Kendriya Vidyalaya Sangathan, Jaipur Region
PRACTICE PAPER-4
Question Paper

Class: XII **Subject**: Computer Science (083)
Maximum Marks: 70 **Period**: 3 Hours

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 the case of MCQ, the text of the correct answer should also be written.

Q.	Section-A (21 x 1 = 21 Marks)	Mark
1	State True/False: The python expression 3.2+2 is evaluated as 3*2+2	1
2	Observe and find output of the following python code: str1 = "Python" str2 = "Programming" print(str1[:2] + str2[-4:]) a. Pyming b. Pythming c. Pyogramming d. Pythonming	1
3	Evaluate the following expression and find correct value of y: y = 3 * 4 + 2**3 // 2 - (7 % 3)	1
4	What will be the output of following python code: s = 'Programming' print(s.split("m")) a. ['Progra', '', 'ing'] b. ['Progra', 'ing'] c. ['Progra', 'm', 'ing'] d. ['Progra', 'ming']	1
5	What will be the output of following python code: s = “yoBananaBoy” print(s[: :-1])	1
6	What will be the output of following python code: t1 = 1,2,3 t2 = (1,2,3) print(t1 is t2) a. True b. 1 c. False d. 0	1
7	What would the following code print: fruits = {'apple': 5, 'banana': 3, 'orange': 2, 'grape': 4} print(fruits.get('mango')) a. 0 b. None c. Error d. 5	1

8	Consider the given list L: L = list('All is well in ') What python code should be written for inserting the word 'Havana' at the end of the list as separate characters? a. L.extend('Havana') b. L.append(list('Havana')) c. both a and b d. None of the above	1
9	What will be the output of following python code: l2= [1,2,3,'[4,5]'] print(type(l2[-1])) a. error b. <class 'list'> c. <class 'string> d. <class 'NoneType'>	1
10	Suppose the content of a text file xyz.txt is as follows: "The best way to Predict the future is to create it." What will be the output of the following python code? f = open("xyz.txt") f.seek(17) s = f.read(7) print(s) f.close() a. Predict b. The best way to c. predict the d. to predict the future	1
11	In Python exception handling, the finally block is executed regardless of whether an exception occurs or not. (True/False)	1
12	def func(a, b, c=3, d=4): pass Identify the keyword and positional arguments in the function given above: a) a and b are positional arguments; c and d are keyword arguments b) a, b, c, and d are all positional arguments c) a, b, c, and d are all keyword arguments d) a, b, and c are positional arguments; d is a keyword argument	1
13	What is the output of following SQL statement? SELECT Department, COUNT(*) FROM employees WHERE Salary > 50000 GROUP BY Department; a. The total number of employees in each department b. The departments with employees earning over 50,000 and the count of such employees in each department c. The departments with average salary over 50,000 and their total number of employees d. The number of departments with employees earning over 50,000	1
14	Consider a table named 'Products' with columns 'product_id', 'product_name', and 'category'. Which of the following SQL queries will retrieve all products that are not in the categories 'Electronics' or 'Furniture'? a. SELECT product_id, product_name FROM Products WHERE category NOT IN ('Electronics', 'Furniture'); b. SELECT product_id, product_name FROM Products WHERE category NOT IN 'Electronics', 'Furniture'; c. SELECT product_id, product_name FROM Products WHERE category != 'Electronics' AND != 'Furniture'; d. SELECT product_id, product_name FROM Products WHERE category NOT LIKE ('Electronics', 'Furniture');	1
15	In MySQL, which command does not change the cardinality of a relation? a. ALTER b. INSERT c. DELETE d. None of these	1

16	Sita is creating a table for her project. She wants that a particular column always has a unique value. Which constraint should she use? a. DISTINCT b. UNIQUE c. NOT NULL d. DEFAULT	1
17	Which of the following is a network protocol? a. Firewall b. HTTP c. Modem d. Switch	1
18	The Router in a network primarily functions as a _____. a. Converter b. Traffic director c. Amplifier d. Modulato	1
19	Write the full form of the following: (i) FTP (ii) DNS	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**: Assertion: In Python, a function can return multiple values. **Reason:** Python functions can return tuples, which can be unpacked into multiple variables.	1
21	**Assertion**: The FOREIGN KEY constraint is used to establish links between tables. **Reason:** A FOREIGN KEY in one table points to a FOREIGN KEY in another table.	1

Q	Section-B (7 x 2=14 Marks)	Mark
22	Mark the valid and invalid identifiers in Python from the below options: myVariable, 1st_try, for, _total_sum	2

23	Rohan is writing a Python program to determine if a year is a leap year. He has written a program, but it's not working correctly. Help him rewrite the code, underlining the changes.
	year = input("Enter a year: ")
	if year % 100 == 0:
	if year % 400 ==0:
	print(year, "is a century and leap year")
	else:
	print(year,"is a century year but not leap year")
	else if year%4==0:
	print(year, "is a leap year")
	else:
	print(year, "is not a leap year")
		2

24	(A) Write a Python program to find the largest and smallest numbers from a list. Assume the list is given as [55, 12, 98, 34, 76, 1, 88]. OR (B) Write a Python program to check if a string is a palindrome (reads the same backward as forward). The string should be entered by the user.	2
25	Identify the correct output(s) of the following code from the choices i to iv. Write incorrect choice. Also specify the maximum values that can be assigned to each of the variables start and end. import random numbers = [10, 20, 30, 40, 50, 60] start = random.randint(0, 2) end = random.randint(3, 4) for i in range(start, end): print(numbers[i], end=", ") (i) 10, 20, 30, (ii) 30, 40, (iii) 20, 30, 40, (iv) 40, 50,	2

26	Define the following in context of MYSQL: (i) Tuple (ii) Cardinality	2
27	(A) Write difference between DISTINCT and GROUP BY clause of SQL. OR (B) What is the difference in INT and FLOAT?	2
28	Differentiate between Coaxial Cable and Optical Fiber. OR What is the use of the following devices? (i) Modem (ii) Repeater	2

Q	Section-C (3 x 3 = 9 Marks)	Mark
29	(A) Write a Python function count_vowels() that reads text from a file named "input.txt" and counts the number of vowels (a, e, i, o, u) in the file. The function should return the vowel count. OR (B) Write a Python function longest_word() that reads text from a file "words.txt" and returns the longest word in the file.	3
30	(A) A website uses a stack to manage recently viewed products. Each product is represented as a tuple: (product_id, product_name, price). Write the following Python functions to manage this RecentlyViewed stack: (I) add_product(RecentlyViewed, new_product): This function adds a new product tuple to the top of the RecentlyViewed stack. (II) remove_product(RecentlyViewed): This function removes and returns the most recently viewed product from the stack. If the stack is empty, it should print "No products recently viewed." (III) show_latest_product(RecentlyViewed): This function displays the most recently viewed product without removing it. If the stack is empty, it should print "No products recently viewed." OR (B) A hospital is managing patient data using a stack-based system. Patient records are initially stored in a list. Each record is a tuple containing (patient_id, age, priority_level). Priority levels are integers, with higher numbers representing higher priority. (I) Create a list named **patients** containing the following patient records: (101, 65, 2), (102, 32, 4), (103, 78, 1), (104, 45, 3), (105, 52, 5), (106, 28, 2) (II) Write the definition of a user-defined function push_high_priority(patients, priority_threshold). It should push only those patient records with a priority level greater than or equal to the priority_threshold onto a stack called **high_priority_patients**. (III) Write a function get_high_priority() to display all elements of the high_priority_patients stack while deleting them one by one. If the stack is empty, the function should display No high-priority patients.	3

31	Observe the table Students and write query for (i) to (iii): Table: Faculty (A) (i) Display Gender wise number of faculties who earn more than 85000. (ii) Display all data separated by Department and in decreasing order of Salary. (iii) Display FName and F_ID of faculties from ICT department. OR (B) (i) Display Gender wise average salary of those faculties with average salary more than 90000. (ii) Display FName and F_ID of faculties having the string 'ta' in the Fname. (iii) Change data of table to award 5% annual increment in salary.	3

F_ID	FName	LName	Department	Gender	Hire_Date	Salary
102	Ibomcha	Thounaojam	Exam	M	10/02/2020	75000
103	Shantanu	Fernandes	Exam	M	11/01/2015	120000
104	Tashi	Dorjey	ICT	F	14/03/2023	50000
105	Bhanwar	Singh	ICT	M	13/12/2019	80000
106	Kanta	Kumari	HOD	F	11/01/2024	140000

Q	Section-D (4 x 4 = 16 Marks)	Mark

32	(A) Explain the difference between the `'a'` and `'x'` file opening modes in Python.
	(B) Observe the following code and predict the output of (i), (ii), and (iii):
	def process_data(data):
	try:
	value = int(data)
	if value > 100:
	print("Value is greater than 100.")
	else:
	print("Value is not greater than 100.")
	except ValueError:
	print("Invalid input: Not an integer.")
	finally:
	print("Data processing complete.")
	(i) process_data(150)
	(ii) process_data("abc")
	(iii) process_data(50)
		4

33	A librarian is managing book inventory using a CSV file named `Inventory.csv`. The file structure is: `[BookID, Title, Author, Available]` where `BookID` is an integer, `Title` and `Author` are strings, and `Available` is an integer representing the number of copies available. The librarian needs to write the following functions: - add_book(): This function accepts new book details from the user and adds them to `Inventory.csv`. The file should be created with column headers if it doesn't exist. - check_availability(book_id): This function takes a `book_id` as input and returns the number of copies available for that book. If the book is not found, it should return -1.	4

34	Give output of the following queries as per given table(s): **WORKER** (table) **DEPT** (table) (i) SELECT DISTINCT JOB FROM WORKER; (iii) SELECT DNAME, LOC FROM DEPT WHERE SALARY > 10000; (iv) SELECT W.WNAME, D.MANAGER FROM WORKER AS W, DEPT AS D WHERE W.DNO = D.DNO; (v) SELECT WNAME FROM WORKER WHERE WNAME LIKE 'R%';	4
35	A table named Products in a database named Inventory stores information about products. The table has the following columns: ProductID (integer, primary key), ProductName (string), Price (float), and Quantity (integer). Assume the database username is 'admin' and the password is 'secure123'. Write a Python code that prompts the user to enter a ProductID and updates the Quantity of that product by adding 10 to the existing quantity. Handle any potential errors (e.g., the product ID not existing in the table).	4

WID	WNAME	JOB	SALARY	DNO
1001	RAHUL SHARMA	CLERK	15000	D03
1002	MUKESH VYAS	ELECTRICIAN	11000	D01
1003	SURESH	FITTER	9000	D02
1004	ANKUR	GUARD	8000	D01

DNO	DNAME	LOC	MANAGER
D01	PRODUCTION	GROUND FLOOR	D K JAIN
D02	ACCOUNTS	1ST FLOOR	S ARORA
D03	SECURITY	1ST FLOOR	R K SINGH

Q	Section-E (2 x 5 = 10 Marks)	Mark
36	Simran is developing a Python program to manage customer orders for an online store. Order data (order_id, customer_name, order_date, total_amount) is stored in a binary file named "Orders.dat". Each order is represented as a tuple. Help Simran complete the following tasks: (i) Write a function `add_order()` to input order details from the user (order_id, customer_name, order_date, total_amount) and store them in "Orders.dat". The program should allow adding multiple orders until the user chooses to stop. (ii) Write a function `update_order_amount()` to modify the `total_amount` for orders placed. The function should increase the `total_amount` of each qualifying order by 10%. (iii) Write a function `count_high_value_orders()` to count and display the number of orders with a `total_amount` greater than 1000.	5

37	Kendriya Vidyalaya No 1 Jaipur is setting up the network between its Different Wings of school campus. There are 4 wings named as – SENIOR(S), JUNIOR(J), ADMIN(A) and HOSTEL(H). Distance between various wings are given below: Wing A to Wing S — 80m Wing A to Wing J — 200m Wing A to Wing H — 400m Wing S to Wing J — 70m Wing S to Wing H — 120m Wing J to Wing H — 450m Number of Computers installed at various wings are as follows: Wing A — 20 Wing S — 150 Wing J — 50 Wing H — 25 (i) Suggest a most suitable cable layout for the above connections. (ii) Suggest the most appropriate topology of the connection between the wings. (iii) The company wants internet accessibility in all the wings. What type of network (LAN/MAN/WAN) will be created if we connect all buildings? (iv) Suggest the placement of the following devices with justification: (A) Repeater (B) Firewall (v) (A) Which building will host the server of the company OR (B) Suggest a device to be used for accessing the internet.	5