केंद्रीय विद्यालय संगठन , बैंगलुरु संभाग

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प्रथम प्री-बोर्ड परीक्षा 2025-26

FIRST PRE BOARD EXAMINATION – 2025-26

Class: XII **Maximum Marks: 70**

Subject: Computer Science (083) **Time: 3 hrs.**

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

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Q.No	SECTION-A (21X1=21 MARKS)	Marks
1.	**State True/False** The range() function used in a for loop includes both start and end values.	1
2.	**Which Python code will return the index position of the second occurrence of 'o' in the string** **text = "Learn To Grow"** a) text.find('o') b) text.find('o',1,13) c) text.find('o',8,13) d) text.find('o',2)	1
3.	What will be the output of the following Python expression? **True+24//2**3-False**	1
4.	**Which of the following statements removes the key "b" from dictionary d?** **d = {"a": 10, "b": 20, "c": 30}** a) d.delete("b") b) d.remove("b") c) del("b") d) d.pop("b")	1
5.	**Which of the following correctly checks if two variables x and y refer to the same object?** a) x==y b) x*=y c) x is y d) x =y	1
6.	What will be the data type of the variable s after executing the following statement in Python? **s= 1,2,3** a) List b) Tuple c) Integer d) Invalid operation	1

7.	Given the list: **x = [10, 20, 30, 40, 50, 60]** What will be the output of the expression: **print(x[-1:-6:-2])** a) [60, 40, 20] b) [60, 50, 40, 30, 20] c) [10, 30, 50] d) [60, 40]	1
8.	What will be the output of the following code? **for i in range(1, 6):** **if i == 3:** **break** **print(i, end=" ")** a) 1 2 3 4 5 b) 1 2 3 c) 1 2 d) Error	1
9.	What will be the output of the following Python code? **val = 1** **def update():** **global val** **val += 3** **print(val, end='@')** **print(val, end='#')** **update()** **print(val)** a) 1#4@4 b) 1#1@4 c) 4#4@4 d) 1@4#4	1
10.	What possible output is expected to be displayed on the screen at the time of execution of the Python program from the following code? **import random** **s = "HELLO"** **i = random.randint(2, 3)** **for k in range(i,len(s)):** **print(s[k], end="@")** a) H@E@L@ b) L@L@O@ c) L@O d) E@L@L@	1
11.	**Which of the following access modes is used in reading csv files?** a) wb b) a c) r d) w	1
12.	**A teacher uses a remote control to change slides on a projector during class. Which type of signal is being used?** a)Radio waves b) Infrared c) Microwaves d) Optical fiber	1

13.	**Which of the following is used to access and view websites on the Internet?** a) Web Server b) HTML c) Web Host d) Web Browser	1
14.	**Which of the following is a DDL command?** a) DELETE b) SELECT c) INSERT d) CREATE	1
15.	**In SQL, a relation has 5 columns and 6 rows. If 2 columns and 3 rows are added, what will be the updated degree of the relation?** a) Degree: 7 b) Degree: 8 c) Degree: 9 d) Degree: 6	1
16.	**In the table EMPLOYEE(EmpID, Name, Email, DeptID), if both EmpID and Email are unique, but only EmpID is chosen as the Primary Key, then Email is a ?** a) Foreign Key b) Composite Key c) Alternate Key d) Super Key only	1

17.	**Which SQL statement correctly lists all records from the students table where the email field has a NULL value?**
	a) SELECT * FROM students WHERE email = NULL;
	b) SELECT * FROM students WHERE email == NULL;
	c) SELECT * FROM students WHERE email != NULL;
	d) SELECT * FROM students WHERE email IS NULL;
		1

18.	**Which statement about ORDER BY is TRUE?** a) ORDER BY can only be used with numeric columns b) ORDER BY can be applied to one or more columns c) ORDER BY always requires ASC or DESC d) ORDER BY cannot be used with WHERE clause	1
19.	**Which of the following correctly shows the structure of a table named employee?** a) DESC employee; b) Show employee; c) Table employee; d) Select * from employee;	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):** If an exception is not handled in Python, the program terminates abnormally. **Reason (R):** The finally block ensures that important cleanup actions are always executed. a) Both A and R are true, and R is the correct explanation of A. b) Both A and R are true, but R is not the correct explanation of A. c) A is true, but R is false. d) A is false, but R is true	1

21.	**Assertion (A)** A switch is called an intelligent Hub **Reason (R):** A switch is more efficient than a hub because it sends data only to the intended destination device a) Both A and R are true, and R is the correct explanation of A. b) Both A and R are true, but R is not the correct explanation of A. c) A is true, but R is false. d) A is false, but R is true.	1
Q.No	**Section-B (7 x 2=14 Marks)**	**Marks**
22.	**A**. Explain the concepts of mutable and immutable objects in Python. Mention examples for each. **OR** **B**. What is the purpose of identity operators is and is not in Python? Explain with an example.	2
23.	The code provided below is intended to return the average of odd numbers in a list of strings. However, there are syntax and logical errors in the code. Rewrite it after removing all the errors. Also, underline all the corrections made. **define avg_odd(nums):** **total = 1** **count = 0** **for n in nums** **if n % 2 == 0:** **total += n** **count += 1** **return total / count**	2
24.	**A.** (Answer using Python built-in methods/functions only): I. Write a statement to replace every occurrence of the word "bad" with "good" in a string named feedback. II. Write a statement to add an element "Python" to a list named languages. **OR** **B.** Predict the output of the following Python code: **msg = "red,green,blue,yellow"** **colors = tuple(msg.split(","))** **print(colors)** **print(colors.index("blue"))**	2
25.	**A.**Write a Python function ReverseHalf(Word) that reverses the first half of the string and keeps the second half as it is. **Assume the length of the string is even.** For example: If Word = "Garden", the function should convert it to "raGden" and display: Changed Word is raGden **OR** **B.**Write a Python function update_price() that accepts a dictionary **products**, an item_name, and a new price as arguments.If the item exists, update its price.Otherwise, print **"Item not found".**	2
26.	A company is developing a small Python program to collect user inputs for daily sales records. Sometimes, users make typing mistakes such as entering text instead of numbers, or mixing incompatible data types. To make the program error-free and user-friendly, the developer decides to use exception handling. a) Write a Python program that takes input for the number of items sold and handles the exception if the input is not an integer.	2

	b) What is the difference between else and finally Clause in Exception handling?	
27.	**A.** Write suitable commands to do the following in MySQL. I. List out all tables in a database. II. What constraint should be applied on a column of a table so that all the values in that column are different (no two rows can have the same value), but NULL values are allowed? **OR** **B.** Differentiate between CHAR(n) and VARCHAR(n) data types in SQL. Support your answer with a suitable example.	2
28.	**A.** Define the following terms: I. Router II. WIFI card **OR** **B**. I. Expand the following terms: PPP and FTP II. Differentiate between Circuit Switching and Packet Switching.	2
Q.NO	**Section-C (3 x 3 = 9 Marks)**	**Marks**
29.	A text file named numbers.txt contains both words and numbers. Write a Python function **Read_Only_Numbers ()** that reads the file and prints only the numbers present in it. **Sample Input** (numbers.txt): The bill is 450 and the discount is 50 **Expected Output:** 450 50 **OR** Write and call a Python function **Lines_Words_Six ()** that finds and displays all the lines having at least 6 words from a text file "Song.txt". The sun smiles over the hill Birds sing softly every dawn Dreams take flight in silent skies Hope blooms bright each morning Rain falls slow Stars shine **Expected Output:** The sun smiles over the hill Dreams take flight in silent skies	3
30.	You have a stack named **BigCities** that contains records of cities. Each city record is represented as a nested list in the format: **[city, name, population]** Write the following user-defined functions in Python to perform the specified operations on the stack **BigCities**: (i) push_city(BigCities, AllCities): This function takes two arguments — the stack BigCities and a list of nested lists named AllCities containing details of various cities in the format: [["Delhi", 19800000], ["Bengaluru", 12700000], ["Pune", 6900000], ["Mumbai", 20400000]] It should push records of only those cities whose population is more than 10 million (i.e., 10000000) into the stack **BigCities**.	3

	(ii) pop_city(BigCities): This function takes the stack **BigCities** as an argument and pops the topmost city record from the stack and returns it. If the stack is empty, it should display "**Underflow**". (iii) peek_city(BigCities): This function takes the stack **BigCities** as an argument and displays the topmost city record of the stack without deleting it. If the stack is empty, the function should display "**None**".	
31.	**A.** Predict the output of the following Python code: **data = ["pen", "pencil", "book", "eraser", "bottle","Ruler"]** **result = ""** **i = 0** **while i < len(data):** **word = data[i]** **if "o" in word:** **result += word[0].upper()** **else:** **result += word[-1]** **i += 1** **print(result)** **OR** **B**. Predict the output of the following Python code: **fruits = {"f1": "Apple", "f2": "Orange", "f3": "Kiwi","f4":"Banana","f5":"Fig"}** **out = []** **keys = list(fruits.keys())** **for k in keys:** **if len(fruits[k]) % 3==0:** **out.append(fruits.pop(k))** **print(out)**	3
Q.NO	**Section-D (4 x 4 = 16 Marks)**	**Marks**
32.	A college maintains its student database in a CSV file named Students.csv. The columns are: Roll_No, Name, Course, Marks, Fees. Write the following Python functions to perform the specified operations on this file: (i) AddStudent() – This function accepts new student details from the user and appends them to Students.csv. (ii) AverageMarks(Course) – This function calculates and returns the average marks of students enrolled in a given course.	4
33.	Consider the table **Peripherals** as given below:	4

peripheral_id	peripheral_name	brand	quantity	price
P001	Keyboard	Logitech	20	1200.00
P002	Mouse	HP	35	800.00
P003	Monitor	HP	10	9000.00
P004	Printer	Canon	8	15000.00
P005	Scanner	Epson	5	11000.00
P006	Headset	HP	25	2500.00
P007	Webcam	Logitech	12	3200.00

A.Write the following queries:

(i) Display the total quantity for each peripheral brand.

(ii) Display the unique peripheral brand names.

(iii) Display the prices of peripherals whose names end with the letter "r."

(iv) Display the details of peripherals having a quantity greater than 20

B.Predict the output of the following:

(i) SELECT * FROM Peripherals WHERE brand='HP';

(ii) SELECT peripheral_id, peripheral_name FROM Peripherals WHERE peripheral_name LIKE 'M%';

(iii) SELECT MAX(price) FROM Peripherals ;

(iv) SELECT peripheral_name, price*quantity AS total_value FROM Peripherals WHERE brand="Logitech";

34. MySQL database named SchoolDB has a student_records table in MySQL which contains the following attributes: — 4

- Student_ID: Unique ID of the student (Integer)
- Student_Name: Name of the student (String)
- Class: Class of the student (String)
- Marks: Total marks obtained (Integer)

Consider the following details to establish Python-MySQL connectivity:

- Username: admin_user
- Password: school2025
- Host: localhost

Write a Python program to delete a student record from the student_records table based on the Student_ID entered by the user**.**

35. Saanvi, an employee at Balmer and Lawrie, is working on a flight travel database and needs to retrieve specific information from the Customers and Booking_details table. Help her extract the required data by writing the appropriate SQL queries for the tasks described below: — 4

TABLE: CUSTOMERS

Customer_ID	Customer_Name	Email
C001	Rahul Sharma	rahul.sharma@email.com
C002	Priya Verma	priya.verma@email.com
C003	Arjun Patel	NULL
C004	Sneha Reddy	sneha.reddy@email.com
C005	Vikram Joshi	NULL
C006	Anjali Sharma	anjali.sharma@email.com
C007	Karan Sharma	NULL
C008	Meera Sharma	meera.sharma@email.com
C009	Rohan Sharma	rohan.sharma@email.com
C010	Nisha Sharma	NULL

TABLE : BOOKING_DETAILS

Booking_ID	Customer_ID	Source	Destination	Flight_Number	Departure_Date	Class
BKG001	C001	DEL	BOM	AI101	2025-10-15	Economy
BKG002	C002	BLR	DEL	6E205	2025-10-16	Business
BKG003	C003	MAA	HYD	SG312	2025-10-17	Economy
BKG004	C004	DEL	CCU	AI202	2025-10-18	First
BKG005	C005	DEL	BOM	AI101	2025-10-15	Economy
BKG006	C006	DEL	MAA	AI303	2025-10-21	Economy
BKG007	C007	BOM	DEL	6E507	2025-10-22	Business
BKG008	C008	BLR	BOM	SG418	2025-10-23	Economy
BKG009	C009	DEL	HYD	AI404	2025-10-24	First
BKG010	C010	MAA	DEL	6E509	2025-10-25	Economy

(i) To display the names of all customers whose fight source is 'DEL'.

(ii) To display flight numbers of customers who have non-null email ID

(iii) To update the Class of Customer 'C001' to Business Class

(iv) **A**.To retrieve customer name, source and destination of bookings where the source is either 'DEL' or 'BLR'

OR

B.To display booking details scheduled after '2025-10-20' with destination 'DEL'

Q.NO	Section-E (2 X 5 = 10 Marks)	Marks
36.	A school wants to store teacher records. Each record should contain: [Teacher_ID, Teacher_Name, Subject, Salary]. (i) Write a Python function **Store_Data()** that takes teacher details as input and saves them into a binary file named Teacher.dat. (ii) Write a Python function **Count_Data(subject)** that returns the total number of teachers who teach a given subject. (iii) Write a Python function **Search_Data()** that displays the details of all teachers whose salary is greater than 60,000.	(1+2+2)
37.	TechWave Ltd. is setting up a new office campus in Pune, while keeping its headquarters in Delhi. The Pune campus will have four departments: Administration, Accounts, IT, and Research. The details of distances and number of computers are given below: **From** / **To** / **Distance (in meters)** Administration – Accounts – 80 Administration – IT – 150 Administration – Research – 120 Accounts – IT – 60 Accounts – Research – 100 IT – Research – 70 Number of computers in each block :	5

Department	Number of Computers
Administration	45
Accounts	30
IT	100
Research	55

(i) Suggest the most suitable location for placing the server in the Pune campus. Give a valid reason for your choice.

(ii) Draw an ideal cable layout to connect all departments in the campus

(iii) Suggest the placement of the following devices:
a) Repeater
b) Switch

(iv) The organisation plans to provide a high-speed leased line connection from Pune campus to Delhi headquarters.Which type of cable/media will be most suitable for this purpose?

(v) What type of network (PAN, LAN, MAN, WAN) will be formed when connecting Pune campus with Delhi headquarters?

OR

Suggest a device to be used for accessing the internet.

END