Pre Board Examination (2025-26)

Class :XII Subject & Code : Computer Science(083) Time : 03 Hrs. 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.	State True or False "Variable declaration is implicit in Python."	1
2.	What will be the output of the following code? import statistics print(statistics.mode([5, 8, 5, 10, 8, 5, 10]))	1
3.	Given the following dictionaries dict_exam={"Exam":"AISSCE", "Year":2025} dict_result={"Total":500, "Pass_Marks":165} 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: not True and False or True 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: a = "Year 2022 at All the best" a = a.split('2') b = a[0] + ". " + a[1] + ". " + a[3] print (b) (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	1
6.	What will the following expression be evaluated to in Python? print(15.0 / 4 + (8 + 3.0)) (a) 14.75 (b)14.0 (c) 15 (d) 15.5	1
7.	What will be the output of the following Python statement? print('CS2025'[::-2]) a) 520 b) C22 c) 50S d) 25	1
8.	What will be the possible outputs of the following code? import random L = [10, 30, 50, 70] Lower = random.randint(2, 2) Upper = random.randint(2, 3) for K in range(Lower, Upper+1): print(L[K], end="@") (a) 50@ (b) 50@70@ (c) 10@30@ (d) Both (a) and (b)	1

9.	Which of the following statement(s) would give an error after executing the following code?
	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
	(a) Statement 3
	(b) Statement 4
	(c) Statement 5
	(d) Statement 4 and 5
		1

10.	Write the output of the following code: for k in range(2,10,3): print(k, end='-') (a) 2-5-8- (b) 2-5-8 (c) 2-3-4-5-6-7-8-9- (d) 2-5-8-11-	1
11.	Which of the following constraints prevents a field from being left blank? (a) UNIQUE (b) CHECK (c) DEFAULT (d) NOT NULL	1
12.	A relation named Employee exists with 4 columns and 5 records. If two more columns are added, what is the new degree of the relation? a) 5 (b) 6 c) 7 d) 4	1
13.	Which SQL command is used to modify structure of a table? a) UPDATE b) ALTER c) MODIFY d) CHANGE	1
14.	What will be the output of the following Python code? x = 10 print(x, end='--') def multiply(): global x x = x * 2 print(x, end='++') multiply() print(x) (a) 10--20++20 (b) 10--20++10 (c) 10--10++20 (d) 20--20++20	1
15.	Which function should be used to display the total number of records from table in a database? (a) sum(*) (b) total(*) (c) count(*) (d) return(*)	1
16.	The SELECT statement when combined with_____clause, returns records without repetition. (a) DESCRIBE (b) UNIQUE (c) DISTINCT (d) NULL	1
17.	Which of the following network devices is used to connect different networks and also performs data routing between them? (a) Switch (b) Hub (c) Router (d) Repeater	1
18.	You work in a company that allows you to work from home. Recently you encountered a problem in your laptop and you called the IT head of your company to resolve the problem. He asked you to give him remote access of your laptop. Which network protocol will be used in this connection? (a) FTP (b) VOIP (c) PPP (d) TELNET	1
19.	Software used to view web pages is known as _____. (a) Web server (b) Website (c) Web browser (d) Web hosting	1

	Q 20 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 must be unique and cannot have NULL values. **Reasoning (R):** The primary key uniquely identifies each row in the table.	1
21.	**Assertion (A):** In Python, the finally block is always executed, whether an exception occurs or not. **Reason (R):** The finally block is used to write the code that must be executed before a program terminates, such as closing files or releasing resources.	1
	SECTION B (7 X 2 = 14 Marks)	
22.	Explain the term **Dynamic Typing** in Python with the help of example. **OR** Differentiate between **mutable** and **immutable** data types in Python with one suitable example each.	2

23.	Rao has written a code to input a number and check whether it is prime or not. His code is having errors. Rewrite the correct code and underline the corrections made.
	Def prime():
	n=int(input("Enter number to check :: ")
	for i in range (2, n//2):
	if n%i=0:
	print("Number is not prime \n")
	break
	else:
	print("Number is prime \n")
		2

24.	Answer using Python built-in methods/functions only : I. Write a Python statement to convert all characters of string S to uppercase. II. Write a Python statement to count the number of elements in list L. **OR** Predict the output of the following Python code: quote = "Knowledge is the power, but enthusiasm pulls the switch." print(quote.replace("the", "your")) print(quote.split()[3])	2
25.	Write a function count_even() in Python that accepts a list of integers as input and returns the count of even numbers present in the list. **OR** Write a Python function update_marks() that accepts a dictionary Marks with student names as keys and their marks as values, along with a name and new_mark. The function should update the student's mark if the name exists, otherwise print "Student not found".	2

26.	Predict the output of the Python code:
	data = {'A':90,'B':75,'C':60,'D':95}
	sel = [ ]
	for k in data:
	if data[k]>80:
	sel.append(k)
	print(sel)
		2

27.	Write suitable commands to do the following in MySQL. I. To list all the tables in a database LIBRARY. II. To remove a database EXAM from system. **OR** Differentiate between count() and count(*) functions in SQL with appropriate example.	2

28.	Expand the following terms: SMTP, VOIP, HTTPS, PPP **OR** Define the term Network Topology and mention the advantages of using STAR topology.	2
	SECTION C (3 X 3 = 9 Marks)	
29.	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. **OR** Write a function ETCount() in Python, which should read the text file "TESTFILE.TXT" and then print the count of occurrences of words ending with character 'n'.	3
30.	A list contains following record of course details for a University: **[Course_name, Fees, Duration]** **Course=[["MCA", 200000, 3] , ["MBA", 500000, 2] , ["BA", 100000, 3]]** Write the following user defined functions to perform given operations on the stack named **'Univ'** : (i) **Push_element( )** - To push an object containing the Course_name, Fees and Duration of a course, which has fees greater than 100000 to the stack. The stack should contain **["MBA", 500000, 2]** **["MCA", 200000, 3]** (ii) **Pop_element( )** - To pop the object from the stack and display it. Also, display "Underflow" when there is no element in the stack.	3

31.	Predict the output of the Python code given below:
	`s = 'Computer@Science'`
	`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)`
	OR
	Predict the output of the Python code given below:
	`cities = ["Delhi", "Kolkata", "Chennai", "Mumbai", "Pune", "Agra", "Bhopal"]`
	`result = []`
	`for city in cities:`
	`  if len(city) % 2 == 0:`
	`  result.append(city[-2:].upper())`
	`print(result)`
		3

	SECTION D (4 X 4 = 16 Marks)	
32.	Consider the table Teacher as given below: 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 | A. Write the following queries I. To print Name of teachers working in Computer Science department. II. To display the details of female employees getting salary less than 20000.	4

III. To display average **salary** of male and female teachers.
IV. To count the number of teachers in each department.

OR

B. Predict the output of the following
I. SELECT Department, avg(salary) FROM Teacher GROUP BY Department;
II. SELECT MAX(Date_of_Join),MIN(Date_of_Join) FROM Teacher;
III. SELECT Name from Teacher where Department like '%ry';
IV. SELECT Name, Age FROM Teacher where Salary between 25000 and 40000;

33. Kaustubh is working in a mall as a data analyst. The company stores the data in a CSV file named "Product.csv" that contains columns pid, pname and price to store Product id, Product name and Product price respectively. 4

Help him to efficiently maintain the data by creating the following user-defined functions
i. add() – To accept and add data of a Product to the CSV file.
ii. search()- To display the records of the Product whose price is more than 20000 and product name starting with a vowel.

34. Your friend Satish is working in a company to manage the employee related issues. Help him by writing SQL queries to get desired information from the tables. 4

Table **Employees**

Empid	Firstname	Lastname	Address	City
010	Ravi	Kumar	Raj nagar	GZB
105	Harry	Waltor	Gandhi nagar	GZB
152	Sam	Tones	33 Elm St.	Paris
215	Sarah	Ackerman	440 U.S. 110	Upton
244	Manila	Sengupta	24 Friends street	New Delhi
300	Robert	Samuel	9 Fifth Cross	Washington
335	Ritu	Tondon	Shastri Nagar	GZB
400	Rachel	Lee	121 Harrison St.	New York
441	Peter	Thompson	11 Red Road	Paris

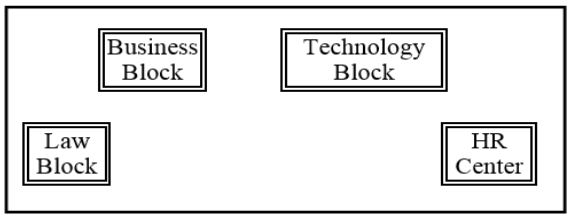
Table **EmpSalary**

Empid	Salary	Benefits	Designation
010	75000	15000	Manager
105	65000	15000	Manager
152	80000	25000	Director
215	75000	12500	Manager
244	50000	12000	Clerk
300	45000	10000	Clerk
335	40000	10000	Clerk
400	32000	7500	Salesman
441	28000	7500	salesman

Write the SQL commands for the following:
I. To show first name, last name and address of all employees who lives in Paris or Upton.
II. To display the details of Employees table in descending order of First name.
III. To display the first name, last name and salary of all employees from the tables Employee and EmpSalary, who are working as Manager.
IV. To increase salary of all Clerks by Rs.1000.

OR

To print maximum and minimum salary for each designation.

35.	You are working on a project that involves managing **inventory** records of a store in a MySQL database. Assume the database is named **STOREDB**, the user is **admin**, and the password is **admin123**. The MySQL is available on a local computer, not a remote computer. The table **INVENTORY** in the database has following columns: o ProductID (INTEGER, Primary Key) o ProductName (VARCHAR(100)) o Price (FLOAT(8,2)) o PurchaseDate (DATE) Your task is to create a Python program that adds Rs. 100 to the price of the products that have string "soap" in their product name.	4
	SECTION E (2 X 5 = 10 Marks)	
36.	A file, PASSENGERS.DAT, stores the records of passengers using the following structure : [PNR, PName, BRDSTN, DESTN, FARE] where : PNR – Passenger Number (string type) PName – Passenger Name (string type) BRDSTN – Boarding Station Name (string type) DESTN – Destination Station Name (string type) FARE – Fare amount for the journey (float type) Write user defined functions in Python for the following tasks : (i) Create( ) – to input data for passengers and write it in the binary file PASSENGERS.DAT. (ii) SearchDestn(D) –to read contents from the file PASSENGERS.DAT and display the details of those Passengers whose DESTN matches with the value of D. (iii) UpdateFare( ) – to increase the fare of all passengers by 5% and rewrite the updated records into the file PASSENGERS.DAT.	5
37.	MyPace University is setting up its academic blocks at Naya Raipur and is planning to set up a network. The University has 3 academic blocks and one Human Resource Center as shown in the diagram below:  Center to Center distances between various blocks/center and the no. of computers in blocks are as follows: **Law Block to business Block** 40m Law block to Technology Block 80m Law Block to HR center 105m Business Block to technology Block 30m Business Block to HR Center 35m Technology block to HR center 15m **Law Block** 15 Technology Block 40 Business Block 25 HR Center 115	5
	I. Suggest the most suitable place (i.e., Block/Center) to install the server of this University with a suitable reason. II. Suggest an ideal layout for connecting these blocks/centers for a wired connectivity. III. Which device will you suggest to be placed/installed in each of these blocks/centers to efficiently connect all the computers within these blocks/centers. IV. The University wants to establish a high-speed wired connection to its placement center situated 04 KM away from the main campus. Which cable should be used for this connection? V. a. The university is planning to connect its admission office in Delhi, which is more than 1250 km from university. Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer. OR b. What is the use of SMTP?	