' AND COURSE IN('Math','Biology')AND GRADE = 'A';</p>	SID	SNAME	AGE	GENDER	COURSE	GRADE	ENROLL_DATE	101	John	22	Male	Computer Sci.	A	2022-02-15	102	Maria	23	Female	Biology	B	2022-02-10	103	Raj	21	Male	Physics	C	2021-12-05	104	Eshaan	24	Male	Math	A	2022-03-20	105	Aakriti	22	Female	Chemistry	B	2022-01-02	106	Pooja	23	Female	Biology	A	2021-11-18	107	Jyoti	21	Female	Computer Sci	C	2022-04-08	3
SID	SNAME	AGE	GENDER	COURSE	GRADE	ENROLL_DATE																																																				
101	John	22	Male	Computer Sci.	A	2022-02-15																																																				
102	Maria	23	Female	Biology	B	2022-02-10																																																				
103	Raj	21	Male	Physics	C	2021-12-05																																																				
104	Eshaan	24	Male	Math	A	2022-03-20																																																				
105	Aakriti	22	Female	Chemistry	B	2022-01-02																																																				
106	Pooja	23	Female	Biology	A	2021-11-18																																																				
107	Jyoti	21	Female	Computer Sci	C	2022-04-08																																																				

28.	<p>A text file "WisdomQuotes.Txt" has the following data written in it: Embrace challenges; they make you stronger. Learn from yesterday, live for today, hope for tomorrow. Your attitude determines your direction. Believe you can and you are halfway there. Write a user defined function to display the total number of words present in the file.</p> <p style="text-align: center;">OR</p> <p>Write a Python function count_my() to read the text file "DATA.TXT" and count the number of times the word "my" occurs in the file. For example, if the content of the file "DATA.TXT" is updated to: "This is my Python program. I enjoy programming and customizing my code." The count_my() function should display the output as: "my occurs 2 times".</p>	3																																				
29.	<p>Imagine you are working with a table named "Customers," designed to store records of online customers. The table has the following columns: CustomerID, Name, City, Purchase, Amount, and Date.</p> <table border="1" data-bbox="241 709 1390 953"> <thead> <tr> <th>CustomerID</th> <th>Name</th> <th>City</th> <th>Purchase</th> <th>Amount</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>C001</td> <td>Priya</td> <td>Delhi</td> <td>Laptop</td> <td>55000</td> <td>2023-01-15</td> </tr> <tr> <td>C002</td> <td>Jiya</td> <td>Orissa</td> <td>Smartphone</td> <td>42000</td> <td>2023-09-12</td> </tr> <tr> <td>C003</td> <td>Mukesh</td> <td>Jaipur</td> <td>Tablet</td> <td>33000</td> <td>2023-07-09</td> </tr> <tr> <td>C004</td> <td>Harish</td> <td>Ghaziabad</td> <td>Headphones</td> <td>1800</td> <td>2023-09-19</td> </tr> <tr> <td>C005</td> <td>Geeta</td> <td>Delhi</td> <td>Laptop</td> <td>79000</td> <td>2023-10-10</td> </tr> </tbody> </table> <p>Based on the data given above answer the following questions:</p> <ol style="list-style-type: none"> Identify the most appropriate column, which can be considered as Primary key. What is the cardinality of the table? Write SQL commands for the following: <ol style="list-style-type: none"> To add a new column Date of Delivery. To delete the column City from the table. 	CustomerID	Name	City	Purchase	Amount	Date	C001	Priya	Delhi	Laptop	55000	2023-01-15	C002	Jiya	Orissa	Smartphone	42000	2023-09-12	C003	Mukesh	Jaipur	Tablet	33000	2023-07-09	C004	Harish	Ghaziabad	Headphones	1800	2023-09-19	C005	Geeta	Delhi	Laptop	79000	2023-10-10	3
CustomerID	Name	City	Purchase	Amount	Date																																	
C001	Priya	Delhi	Laptop	55000	2023-01-15																																	
C002	Jiya	Orissa	Smartphone	42000	2023-09-12																																	
C003	Mukesh	Jaipur	Tablet	33000	2023-07-09																																	
C004	Harish	Ghaziabad	Headphones	1800	2023-09-19																																	
C005	Geeta	Delhi	Laptop	79000	2023-10-10																																	
30.	<p>A list contains the following records of students: [Student_name, Percentage, State]</p> <p>Write the following user-defined functions to perform given operations on the stack named student:</p> <p>(i) Push_Student(SDetails) - A function to push an object containing the name, percentage, and state of students who have a percentage greater than 85 into the stack. Also, display the count of students pushed into the stack.</p> <p>(ii) Pop_Student() - A function to pop the objects from the stack and display them. If the stack is empty, display "Stack Empty."</p>	3																																				
Section - D																																						
31.	<p>Consider a database for an online bookstore with the following tables:</p> <p>Table: Author</p> <table border="1" data-bbox="196 1751 1390 1986"> <thead> <tr> <th>AuthorID</th> <th>AuthorName</th> <th>BirthYear</th> <th>Nationality</th> </tr> </thead> <tbody> <tr> <td>A001</td> <td>J.K. Rowling</td> <td>1965</td> <td>British</td> </tr> <tr> <td>A002</td> <td>George R.R. Martin</td> <td>1948</td> <td>American</td> </tr> <tr> <td>A003</td> <td>Haruki Murakami</td> <td>1949</td> <td>Japanese</td> </tr> <tr> <td>A004</td> <td>Chimamanda Ngozi Adichie</td> <td>1977</td> <td>Nigerian</td> </tr> <tr> <td>A005</td> <td>Arundhati Roy</td> <td>1961</td> <td>Indian</td> </tr> </tbody> </table>	AuthorID	AuthorName	BirthYear	Nationality	A001	J.K. Rowling	1965	British	A002	George R.R. Martin	1948	American	A003	Haruki Murakami	1949	Japanese	A004	Chimamanda Ngozi Adichie	1977	Nigerian	A005	Arundhati Roy	1961	Indian	4												
AuthorID	AuthorName	BirthYear	Nationality																																			
A001	J.K. Rowling	1965	British																																			
A002	George R.R. Martin	1948	American																																			
A003	Haruki Murakami	1949	Japanese																																			
A004	Chimamanda Ngozi Adichie	1977	Nigerian																																			
A005	Arundhati Roy	1961	Indian																																			

A006	Ruskin Bond	1934	Indian													
Table: Book																
BookID	Title	AuthorID	Genre	Price (INR)												
B001	Harry Potter and the Philosopher's Stone	A001	Fantasy	351												
B002	A Game of Thrones	A002	Fantasy	483												
B003	Norwegian Wood	A003	Fiction	341												
B004	Half of a Yellow Sun	A004	Historical Fiction	381												
B005	The Wind-Up Bird Chronicle	A003	Magic Realism	418												
B006	Americanah	A004	Contemporary Fiction	339												
B007	The God of Small Things	A005	Fiction	302												
B008	The Blue Umbrella	A006	Children's Literature	120												
<p>(i) Display the titles and prices of books written by Indian authors.</p> <p>(ii) Display the average price of books in each genre.</p> <p>(iii) Display the titles and prices of books with a price above 300.</p> <p>(iv) Display the titles of books and genres of books that belong to either the 'Fiction' or 'Fantasy' and arrange the results in descending order.</p> <p>(v) Write a command to change the data type of the column Price from integer to decimal (8,2).</p>																
32.	<p>Riya, a computer science teacher at a high school, is managing a database for tracking students' programming projects. She has created a CSV file named "Projects.csv" with the following structure: [Proj_ID, Proj_Title, St_Name, Status] Where:</p> <p>Proj_ID is the project ID (integer)</p> <p>Proj_Title is the title of the programming project (string)</p> <p>St_Name is the student name (string)</p> <p>Status represents the project status, which can be 'Completed', 'In Progress', or 'Not Started'.</p> <p>Riya wants to enhance her program by implementing the following user-defined functions:</p> <p>acceptProject() - To accept a new project record from the user and add it to the "Projects.csv" file. The column headings should be added at the top of the CSV file.</p> <p>completedProjectsCount() - To count the number of projects that are marked as 'Completed'.</p> <p>Assist Riya in completing these functions.</p>			4												
Section E																
33.	<p>XYZ Corporation is establishing a new technology campus in a suburban area. The campus consists of three main buildings – IT Hub, Research Center, and Innovation Lab.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 2px solid orange; padding: 10px; text-align: center;">IT Hub</div> <div style="border: 2px solid orange; padding: 10px; text-align: center;">Research Center</div> <div style="border: 2px solid orange; padding: 10px; text-align: center;">Innovation Lab</div> </div> <p>The distances between the buildings are as follows:</p> <table border="1"> <thead> <tr> <th>From</th> <th>To</th> <th>Distance (in Mtrs.)</th> </tr> </thead> <tbody> <tr> <td>IT Hub</td> <td>Research Center</td> <td>75</td> </tr> <tr> <td>IT Hub</td> <td>Innovation Lab</td> <td>110</td> </tr> <tr> <td>Research Center</td> <td>Innovation Lab</td> <td>90</td> </tr> </tbody> </table>			From	To	Distance (in Mtrs.)	IT Hub	Research Center	75	IT Hub	Innovation Lab	110	Research Center	Innovation Lab	90	5
From	To	Distance (in Mtrs.)														
IT Hub	Research Center	75														
IT Hub	Innovation Lab	110														
Research Center	Innovation Lab	90														

	<p>Number of computers in each of the building is as follows:</p> <table border="1" data-bbox="198 170 578 289"> <tr> <td>IT Hub</td> <td>150</td> </tr> <tr> <td>Research Center</td> <td>80</td> </tr> <tr> <td>Innovation Lab</td> <td>30</td> </tr> </table> <p>a) Suggest and draw a cable layout to efficiently connect various buildings within the campus for connecting digital devices. b) Which network device will be used to connect computers in each building to form a local area network? c) Which building should be designated as the server, and why? d) Suggest a suitable wired-transmission medium to connect the campus with a nearby office 5 kilometers away. e) Suggest the devices to be installed in each of these buildings for connecting computers within the building out of the following: (i) Gateway (ii) Modem (iii) Switch</p>	IT Hub	150	Research Center	80	Innovation Lab	30	
IT Hub	150							
Research Center	80							
Innovation Lab	30							
34.	<p>(i) Differentiate between read() and readline() methods in Python for file handling. (ii) Suppose you have a file named "BOOKS.TXT" with records [BookTitle, Author, Price]. Create a function, findExpensiveBooks(), that reads the file and returns the titles of books with prices exceeding Rs. 500. OR (i) Explain the distinctions between 'a' and 'w' modes in Python file handling. (ii) Imagine a file, "EMPLOYEES.DAT," structured as [EmpID, EmpName, Salary]. Develop a function, retrieveHighSalary(), to read the file and display employee names earning more than Rs. 75,000.</p>	1+4=5						
35.	<p>(i) Define the term referential integrity in context with RDBMS. (ii) Riya is working on a Python program to update a specific record in the "Employee" table of a MySQL database named "CompanyDB." The "Employee" table has the following columns: emp_id (Employee ID) - integer emp_name (Employee Name) - string emp_salary (Employee Salary) - float emp_department (Employee Department) - string Riya needs assistance in writing a Python program that prompts the user to enter the employee ID whose record needs to be updated. The program should then take new values for the employee's name, salary, and department, and update the corresponding record in the database. Ensure that the program establishes connectivity to MySQL with the following credentials: Username: admin Password: abc@123 Host: localhost Help Riya by providing a Python program that achieves this task. OR (i) Differentiate between candidate and alternate key. (ii) Sarthak has created a table named Product in the MySQL database named 'Inventory', with the following columns:</p> <ul style="list-style-type: none"> ProductID (Product ID) - integer 	1+4=5						

- ProductName (Product Name) - string
- ProductPrice (Product Price) - float
- Discount (Discount Percentage) - float

Note the following to establish connectivity between Python and MySQL:

- Username: root
- Password: sunshine
- Host: localhost

Sarthak now wants to display the records of products that have a discount of 50%. Help Sarthak write a Python program to achieve this.

SuperNova-Learnpython4cbse