St. Mary's School, Dwarka
Winter Holiday Homework
Class XI (Science Section)

General Instructions:

1) The work should be done neatly and in a systematic way.

2) The given questions are to be done in your respective subject notebooks.

Subject: English

Q1. You are Sachin/Somya, the School Leader of St. John School, Pune. In an age where youths are mostly addicted to gadgets and other devices, you feel the need to spread awareness about maintaining a healthy life. Write a speech in about 150-200 words on 'The Importance of Exercise and Yoga in a Student's Life'. **(6)**

Q2. Complete the following dialogue by filling the blank. **(½ x4=2)**

Asha: Where do you get your clothes stitched?

Neha: I get a) _____ in Kamla Nagar.

Asha: They are beautiful. Who buys the material for your dresses?

Neha: The material b) _____ my mother.

Asha: And who designs your outfits?

Neha: c)_____ my sister.

Asha: You wore a red dress with embroidery yesterday. From where did you buy?

Neha: I d)_____ from my mother's friend who is a designer.

Q3. Read the following paragraph and fill in the blanks with appropriate form of verbs. **(½ x4=2)**

As soon as the shot wounded the elephant, it a)_____ (rush) back into the forest. I made an attempt to b)_____ (run) after it but c) _____ (can) not catch it. I d) _____ (lose) the animal in the dark and I returned home disappointed.

Q4. Read the sentence given below. They are not in the correct sequential order. Rewrite the sentences in proper sequence. **(1x2=2)**

i. a) A fierce battle was fought.

b) Emperor Ashoka wished to expand the Mauryan Empire.

c) Over a hundred thousand people died.

d) He attacked the kingdom of Kalinga with a large army.

ii. a) It was kept in the dining room waiting to be hung.

b) A picture had come from the frame makers.

c) Aunt Podger asked what was to be done with it.

d) "Oh, you leave that to me, I'll do the job", Uncle Podger said.

Q5. (i) Read the extract given below and answer the following question. **(1x3=3)**

Mrs Pearson: (taunting him) Why don't you get off to your club? Special night tonight, isn't it? They'll be waiting for you-wanting to have a good laugh. Go on then. Don't disappoint 'em.

a) Why is Mrs. Pearson unhappy with her husband?

    i.   He fought with him

    ii.   She was not given money by him.

    iii.   Her husband did not respect and value her.

    iv.   He made fun of her.

b) The tone of the speaker is _____.

    i.   persuasive

    ii.   kind

    iii.   sarcastic

    iv.   filled with rage

c) The expression 'wanting to have a good laugh' means that _____.

    i.   George's club buddies are waiting for his jokes.

    ii.   He himself is made fun of by his friends.

    iii.   His friends love to have him around.

    iv.   George's friends tell him the latest jokes every day.

(ii) What is the parallel drawn between rain and music in the poem 'The Voice of Rain'. Explain in 40-60 words. **(2)**

(iii) 'Gangadharpant had not been to this Bombay before.' Show how this Bombay is different from the one he knew in 100-120 words. **(3)**

Subject: Physics

Q1. (a) What is the largest average velocity of blood flow in an artery of radius 2×10^{-3} m, if the flow must remain laminar? What is the corresponding flow rate? Take viscosity of blood $= 2.084 \times 10^{-3}$ Pa s and density of blood $= 1.06 \times 10^{3}$ kg m^{-3}.

(b) State and prove equation of continuity. (3+2=5)

Q2. (a) A liquid is flowing through a horizontal pipeline of varying cross – section. At a certain cross – section, the diameter of the pipe is 5cm and the velocity of flow of the liquid is 25cm s^{-1}. Calculate the velocity of flow at another cross – section, where the diameter is 1cm.

(b) Air of density 1.3kg m^{-3} blows horizontally with a speed of 10^{8} km h^{-1}. A house has a plane roof of area 40m^{2}. Find the magnitude of aerodynamic lift on the roof. (2.5 + 2.5 = 5)

Q3. (a) State Stoke's law. Write its mathematical expression

(b) Drive an expression of terminal velocity of a spherical body of radius r and density ρ falling through a fluid of density σ and coefficient of viscosity as η. Draw a relevant diagram as well.

(2 + 3 = 5)

Q4. (a) Water flowing in a horizontal main of uniform bore has a velocity of 100 cm s^{-1} at a point, where the pressure id 1/10th of the atmospheric pressure. What will be the velocity at a point, where the pressure is one half of that at the first point?

(b) Water is flowing through a horizontal pipe of varying cross-section. If the pressure of water equals 2 cm of mercury, where the velocity of the flow is 32 cm s^{-1} , what is the pressure at another point, where the velocity of flow is 65 cm s^{-1}. (2.5 + 2.5 = 5)

Q5. (a) State and prove Bernoulli's theorem with the help of labelled diagram.

(b) What is capillary action and give a mathematical expression for a rise of liquid in a capillary tube.

(c) Define angle of contact. Draw diagrams to show acute angle as well as obtuse angle for a liquid in a container. (2.5 + 1 + 1.5 = 5)

Subject: Chemistry

Q1. (a) What is the difference between the terms orbit and orbital?

(b) Define (i) Hund's Rule,

(ii) Pauli's Exclusion Principle and

(iii) Heisenberg's Uncertainty Principle (5)

Q2. (a) What is the difference between molality and molarity?

(b) A sulphuric acid solution contains 98% (m/v) H_2SO_4 . The density of the

Solutions is 1.98 gcm^{-3}. Calculate molarity and molality of the solution. (5)

Q3. (a) Calcium carbonate reacts with aqueous HCl to give $CaCl_2$ and CO_2 according

to the reaction given below:

$CaCO_3$ (s) + 2HCl (aq) $\rightarrow CaCl_2$(aq) + CO_2(g) + H_2O(l)

What mass of $CaCl_2$ will be formed when 250 mL of 0.76 M HCl reacts with 1000 g

of $CaCO_3$? Name the limiting reagent. Calculate the number of moles of

$CaCl_2$ formed in the reaction.

(b) Table-tennis ball has a mass 10 g and a speed of 90 m/s. If speed can be measured

within an accuracy of 4% what will be the uncertainty in speed and position? (5)

Q4. (a) Calculate the enthalpy of hydrogenation of C_2H_2 to C_2H_4 (g) in the following

reaction: $C_2H_2 + H_2 \rightarrow C_2H_4$.

Given are the bond enthalpies C-H bond is 414, C=C bond is 606, C≡C bond is

827.6, and H-H bond is 430.5 kJ/mol.

(b) Define enthalpy of formation. How can it be used to calculate the enthalpy

of reaction? (5)

Q5. (a) Write the IUPAC name of following compounds:

(i) CH_3-CH_2-CHO (ii) $CH_3CH_2CH_2CH_2OH$

(b) Draw orbital diagram and explain the hybridization and the shape of the ethane

molecule.

(c) Using VSEPR theory, explain and draw the structure of BrF_3. (5)

Subject: Biology

Q1. Draw and label the human heart. (3)

Q2. With the help of a diagram explain the distribution of blood in the human body. (3)

Q3. Draw and explain Calvin cycle. (4)

Q4. What do you understand by Z scheme in light harvesting complex? Explain. (5)

Q5. Show the Hatch and Slack pathway diagrammatically. List the differences between
C3 and C4 plants. (5)

Subject: Economics

Q1. Explain the implication of very large number of buyers under perfect competition. (2)

Q2. Why is a firm price taker under perfect competition? Explain with the help of a
schedule and diagram. (2)

Marks	0−10	10−20	20−30	30−40	40−50
Number of Students	8	30	40	12	10

Q3.Find out mean and median marks of the following marks distribution for 100 students(3)

Q4. There is an increase in market demand and market supply simultaneously. How will it
affect the market equilibrium? (5)

Q5. A measure of central tendency is a value that represents a typical, or central, entry of a
data set. The three most commonly used measures of central tendency are the mean,
median and mode. A way to measure the variation (or spread) of a data set is to find the
range, variance and standard deviation. Annual Salaries: Sample annual salaries (in the
thousands of dollars) for accountants in Dallas are listed. 41.6 50.0 49.5 38.7 39.9 44.7
44.7 47.8 40.5

  A) Using the annual salaries data set, find the mean, median, and mode. Mean.

  B) Interpret the meaning of each measure of central tendency (mean, median, mode) with
respect to annual salaries?

  C) If the sample annual salary for Dallas is changed by adding the data point 72.3 Compute
the mean.

  D) Which average is more suitable in this situation?

  E) Write any two demerits of median. (5)

Subject: Mathematics

Q.1) There are 12 points in a plane, out of which 5 are collinear. How many lines can be constructed by joining two points? (2)

Q.2) Convert i(1 + i) in the polar form. (2)

Q.3) Find the domain and the range of the following functions: (3)

(i) $\{(x , \frac{x^2-1}{x-1} ; x \in R, x \neq 1 \}$ (ii) $\{ (x , \sqrt{4 - x^2}) : x \in R \}$

Q.4) Prove that $\cos6x = 32\cos^6x - 48 \cos^4x + 18\cos^2x - 1$ (3)

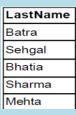Q.5) (i) Show graphically that the following system of linear inequalities has no solution:

$x + 2y \leq 3$, $3x + 4y \geq 12$, $x \geq 0$, $y \geq 1$

(ii) Find the general solution of the equation: $5 \cos^2\theta + 7 \sin^2\theta - 6 = 0$ (2.5+2.5)

Subject: Informatics Practices

Q1. Do as directed: (1x6=6)

(a) If a database "Employee" exists, which MySQL command helps you to start working in that database?

(b) Sahil created a table in MySQL. Later on, he found that there should have been another column in the table. Which command should he use to add another column to the table?

(c) Purnima, a student of class XI, created a table "Book". Price is a column of this table. To find the details of books whose prices have not been entered. help Purnima to write the query.

(d) Rama is not able to change a value in a column to NULL. What constraint did she specify when she created the table?

(e) Distinguish between a Primary key and Candidate key with the help of suitable example of each.

(f) The LastName column of a table "Directory" is given below:

LastName
Batra
Sehgal
Bhatia
Sharma
Mehta

Based on this information, find the output of the following queries:

i) SELECT lastname FROM Directory WHERE lastname like "_a%";

ii) SELECT lastname FROM Directory WHERE lastname not like "%a";

Q2.Consider the following tables FACULTY and COURSES. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (vi) (6)

FACULTY

F_ID	Fname	Lname	Hire_date	Salary
102	Amit	Mishra	12-10-1998	12000
103	Nitin	Vyas	24-12-1994	8000
104	Rakshit	Soni	18-5-2001	14000
105	Rashmi	Malhotra	11-9-2004	11000
106	Sulekha	Srivastava	5-6-2006	10000

COURSES

C_ID	F_ID	Cname	Fees
C21	102	Grid Computing	40000
C22	106	System Design	16000
C23	104	Computer Security	8000
C24	106	Human Biology	15000
C25	102	Computer Network	20000
C26	105	Visual Basic	6000

i) To display details of those Faculties whose salary is greater than 12000.

ii) To display the details of courses whose fees is in the range of 15000 to 50000 (both values included).

iii) To increase the fees of all courses by 500 of "System Design" Course.

iv) To display details of those courses which are taught by 'Sulekha' in descending order of courses.

v) Select COUNT(DISTINCT F_ID) from COURSES;

vi) Select MIN(Salary) from FACULTY,COURSES where COURSES.F_ID =FACULTY.F_ID;

Q3.**Write the following programs in Python and complete the practical file.**

a) Write a program to calculate the total number of zeros, positive and negative elements in the list.

b) Write a program to read a list of n integers (positive as well as negative). Create two new lists, one having all positive numbers and the other having all negative numbers from the given list. Print all three lists.

c) Write a program to read elements of a list and do the following.

i) The program should ask for the position of the element to be deleted from the list and delete the element at the desired position in the list.

ii) The program should ask for the value of the element to be deleted from the list and

delete this value from the list.

d) Write a Python program to find the highest 2 values in a dictionary.

e) Write a Python script to merge two Python dictionaries.

f) Write a program that repeatedly asks the user to enter product names and prices. Store all of these in a dictionary whose keys are the product names and whose values are the price. When the user is done entering products and price, allow them to repeatedly enter a product name and print the corresponding price or a message if the product is not in dictionary.

g) Create a dictionary whose keys are month name and whose values are number of days in the corresponding month:

    (a) ask the user to enter the month name and use the dictionary to tell how many days are in month.

    (b) print out all of the keys in alphabetical order.

    (c) print out all of the month with 31 days.

    (d) print out the (key - value) pair sorted by the number of the days in each month

h) Create any two tables in SQL and perform the following operations:

        a) CREATE TABLE ..   b) INSERT INTO….   c) SELECT queries (any 5) d) ALTER TABLE….   e) UPDATE TABLENAME SET …..

    The screenshots of SQL working should be pasted in the practical file.

Q4. a) Why is dictionary termed as an unordered collection of objects?   (2)

   b) The following code has two dictionaries with tuples as keys. While one of these dictionaries being successfully created, the other is giving some error. Find out which dictionary will be successfully and which one will give error and correct it: (2)

    dict1 = {(1, 2) : [1, 2], (3, 4) : [3, 4]}

    dict2 = {([1], [2]) : [1, 2] : ([3], [4]) : [3, 4]}

Q5. Write any two differences between indexing and slicing.   (2)

Subject: Computer Science

Q1. Write a short note on lists in Python and include the following list methods.

append ( ), extend ( ), sort ( ), pop ( ), index ( ), insert and remove ( )   (2+1x7)

Q2. Create the following tuple using a for loop: (2)

(i) = a tuple containing the squares of the integer 1 though 50 .

(ii)= the tuple ("a", "bb", "ccc"….)that ends with 26 copies of the letter z .

Q3. Create a dictionary 'ODD' of odd numbers between 1 and 10, where the key is the decimal number and the value is the corresponding number in words. Perform the following operations on this dictionary:

(a) Display the keys   (1x8=8)

(b) Display the values

(c) Display the items

(d) Find the length of the dictionary

(e) Check if 7 is present or not

(f) Check if 2 is present or not

(g) Retrieve the value corresponding to the key 9

(h) Delete the item from the dictionary corresponding to the key 9

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b) Write a program to read a list of n integers (positive as well as negative). Create two new lists, one having all positive numbers and the other having all negative numbers from the given list. Print all three lists.

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Q5. Consider the following code and then answer the questions that follow: (1x4=4)

myDict = {'a' : 27, 'b' : 43, 'c' : 25, 'd' : 30}

valA ' '

for i in myDict :

 if i > valA :

valA = 1

valB = myDict[i]

print (valA)# Line 1

print (valB)# Line 2

print (30 in myDict)# Line 3

myLst = (myDcit.items())

mylst. sort()# Line 4

print (myLst[-1])# Line 5

(i) What output does Line 1 produce?

(ii) What output does Line 2 produce?

(iii) What output does Line 3 produce?

(iv) What output does Line 5 produce?

(v) What is the return value from the list sort() function (Line 5) and what is its type?

Subject: Psychology

Q1. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice. (1)

Assertion (A): If you hide the toy infront of the new born child with which the child has been playing, he/she would react as if nothing has happened, i.e. s/he will not search for the toy.

Reason (R): According to Jean Piaget, an infant lacks object permanence.

(A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

Q2. Why does illusion occur? (2)

Q3. What is Piaget's hypothetical deductive reasoning? (2)

Q4. Differentiate between classical and operant conditioning. (3)

Q5. What is reinforcement? Differentiate among positive and negative reinforcements and (5) punishment.