PM SHRI KENDRIYA VIDYALAYA BSF CAMPUS RAJOURI

CLASS- XII AUTUMN BREAK HOLIDAY HOMEWORK

COMPUTER SCIENCE

General Instructions:

1. Complete all questions day-wise neatly in your Computer Science Assignment Notebook.
2. All questions are based on previous year CBSE Board question papers and latest SQP patterns.
3. Show step-by-step working for output prediction, stack evaluations, and code conversions.

DAY 1: Revision of Python Fundamentals & Functions

Q1 (MCQ): Which of the following is an invalid identifier in Python?

(a) _total (b) 2nd_num (c) print_val (d) Data_1

Q2 (Output): Predict the output of the following code:

```
def calc(a, b=2):
    global p
    p = a ** b
    return p

p = 5
print(calc(3), p, end="#")
```

Q3 (Short Answer): Explain the difference between positional arguments and default arguments with a Python code snippet.

Q4 (Coding): Write a user-defined function count_digits(s) that receives a string s as a parameter and returns the total count of numeric digits present in it.

DAY 2: Data Handling & Functions (PYQs)

Q1 (Error Correction): Rewrite the following code after removing all syntax errors. Underline each correction:

```
def display
    N = 30
    For I in range(0, N):
        if N % 5 == 0
```

```
            print(N * 5)
        Else:
            print[N]
```
display()

Q2 (Output): What output will be generated by the code given below?

```
def Swap(st):
    m = ""
    for i in range(len(st)):
        if st[i].isupper():
            m += st[i].lower()
        elif st[i].islower():
            m += st[i].upper()
        else:
            m += "#"
    print(m)
```

Swap("KVS @ 2026")

Q3 (Coding): Write a function INDEX_LIST(L) in Python where L is a list of integers passed as an argument. The function should return a new list containing the index positions of all non-zero elements.

DAY 3: Text File Handling

Q1 (Theory): Differentiate between 'r+' and 'w+' file modes in Python text file operations.

Q2 (Coding): Write a function count_words() in Python to read a text file "STORY.TXT" and count how many words start with an uppercase letter.

Q3 (Coding): Write a Python program to read lines from a text file "NOTES.TXT" and copy all lines that do not contain the character 'a' or 'A' into a new file "FILTERED.TXT".

DAY 4: Binary File Handling (Pickle Module)

Q1 (MCQ/Short): Which module is imported in Python for serializing and deserializing binary files? Name the two primary methods used for writing and reading binary data.

Q2 (Coding): A binary file "STUDENT.DAT" contains records stored as dictionaries with keys: ['RollNo', 'Name', 'Marks']. Write a function add_record() to append a new student entry to this file.

Q3 (Coding): Write a function search_student(rno) that opens "STUDENT.DAT", searches for the student

with roll number rno, and displays their name and marks. If not found, display "Record Not Found".

DAY 5: CSV File Handling

Q1 (Short Answer): What is the purpose of the newline='' argument when opening a CSV file for writing in Python? What issue occurs if it is omitted?

Q2 (Coding): Write a Python program to create a CSV file "USERS.CSV" that accepts UserID and Password from the user and writes 5 records using writerows().

Q3 (Coding): Write a function read_csv() to read "USERS.CSV" and display only those records where UserID starts with "ADMIN".

DAY 6: Data Structure – Stack Operations

Q1 (Theory): What is LIFO? State the standard Python list methods used for push and pop operations in a Stack implementation.

Q2 (Coding): Write a program using functions to implement Stack operations (Push, Pop, Display) for a Stack containing customer dictionary records {'Cust_ID', 'Cust_Name'}.

Q3 (Evaluation): Evaluate the following Postfix expression using a Stack. Show step-by-step stack status after each operation:

```
20  4  /  3  *  2  +
```

DAY 7: Computer Networks – Fundamentals & Topologies

Q1 (Theory): Differentiate between PAN, LAN, MAN, and WAN with one real-world example for each.

Q2 (Short Answer): Name the network devices required for:
(a) Connecting multiple computers in a local network and amplifying signals across long distances.
(b) Connecting two distinct networks using different protocols.

Q3 (Case Study): Draw and explain Star Topology and Bus Topology. Write one major advantage and one disadvantage of Star Topology.

DAY 8: SQL Basics & DDL/DML Commands

Q1 (Theory): Differentiate between CHAR and VARCHAR data types in MySQL with suitable examples.

Q2 (SQL Queries): Write SQL statements for the following based on table EMPLOYEE(EmpID, Name, Dept, Salary, DOJ):

(a) Display all details of employees whose salary is between 40000 and 70000.

(b) Display unique department names (Dept) from the table.

(c) Increase the salary of all employees in the 'IT' department by 10%.

(d) Add a new column Mobile_No of type BIGINT to the existing table.

DAY 9: SQL Aggregate Functions & Grouping

Q1 (Theory): Explain the difference between WHERE clause and HAVING clause in SQL queries with a suitable example.

Q2 (SQL Queries): Write SQL queries based on table STUDENT(RollNo, Name, Stream, Marks, City):

(a) Display the highest and average marks grouped by Stream.

(b) Display total number of students in each City having more than 5 students.

(c) Display details of students sorted in descending order of Marks.

(d) Display names of students whose names start with 'A' and end with 'R'.

DAY 10: Python-SQL Interface & Board SQP Practice

Q1 (Coding): Write a Python script using mysql.connector to connect to a MySQL database named "SCHOOL", fetch all records from the STUDENT table, and display them line by line using fetchall().

Q2 (Coding): Write a Python function to insert a new row into the EMPLOYEE table using user input and execute the command using parameterized queries (%s).

Q3 (Revision Task): Solve Section A (MCQs) of the official CBSE Class 12 Computer Science Sample Question Paper (SQP) in your notebook.

ENGLISH

Dear Students

Make the most of your Autumn Break by reading the prescribed chapters carefully and completing the written work neatly in your English notebook. Focus on understanding the text, building vocabulary, and applying the ideas from each chapter to real-life situations.

1. Read the following chapters:

- (i) On the Face of It
- (ii) Memories of the childhood

2. Written Work (English Notebook):

For each of the chapters, write the following:

- Theme of the chapter.
- Meanings of any 10 words from the chapter.
- Summary of the chapter in your own words.
- Textual questions and answers.

3. Competency-Based Questions:

Prepare and answer 5 competency-based questions from each chapter and write them in your English notebook. The questions should test your understanding, interpretation, critical thinking, and ability to connect the events and themes of the chapter with real-life situations.

General Instructions:

- Complete all work neatly and legibly in your English notebook.
- Use your own words and avoid copying summaries or answers directly from the internet.
- Support answers with relevant details from the chapters..
- Submit the completed holiday homework on the first working day after the Autumn Break.

PHYSICS

a.Solve previous year question papers (hard copy already provided)

b. Solve CBSE Sample paper.

c. Complete the investigatory project .

d. Complete lab manual.

CHEMISTRY

Instructions: Attempt all questions neatly in your chemistry notebook. Write balanced chemical equations wherever required. Show complete steps for numerical problems.

Section A: Solutions

1. Define molarity, molality and mole fraction.
2. State Raoult's law. Explain ideal and non-ideal solutions with examples.
3. What are colligative properties? Name the four colligative properties.
4. Calculate the molarity of a solution containing 5.85 g of NaCl dissolved to make 500 mL of solution.

5. Explain abnormal molar mass and the van't Hoff factor.

Section B: The d- and f-Block Elements

6. Why do transition elements show variable oxidation states?
7. Explain why transition-metal compounds are often coloured.
8. What is lanthanoid contraction? Explain its consequences.
9. Differentiate between lanthanoids and actinoids.
10. Describe the preparation and important reactions of potassium permanganate ($KMnO_4$) and potassium dichromate ($K_2Cr_2O_7$).

Section C: Coordination Compounds

11. Define ligand, coordination number and coordination sphere.
12. Write the IUPAC names of five coordination compounds of your choice. Also write their formulae.
13. Explain Werner's theory of coordination compounds.
14. Explain geometrical and optical isomerism with suitable examples.
15. Describe crystal-field splitting in octahedral complexes. Draw a labelled diagram showing the t_2g and e^g orbitals.

Section D: Amines

16. Explain the basicity of amines. Compare the basic strength of aliphatic and aromatic amines.
17. Write important reactions of amines with balanced chemical equations.
18. Explain the effect of substituents on the basicity of aniline.

Section E: Biomolecules

19. Write a short note on glucose, including its structure and important properties.
20. What are proteins? Explain peptide bonds and the primary, secondary, tertiary and quaternary structures of proteins.
21. What are vitamins? Classify them into water-soluble and fat-soluble vitamins, giving examples.
22. What are nucleic acids? Differentiate between DNA and RNA.

BIOLOGY

a.Solve previous year question papers (hard copy already provided)

b. Solve CBSE Sample paper(2026-27)

c. Complete the investigatory project From any topic from NCERT textbook.

d. Complete lab manual.

MATHS

HOLIDAY HOMEWORK

Chapter: Differential Equations

General Instructions

1. Solve all questions neatly in your mathematics notebook.

2. Show all necessary steps and write the general solution with the constant of integration wherever required.

3. Revise the concepts of order, degree, general solution and particular solution.

Section A: Multiple Choice Questions (MCQs)

1. The order of the differential equation d'y/dx + 3(dy/dx) + y = 0 is: (a) 1 (b) 2 (c) 3 (d) 0

2. The degree of (dy/dx") + (dy/dx) + y = 0 is: (a) 1 (b) 2 (c) 3 (d) 5

3. The differential equation of y = Cx is: (a) d/dx (y) = C (b) x(d/dx (y)) = y c) dy/dx = y (d) x+y=0

4. The general solution of dy/ x = 0i : (a) y = x (b) y = C (c) x = C (d) y = Cx

5. The integrating factor of dy/dx + Py = Q, where P is a function of x, is: (a) e^ dx) (b) e^(Pdx) (c) Pdx (d) P/Q

Section B: Very Short Answer Questions

1. Define a differential equation and give one example.

2. Find the order of dy/dx + (dy/dx) + y = 0.

3. Find the degree of: (d ^ 2 * y / d * x ^ 3) ^ 2 + (d/dx (y)) ^ 4 + y = 0

4. State the difference between a general solution and a particular solution.

5. Verify whether y = 2x + 1 is a solution of dy/dx = 2.

6. Write the standard form of a first-order linear differential equation.

Section C: Formation of Differential Equations

1. Form the differential equation by eliminating the arbitrary constant from r = C * x ^ 2

2. Form the differential equation of the family y = C,ex + C_2e-* by eliminating the arbitrary constants.

3. Form the differential equation of y = mx + 3 where m is an arbitrary constantby , eliminating m

4. Form the differential equation of y = A * e ^ (2x) where A is an arbitrary constant.

Section D: Solve the Following Differential Equations

1. Solve: y / c * dx = 3 * x deg

2. Solve: dy/dx = x/y.

3. Solve: dy/ c = (1 + x ^ 2) / (1 + y ^ 2)

4. Solve: d/dx (y) = e ^ x

5. Solve: (1 + x) dy/dx = y.

6. Solve: dy/dx + y = e.

7. Solve: cy / c * tx + 2y = 4

8. Solve: dy/dx-y tan x = sin x.

Section E: Linear Differential Equations

1. Solve: dy/dx + y/ x = x ^ 2 where x +0.

2. Solve: dy/dx + y = 6

3. Solve: x(dy/dx) + y = x ^ 2 where x +0.

4. Solve: dy/dx- y = e ^ (3x)

5. Solve: $dy/dx + y \tan x = \sin x$.

Section F: Application and Higher-Order Thinking Questions

1. Find the particular solution of $dy/dx = 2x$, given $y = 3$ when $x = 0$

2. Find the particular solution of $dy/dx = y/x$, given $y = 2$ when $x = 1$

3. A curve passes through (1, 2) and has slope $dy/dx = 2x$ at every point. Find its equation.

4. If the rate of change of y with respect to x is proportional to y, write the differential equation and solve it.

5. The general solution of a differential equation contains one arbitrary constant. What can you infer about the order of the equation in the usual case? Explain briefly.

Section G: Conceptual Revision

1. Explain explicit and implicit solutions of a differential equation, with one example of each.

2. Write the steps for solving a variable separable differential equation.

3. Write the formula for the integrating factor of $dy/dx + P(x)y = Q(x)$.

4. Explain how the order and degree of a differential equation are determined.

Section H: Activity-Based Learning

Activity 1-Slope and Curve: Sketch a simple curve and mark two points where the slope is positive. Explain what dy/dx tells us about the curve.

Activity 2-Create Your Own: Write one example each of a first-order differential equation and a second-order differential equation. Identify their orders and degrees, where defined.

Activity 3-Real-Life Connection: Research one example where rates of change are modelled using differential equations (for example, population growth, cooling, or motion). Write 4-5 lines explaining the situation and the variables involved.

Submission: Complete all written work and activities neatly. Show complete working for every numerical question.

हिंदी अवकाश कार्य

कक्षा:बारहवीं

1.मोहनजोदड़ो की नगर-योजना की प्रमुख विशेषताओं का वर्णन कीजिए।

2.यदि आज के किसी आधुनिक शहर की तुलना मोहनजोदड़ो से की जाए, तो नगर-योजना और स्वच्छता के संदर्भ में आप किन समानताओं और भिन्नताओं की पहचान करेंगे?

3.कहानी से नाटक तक रूपांतरण की प्रक्रिया लिखिए।

4.रेडियो नाटक तथा मंचीय नाटक में चार अंतर लिखिए।

5.पुस्तकें हमारी सच्ची मित्र हैं' विषय पर रेडियो कार्यक्रम की संक्षिप्त रूपरेखा तैयार कीजिए।

अथवा

'जल संरक्षण: आज की आवश्यकता' विषय पर लगभग 200 शब्दों में आलेख तैयार कीजिए।