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INDIAN SCHOOL SALALAH
FIRST TERM EXAMINATION – SEPTEMBER 2025



Computer Science (083)

Class: XII**Date: 30/09/2025****Time: 3 Hrs.****Maximum Marks: 70****General Instructions:**

This question paper contains 37 questions.

- All questions are compulsory. However, internal choices have been provided in some questions.
- Attempt only one of the choices in such questions.
- The paper is divided into 5 Sections- A, B, C, D and E.
- Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
- Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
- Section C consists of 3 questions (29 to 31). Each question carries 3 Marks.
- Section D consists of 4 questions (32 to 35). Each question carries 4 Marks.
- Section E consists of 2 questions (36 to 37). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.
- In-case of MCQ, text of the correct answer should also be written.

Section- A		
01	State whether the following statement is True or False import statistics print(statistics.median([10, 30, 20, 40, 50])) The output will be 30.	1
02	What will be the output of the following code? >>>L = ["Python", "Programming", "Language"] >>>print(L[2][-1] + L[-2][2])	1
03	The ALTER and CREATE commands in MySQL are classified as _____. (a) DDL (b) DML (c) DCL (d) Both (b) and (c)	1
04	Which of the following expressions evaluates False? (a) not(True) and False (b) True or False (c) not(False and True) (d) True and not(False)	1
05	_____ is a networking device that receives a weak signal and regenerates it to strengthen the transmission. (a) Router (b) Bridge (c) Switch (d) Repeater	1
06	Expand MODEM and HTTP _____	1
07	What will be the output of the following Python code? str= "Soft Skills" print(str[-3::-3])	1

	(a) lSf (c) StKi	(b) Stkl (d) l	
08	Which of the following file modes makes the file zero length while opening? (a) ab (c) rb	(b) wb (d) None of these	1
09	What will be output the following code: def fun(y): global x x=y+50 return(x) z,y=fun(10),x print(z,y) (a) 60 60 (c) 10 60	(b) 60 10 (d) Error	1
10	When a web server cannot find the requested webpage, which HTTP status code is usually returned to the client's browser? (a) 401 Not Found (c) 403 Not Found	(b) 402 Not Found (d) 404 Not Found	1
11	Which protocol is used to send emails from a client to a mail server? (a) HTTP (c) SMTP	(b) FTP (d) POP3	1
12	In a Cartesian product of two tables R and S, the degree and cardinality of the resultant table will be (a) Degree = sum of degrees of R and S, Cardinality = product of cardinalities of R and S (b) Degree = product of degrees of R and S, Cardinality = sum of cardinalities of R and S (c) Degree = sum of degrees of R and S, Cardinality = sum of cardinalities of R and S (d) Degree = product of degrees of R and S, Cardinality = product of cardinalities of R and S		1
13	Which of the following SQL queries will NOT return the expected result? (a) SELECT * FROM emp WHERE name = NULL (b) SELECT * FROM emp ORDER BY name (c) SELECT * FROM emp WHERE salary > 5000 (d) SELECT * FROM emp WHERE salary < 10000		1
14	Which of the following statements will NOT display a random integer between 1 and 10 (including 1 and 10) correctly? (a) print(random.randint(1, 10)) (b) print(random.randrange(1, 10)) (c) print(random.randint(1, 11)) (d) print(random.randrange(0, 10))		1
15	Consider the given dictionary >>>D1={"Rahul":50,"Manoj":45,"Maneesh":75} What will be the output of the following statement? >>> D1.setdefault("Maneesh":100) (a) 75 (c) None	(b) 100 (d) Error	1
16	Which SQL command can change the number of rows (cardinality) in an existing table? (a) INSERT (c) Both (a) & (b)	(b) DELETE (d) DROP	1
17	In MySQL, a table has 4 columns and 7 rows. If 3 columns and 5 rows are added to the existing table, what will be the updated degree of the table?		1

	(a) Degree: 7 (b) Degree: 8 (c) Degree: 12 (d) Degree: 5	
18	Pavitra executes the given query but does not get the correct output. mysql>SELECT department, MAX(salary) FROM employees HAVING MAX(salary) > 50000 GROUP BY department; Write the correct query	1
19	What will be the output of the following Python statement:? >>>10**2-5*3**2+200//10 (a) 75 (b) 80 (c) 85 (d) 70	1
Q20 and 21 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		
20	Assertion (A): - A primary key constraint automatically creates a unique index on the column. Reason (R): - Unique indexes help in faster retrieval of rows based on the primary key.	1
21	Assertion (A): The expression tuple ([1, 2, 3]).append(4) in Python will modify the original tuple. Reason (R): The append() method adds an element to the end of a list.	1
Section- B		
22	Write the difference between Primary Key and NOT NULL constraint. OR Write any two advantages of DBMS.	2
23	The code below is intended to calculate the sum of all elements in a list. However, it contains syntax and logical errors. Rewrite the code after removing all the errors. Also, underline all the corrections made. def list_sum(nums) total = 0 for i in range(nums): total = total + i return total numbers = [2, 4, 6, 8] print("Sum is", list_sum(numbers))	2
24	Answer using Python built-in methods/functions only) (a) Write a statement to convert all characters of a string message to uppercase. (b) Write a statement to remove all elements from a dictionary named student. OR Predict the output of the following Python code: data = "banana" print(data.replace("a", "o", 2)) print(data.find("na"))	2
25	Write a Python function add_student() that accepts a dictionary students, a roll number, and a name. The function should add the roll number and name to the dictionary. If the roll number already exists, print "Student already exists" instead of updating it.	2

26	Define the following terms: (a) Firewall (b) Web hosting OR (a) Expand the following terms: URL and DNS (b) Differentiate between LAN and WAN	2
27	(a) View all the databases in the server. (b) Create a table Students with columns RollNo, DOB and Name with suitable data type. OR Differentiate between DROP and DELETE query in SQL with a suitable example	2
28	Predict the output of the Python code given below: <pre>marks = {"Ali": [85, 90], "Sara": [78, 82], "Nina": [92, 88], "Omar": [70, 75]} passed = [] for student in marks: scores = marks[student] average = (scores[0] + scores[1]) / 2 if average >= 85: passed.append(student) print(passed)</pre>	2
Section- C		
29	A list containing records of employees and their salaries is given as: <pre>E = [("Ali", 50000), ("Sara", 75000), ("Tom", 45000), ("Nina", 90000)]</pre> Write the following user-defined functions to perform operations on a stack named HighSalary: (a) Push_employee() – To push an item containing the employee name and salary into the stack only if the salary is greater than 60000. <i>Expected Output:</i> <pre>[('Sara', 75000), ('Nina', 90000)]</pre> (b) Pop_employee() – To pop the items from the stack and display them. Also, display "Stack Empty" when there are no elements left. <i>Expected Output:</i> <pre>('Nina', 90000) ('Sara', 75000) Stack Empty</pre>	3
30	Predict the output of the following Python code: <pre>code = "PY3TH0N" result = "" i = 0 while i < len(code): if code[i] >= '0' and code[i] <= '9': num = int(code[i]) num += 2 result = result + str(num) elif code[i] >= 'A' and code[i] <= 'Z': result = result + code[i].lower() else: result = result + '*' i += 1 print(result)</pre>	3

	OR Predict the output of the following Python code <pre>fruits = ["Mango", "Apple", "Banana", "Grapes", "Papaya"] output = [] for fruit in fruits: if fruit[0].lower() in 'aeiou': output.append(fruit[-1]) print(output)</pre>																													
31	In the given table ‘students’ write the query/ output for the given <table border="1"><thead><tr><th>Gr No</th><th>Name</th><th>Class Section</th><th>Country</th></tr></thead><tbody><tr><td>G001</td><td>Monika</td><td>XII-D</td><td>India</td></tr><tr><td>G002</td><td>Manisha</td><td>XII-A</td><td>Oman</td></tr><tr><td>G003</td><td>Mohit</td><td>XII-D</td><td>India</td></tr><tr><td>G004</td><td>Arti</td><td>XII-C</td><td>India</td></tr><tr><td>G005</td><td>Manisha</td><td>XII-C</td><td>India</td></tr><tr><td>G006</td><td>James</td><td>XII-A</td><td>Oman</td></tr></tbody></table> (a) Display the number of students in each class. (b) Write the output- select * from students where Country='Oman' order by name; (c) Change the datatype of name as varchar 50.	Gr No	Name	Class Section	Country	G001	Monika	XII-D	India	G002	Manisha	XII-A	Oman	G003	Mohit	XII-D	India	G004	Arti	XII-C	India	G005	Manisha	XII-C	India	G006	James	XII-A	Oman	3
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Section D																														
32	Write a method Countvowels() in Python to read the Text File ‘Attitude.Txt’ and display the number of uppercase vowels in the file. Example: If the file content is as follows: <i>All Birds Find Shelter During A Rain.</i> <i>But An Eagle Avoids Rain By Flying Above The Clouds.</i> <i>Problems Are Common, But Attitude Makes The Difference.</i> The Countvowels() function should display the output as: Number of Vowels: 8 OR Write a function Countchars() in Python, which should read each character of a Text File “Character.Txt” and display the count of words starting with letter ' I ' (including both the cases). Example: If the file content is as follows: <i>Intelligence plus character - that is the goal of true education</i> <i>Develop your character so that you are a person of integrity.</i> The Countchars() function should display the output as: No. of Words Starting with letter I: 3	4																												
33	Hanna has a list containing 5 cities: <pre>CITIES = ["AHMEDABAD", "CHENNAI", "NEWDELHI", "AMRITSAR", "AGRA"]</pre> You need to help her create a program using separate user-defined functions to perform the following operations. The program should also store the selected cities into a CSV file named SelectedCities.csv. select_cities() – This function should traverse the list and create a new list containing only the cities whose names start with the letter 'A'.	4																												

	Expected Output: ['AHMEDABAD', 'AMRITSAR', 'AGRA'] display_cities() – This function should display the cities from the new list in reverse order, printing one city per line. After all cities are displayed, it should print "No more cities". Expected Output: AGRA AMRITSAR AHMEDABAD No more cities OR Write a Program in Python that defines and calls the following User Defined Functions: i. ADD() – To accept and add data of furniture 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.																																																									
34	<table border="1"><thead><tr><th colspan="4">Table- Exam</th></tr><tr><th>ExamID</th><th>SID</th><th>Subject</th><th>Marks</th></tr></thead><tbody><tr><td>201</td><td>101</td><td>Mathematics</td><td>85</td></tr><tr><td>202</td><td>102</td><td>Science</td><td>72</td></tr><tr><td>203</td><td>103</td><td>History</td><td>65</td></tr><tr><td>204</td><td>104</td><td>Mathematics</td><td>91</td></tr><tr><td>205</td><td>105</td><td>English</td><td>88</td></tr></tbody></table> Mrs. Meera is managing a School Database and needs to access certain information from the Student and Exam tables for preparing the academic performance report. Help her extract the required information by writing the appropriate SQL queries as per the tasks mentioned below: <table border="1"><thead><tr><th colspan="4">Table- Student</th></tr><tr><th>SID</th><th>SName</th><th>Class</th><th>Age</th></tr></thead><tbody><tr><td>101</td><td>Rahul</td><td>X</td><td>15</td></tr><tr><td>102</td><td>Priya</td><td>X</td><td>14</td></tr><tr><td>103</td><td>Aarav</td><td>XI</td><td>16</td></tr><tr><td>104</td><td>Neha</td><td>XI</td><td>15</td></tr><tr><td>105</td><td>Karan</td><td>XII</td><td>17</td></tr></tbody></table> (a) Write a query to display the names of students who have appeared for the 'Mathematics' exam. (b) Write a query to display the exam details of students who scored marks in the range 70 to 90 (including both the numbers). (c) Write a query to delete all exam records where the subject is 'History'. (d) Write a query to display the Cartesian Product of the Student and Exam tables.	Table- Exam				ExamID	SID	Subject	Marks	201	101	Mathematics	85	202	102	Science	72	203	103	History	65	204	104	Mathematics	91	205	105	English	88	Table- Student				SID	SName	Class	Age	101	Rahul	X	15	102	Priya	X	14	103	Aarav	XI	16	104	Neha	XI	15	105	Karan	XII	17	4
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35	Mr. Suresh, the sales manager, is analyzing the Orders Database. Help him by writing SQL queries and predicting the output for the following tasks: Predict the output of the following:	4																																																								

	<table><tr><th>OrderID</th><th>CustomerName</th><th>Product</th><th>Quantity</th><th>Price</th><th>City</th></tr><tr><td>101</td><td>Rohan</td><td>Laptop</td><td>2</td><td>55000</td><td>Delhi</td></tr><tr><td>102</td><td>Priya</td><td>Tablet</td><td>1</td><td>22000</td><td>Mumbai</td></tr><tr><td>103</td><td>Aarav</td><td>Smartphone</td><td>3</td><td>18000</td><td>Chennai</td></tr><tr><td>104</td><td>Neha</td><td>Laptop</td><td>1</td><td>55000</td><td>Delhi</td></tr><tr><td>105</td><td>Karan</td><td>Tablet</td><td>2</td><td>22000</td><td>Kolkata</td></tr><tr><td>106</td><td>Simran</td><td>Headphones</td><td>4</td><td>3000</td><td>Delhi</td></tr></table> (a) SELECT CustomerName, Product, Quantity FROM Orders WHERE City='Delhi' AND Product='Laptop'; (b) SELECT Product, COUNT(*) FROM Orders WHERE Product IN ('Laptop','Tablet') GROUP BY Product; (c) SELECT City, AVG(Price) FROM Orders GROUP BY City HAVING AVG(Price) > 20000; (d) SELECT DISTINCT City FROM Orders WHERE Product LIKE 'S%';	OrderID	CustomerName	Product	Quantity	Price	City	101	Rohan	Laptop	2	55000	Delhi	102	Priya	Tablet	1	22000	Mumbai	103	Aarav	Smartphone	3	18000	Chennai	104	Neha	Laptop	1	55000	Delhi	105	Karan	Tablet	2	22000	Kolkata	106	Simran	Headphones	4	3000	Delhi	
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Section E																																												
36	Mr. Rajan, the head librarian at a school, needs to maintain records of books in the library. Each record should include: BookID, BookTitle, Author, and Price. Write Python functions to: I. Input book details and append them to a binary file named library.dat. II. Update the price of all books written by 'J. K. Rowling' to 500 in the binary file	2+ 3																																										
37	EduTech Academy is setting up a new training center in Kochi while keeping its main office in Bengaluru. The training center will have four sections: Administration, Classrooms, Library, and Labs. As a network engineer, you are asked to design the network and propose solutions based on the following: Distances between Sections (in meters): <table><tr><th>From</th><th>To</th><th>Distance (m)</th></tr><tr><td>Administration</td><td>Classrooms</td><td>40</td></tr><tr><td>Administration</td><td>Library</td><td>60</td></tr><tr><td>Administration</td><td>Labs</td><td>100</td></tr><tr><td>Classrooms</td><td>Library</td><td>50</td></tr><tr><td>Classrooms</td><td>Labs</td><td>80</td></tr><tr><td>Library</td><td>Labs</td><td>70</td></tr></table> Number of Computers in Each Section: <table><tr><th>Section</th><th>Number of Computers</th></tr><tr><td>Administration</td><td>20</td></tr><tr><td>Classrooms</td><td>80</td></tr><tr><td>Library</td><td>35</td></tr><tr><td>Labs</td><td>60</td></tr></table>	From	To	Distance (m)	Administration	Classrooms	40	Administration	Library	60	Administration	Labs	100	Classrooms	Library	50	Classrooms	Labs	80	Library	Labs	70	Section	Number of Computers	Administration	20	Classrooms	80	Library	35	Labs	60	5											
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	(a) Suggest the best location for the main server in the Kochi center and explain your reasoning. (b) Suggest the placement of the following network devices: a) Router b) Switch (c) Suggest and draw a cable layout showing connections between the sections inside the training center. (d) The training center plans to provide a high-speed connection with the Bengaluru office. Which type of network cable will be most suitable for this link? (e) Which type of network (LAN, MAN, or WAN) will be formed within the Kochi training center?	
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