

SAMPLE QUESTION PAPER
Class XII Session 2026-27
COMPUTER SCIENCE (Code 083)

TIME: 3 hours

MAX. 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.

Q No.	Section-A (21 x 1 = 21 Marks)	Marks
1	Write the output on execution of the following Python code: L1=[10,20,25,30] L1.insert(1,15) print(L1)	1
2	What will be the output of the following expression? Msg = "programming is amazing" print(Msg.split("m")) a) ['progra', '', 'ing is a', 'azing'] b) ['progra', 'ming is a', 'azing'] c) ('progra', '', 'ing is amazing') d) ['program', 'ing is a', 'zing']	1
3	Which of the following data types in Python is mutable? a) Tuple b) String c) Integer d) List	1
4	A column in one table matching a primary key of another table is called a: a) Composite key b) Candidate key c) Foreign key d) Super key	1
5	Consider the following Python code: t = (1, 2, 3) l = [4, 5] print(t + l) What will happen when this code is executed? a) [1, 2, 3, 4, 5] b) (1, 2, 3, 4, 5) c) Error, because a tuple cannot be concatenated with a list	1

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	d) ((1, 2, 3), [4, 5])	
6	What possible output is expected to be displayed on the screen at the time of execution of the Python program from the following code? <pre>import random games = {0: "Chess",1: "Scrabble",2: "Sudoku",3: "Tic-Tac-Toe",4: "Puzzle"} start_key = random.randint(1, 2) end_key = random.randrange(3, 4) for k in range(start_key, end_key + 1): print(games[k], end="@@")</pre> a) Sudoku@@Tic-Tac-Toe@@Puzzle@@ b) Scrabble@@Sudoku@@Tic-Tac-Toe@@ c) Chess@@Scrabble@@Tic-Tac-Toe@@ d) Scrabble@@Tic-Tac-Toe@@	1
7	Predict the output for the following: <pre>DI={"Pen":12, "Pencil":6, "Scale":5, "InkPen":20} print(12 in DI)</pre> a) False b) Error c) None d) True	1
8	Long-distance communication without line-of-sight is mainly achieved using: a) Microwaves b) Ultraviolet c) Radio waves d) X-rays	1
9	Which MySQL query will display all employees whose salaries are between 90,000 and 100,000 (including limits)? a) SELECT * FROM Employees WHERE salary > 90000 AND salary < 100000; b) SELECT * FROM Employees WHERE salary IN (90000, 100000); c) SELECT * FROM Employees WHERE salary BETWEEN 90000 AND 100000; d) SELECT * FROM Employees WHERE salary = 90000 OR salary = 100000;	1
10	What will be the output of the following Python statement: <pre>print(25+100**1**3/5)</pre>	1
11	What is the data type of the result when the expression 5 // 2 is evaluated in Python? a) float b) int c) string d) None	1
12	Every network interface card (NIC) comes with its own _____ address. a) Internet Protocol (IP) b) Open Systems Interconnection (OSI) c) Physical (MAC) d) Dynamic Host Configuration Protocol (DHCP)	1
13	In a student table, "Class" can only take values from {IX, X, XI, XII}. This set is called the _____. a) Domain b) Tuple	1

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	c) Attribute d) Key	
14	What would be written in the file errorlog.txt after the following code is run? <pre>def data(num): try: return 190/(29-num) except ZeroDivisionError: logfile = open ("errorlog.txt", "w") logfile.write ("Num was 29") logfile.close() data(29)</pre>	1
15	Which of the following will NOT change if you insert a new record into a table? a) Cardinality b) Degree c) Number of tuples d) Total rows	1
16	What will be the output of the following Python code? <pre>y = 8 def update(): y = y + 2 print(y) update()</pre> a) 10 b) 8 c) Error d) None	1
17	In _____ switching, before a communication starts, a dedicated path is identified between the sender and the receiver. a) Graph b) Plot c) Circuit d) Packet	1
18	What will be the output of the following Python code? <pre>text = "Drone Expo" print(text[-2: :-4])</pre>	1
19	Which MySQL command correctly removes an attribute Age from table Student? a) ALTER TABLE Student DROP COLUMN Age; b) ALTER TABLE Student REMOVE Age; c) DROP COLUMN Age FROM Student; d) DELETE COLUMN Age FROM Student;	1
Q20 and Q21 are Assertion(A) and Reason(R) 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): Opening a file in mode rb allows you to read a binary file without modifying it. Reason (R): In rb mode, if the file does not exist, Python creates a new empty file.	1

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21	Assertion (A): The MySQL query <code>SELECT Student_Name FROM Student WHERE Guardian_Phone IS NULL</code> ; displays the names of students whose guardian phone number is not recorded. Reason (R): In MySQL, you can also use <code>=</code> to check for NULL values; it is equivalent to <code>IS NULL</code> to identify columns with no value.	1
	Section-B (7 x 2=14 Marks)	
22	A. Define global variable and local variable with a suitable example. OR B. Write the difference between the <code>seek()</code> and <code>tell()</code> methods in Python text file handling with a suitable example.	2
23	The Python program below tries to print the list in reverse. However, there are syntax and logical errors in the code. Rewrite it after removing all the errors. Also, underline all the corrections made <code>words=["Class Test","Term Exams","Pre-board Exam","Board Exam"]</code> <code>L=len(words)</code> <code>for i in range(L, -1, -1)</code> <code>Print (words[i] , end = " ")</code>	2
24	A. Write a Python function <code>capitalize_words(words)</code> that takes a list of strings <code>words</code> and returns a new list with each word capitalize. Example: If the input is <code>["python", "computer", "science"]</code> The output should be <code>["Python", "Computer", "Science"]</code> . OR B. Write a Python function <code>sum_positive(list1)</code> that takes a list of numbers and prints the sum of all positive numbers in the list. Example: If the input is <code>[10, -5, 20, -3, 7]</code> The output should be 37.	2
25	A. (Answer using Python built-in methods/functions only): I. Write a statement to check whether the string <code>username</code> starts with <code>"admin"</code> . II. Given <code>data = [2, 7, 9, 9, 2]</code> , write a statement to count how many times the largest element occurs. OR B. Predict the output of the following Python code: <code>text = "Python Programming"</code> <code>print(text.replace("o", "0"))</code> <code>print(text.find("z"))</code>	2
26	Predict the output of the following Python code: <code>code = "gLaD5"</code> <code>result = []</code> <code>i = 0</code> <code>while i < len(code):</code> <code>if code[i].isupper():</code> <code>result.append(code[i].lower())</code>	2

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	<pre> elif code[i].isdigit(): result.append(int(code[i]) * 2) else: result.append("#") i += 1 print(result) </pre>	
27	A. Write suitable commands to do the following in MySQL. I. Display a list of all the relations stored in a database. II. Delete a database named CS_SP. OR B. Differentiate between alter and update command in MySQL with a suitable example.	2
28	A. Which protocol helps us to browse through web pages using internet browsers? Name any one internet browser. OR B. Define tree topology. Also, write down any one limitation of tree topology.	2
	Section-C (3 x 3 = 9 Marks)	
29	A. Write and call a Python function to read "History.txt" and display all lines that contain a four-digit year (e.g., 1999, 2024 etc.) OR B. Write a Python function that displays the number of times the word "Python" appears in a text file named "Prog.txt".	3
30	A list containing records of books is given as: B = [("Machine Learning Basics", 550), ("World Geography", 450), ("Wonder World", 140), ("AI Revolution", 750)] Write the following user-defined functions to perform operations on a stack named Books: I. Push_element(): Push only those books whose price is more than 250 into the stack. II. Pop_element(): Pop the items from the stack and display them. After all items are popped, display "Stack Empty". Expected Output: ('AI Revolution', 750) ('World Geography', 450) ('Machine Learning Basics', 550) Stack Empty	3
31	A. Write a Python function avg_len() segment that adds up the lengths of all the words in a list and then prints the average (mean) length. OR B. Consider the tuple pairs = ((2,5),(4,2),(9,8),(12,10)). Write a Python function cnt_even() to count the number of pairs (a, b) where both a and b are even.	3
	Section-D (4 x 4 = 16 Marks)	

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Consider the table TECH_EVENT_REG as given below:

reg_id	participant_name	event_name	grade	reg_fee
501	Aarav	Hackathon	11	200
502	Riya	RoboRace	10	150
503	Krish	WebDev Challenge	12	250
504	Navya	Hackathon	11	200
505	Samaira	CodeSprint	9	100
506	Rohan	RoboRace	10	150

A. Write the following queries:

I. To display the number of participants in each event where the number of participants is greater than 1.

II. To display the distinct event names available in the Tech Event.

III. To display details of participants whose names contain the letters ‘an’.

IV. To display all records of TECH_EVENT_REG sorted by participant_name in descending order.

OR

B. Predict the output of the following:

I. Select participant_name, event_name from tech_event_reg where grade = 11;

II. Select event_name, count(*) from tech_event_reg group by event_name;

III. Select participant_name from tech_event_reg where event_name like '%challenge';

IV. Select max(reg_fee) from tech_event_reg where grade in (9, 10);

4

33

Kabir runs a vehicle rental agency and maintains a CSV file named Rentals.csv. The file stores daily rental details with columns: Vehicle_ID, Vehicle_Type, Hours_Rented, Rate_Per_Hour

Create the following user-defined functions:

I. AddRental() – to accept rental details from the user and append them to Rentals.csv.

II. CalculateTotalRent() – to calculate and return the total rent earned (Hours_Rented × Rate_Per_Hour).

4

34

Aditi is managing an events database and needs to access certain information from the chess_event and registrations tables for an upcoming survey. Help her extract the required information by writing the appropriate MySQL queries as per the tasks mentioned below:

Table: Chess_Event

Event_ID	Event_Name	Event_Date	Venue	Max_Participants
101	Inter-School Chess Championship	2025-01-15	Auditorium Hall	60
102	Rapid Chess Tournament	2025-02-10	Activity Room 3	40
103	Under-16 Chess Cup	2025-03-05	Sports Complex Room 2	50
104	Teachers vs Students Chess Meet	2025-04-12	Library Conference Area	30
105	Open Blitz Chess Challenge	2025-05-20	IT Lab 1	80

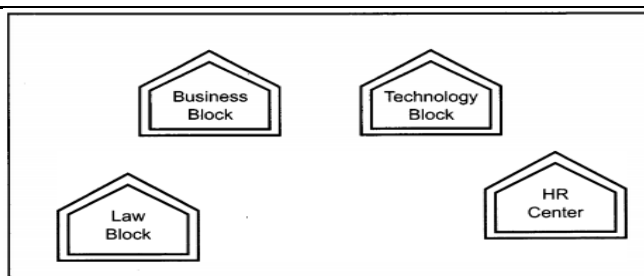
Table: Registrations

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	<table><tr><th>Reg_ID</th><th>Student_Name</th><th>Class</th><th>Event_ID</th><th>Registration_Date</th></tr><tr><td>1</td><td>Aarav Singh</td><td>9A</td><td>101</td><td>2024-12-20</td></tr><tr><td>2</td><td>Navya Sharma</td><td>9C</td><td>103</td><td>2025-01-12</td></tr><tr><td>3</td><td>Rudransh Verma</td><td>10B</td><td>102</td><td>2025-01-25</td></tr><tr><td>4</td><td>Daksh Lal</td><td>9B</td><td>104</td><td>2025-02-18</td></tr><tr><td>5</td><td>Abhijay Malhotra</td><td>11A</td><td>105</td><td>2025-03-30</td></tr><tr><td>6</td><td>Krish Sharma</td><td>10A</td><td>101</td><td>2024-12-22</td></tr><tr><td>7</td><td>Manas Taneja</td><td>8C</td><td>102</td><td>2025-01-28</td></tr><tr><td>8</td><td>Riya Kapoor</td><td>11B</td><td>105</td><td>2025-04-01</td></tr><tr><td>9</td><td>Harsh Mehta</td><td>12A</td><td>103</td><td>2025-02-20</td></tr><tr><td>10</td><td>Simran Kaur</td><td>9D</td><td>104</td><td>2025-03-05</td></tr></table> I. Write a MySQL query to update the venue of the event "Inter-School Chess Championship" to "Multi-Purpose Hall". II. Display the details of all chess events scheduled after 2025-01-01. III. Write a MySQL query to display the registration details of students who have registered for events scheduled in 'Auditorium Hall', 'Activity Room 3', or 'Library Conference Area'. IV. a. Display the student_name along with the event_name for all registrations or b. Write a MySQL query to display the cartesian product of Chess_Event and Registrations tables.	Reg_ID	Student_Name	Class	Event_ID	Registration_Date	1	Aarav Singh	9A	101	2024-12-20	2	Navya Sharma	9C	103	2025-01-12	3	Rudransh Verma	10B	102	2025-01-25	4	Daksh Lal	9B	104	2025-02-18	5	Abhijay Malhotra	11A	105	2025-03-30	6	Krish Sharma	10A	101	2024-12-22	7	Manas Taneja	8C	102	2025-01-28	8	Riya Kapoor	11B	105	2025-04-01	9	Harsh Mehta	12A	103	2025-02-20	10	Simran Kaur	9D	104	2025-03-05	
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1	Aarav Singh	9A	101	2024-12-20																																																					
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3	Rudransh Verma	10B	102	2025-01-25																																																					
4	Daksh Lal	9B	104	2025-02-18																																																					
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35	MySQL database named LibraryDB has a table book_records which contains the following attributes: • Book_ID: ID of the book (Integer) • Book_Title: Title of the book (String) • Author: Author of the book (String) • Copies: Number of copies available (Integer) Consider the following details to establish Python-MySQL connectivity: • Username: librarian • Password: lib@2025 • Host: localhost Write a Python-MySQL program to change the Book_Title to 'Data Structures in Python' for the record whose Book_ID is 109 in the book_records table.	4																																																							
	Section-E (2 X 5 = 10 Marks)																																																								
36	A college administrator, Atul, maintains student course enrollment records. Each record includes Roll_No, Student_Name, Course, Fees. Write Python functions to: I. Input enrollment details and append them to a binary file. II. Update the Fees of all students enrolled in the "Data Science" course to 75000.	2+3																																																							
37	AKA University is setting up its Academic blocks at Raipur and planning to set up a network. The university has 3 academic blocks and one Human Resource Center as shown in the diagram below:	5																																																							

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Center to center distances between various blocks is as follows:

Law Block to Business Block	90 m
Law Block to Technology Block	55 m
Law Block to HR Center	120 m
Business Block to Technology Block	70 m
Business Block to HR Center	105 m
Technology Block to HR Center	45 m

Number of Computers in each of the Blocks/Center is as follows:

Law Block	30
Technology Block	55
HR Center	120
Business Block	45

- I. Suggest the most suitable place (i.e. Block/Center) to install the server of this university with a suitable reason.
- II. Identify and draw the most suitable topology for connecting all the blocks if the university wants a centralized network management system.
- III. Suggest and placement of the following devices with reasons.
 - a. Repeater
 - b. Switch
- IV. The Institute is planning to link its study center situated in Delhi. Suggest a way to connect it with reasonably high speed guided medium.
- V. A. The Vice-Chancellor wants to hold a face-to-face digital meeting with the Heads of Departments in all blocks simultaneously. Which Protocol will be used?

OR

B. What is the use of VoIP?