ST. XAVIER'S SENIOR SECONDARY SCHOOL, DELHI – 110 054

Class 9   Time : 3 hrs.

12-9-2014   Summative Assessment I in **SCIENCE**   M. Marks : 90

General Instructions :
1.   All questions are compulsory.
2.   There is no overall choice.
3.   Marks for each question are mentioned against the questions.

SECTION – A

1.   Define 1 N of force.   (1)

2.   a)   State the Universal law of Gravitation.
      b)   Write its mathematical expression.
      c)   What is the value of G.   (2)

3.   Give reasons for the following:
      a)   We fall outwards when the car takes a sharp turn.
      b)   A karate expert is able to break a pile of tiles easily.   (3)
      c)   As the sailor jumps in the forward direction the boat moves in the backward direction.

4.   The following table shows the velocity of a car at different instants of time.
      Plot the velocity time graph. Interpret the nature of motion. Also calculate the following:
      a)   Acceleration of the car
      b)   Force applied to produce the acceleration if mass of the car is 1500kg.   (3)

Time (s)	Velocity (m/s)
0	9
5	18
10	27
15	36
20	45
25	54
30	63

5.   Shubha purchased 1 kg of gold at the poles. When she came on equator of the Earth, she
      found that weight of the gold bar was slightly less. She did not know why it was so but her
      daughter, who was in class IX, knew the reason. She told Shubha that weight of an object
      depends upon the value of acceleration due to gravity, 'g'. As the value of g is less at the equator
      than its value at the poles, the weight of same gold bar appears to be less at the equator.
      a)   What is weight? What is its SI unit?
      b)   Why is the value of 'g' less at the equator and more at the poles?   (3)
      c)   What qualities are exhibited by Shubha's daughter?

6.   a)   How can we relate Newton's Second Law of Motion with Newton's First Law of
            Motion?
      b)   A car is moving with a velocity of 54km/h and it takes 2s to stop after the breaks
            are applied. Calculate the force exerted by the breaks on the car if the mass
            along with passengers is 1000kg.   (3)

7.   a)   Derive the third equation of motion ($v^2 - u^2 = 2aS$), graphically.
      b)   A ball is thrown vertically upwards with a velocity of 49 m/s. Calculate:
            i)   The maximum height to which it rises.
            ii)   The total time it takes to return to the surface of the earth.
      c)   How does the graph of uniform motion look like? (Draw a rough sketch only).   (5)

8.   a)   State the Law of Conservation of Momentum.
      b)   Derive its mathematical expression.
      c)   A bullet of mass 20g is horizontally fired with a velocity of 150m/s from a pistol of
            mass 2 kg. What is the recoil velocity?   (5)

SECTION - B

9.   How can gases be liquified?   (1)

10.   Differentiate between the following:
      a)   Homogeneous and heterogeneous mixtures.
      b)   Aqueous and Non-Aqueous solutions.   (2)

11.   Draw a neat well labelled diagram to show the separation of two immiscible liquids.
       Which principle is used in this separation?   (3)

12.   Give reasons for the following: (3)
       a)   Sugar is solid even though it takes the shape of the container in which it is kept.
       b)   Naphthalene balls disappear with time without leaving any solid.
       c)   Ice at 273 K is more effective in cooling than water at the same temperature.

13.   a)   Name the solute and solvent in tincture of iodine?
       b)   Give an example of:
             i)   Aerosol   ii)   Emulsion
       c)   What is meant by Tyndall effect?   (1,1,1)

14.   a)   Name a method used for separation of the following:
             i)   Cream from milk   ii)   Acetone from water
       b)   Classify the following as physical or chemical changes:
             i)   Boiling of water to form steam   ii)   Burning of paper
             iii)   mixing of iron filings from sand   iv)   Rusting of iron rod.   (1,2)

15.   a)   Arrange the following in the increasing order of forces of attraction between the
             particles: air, iron and honey.
       b)   Explain how evaporation causes cooling.   (1,1,1,2)
       c)   Wet clothes do not dry easily on a rainy day. Why?
       d)   With the help of an activity show that particles of matter have spaces in between them.

16.   a)   Why crystallisation technique is better than evaporation for purification of solids?
       b)   Define solubility. A solution is prepared by mixing 100g of common salt in 1900g
             of water. Find the concentration of this solution in mass per volume percentage.
       c)   Classify the following as elements compounds and mixtures:
             i)   tin   ii)   soil
             iii)   ammonium chloride   iv)   lead   (1,2,2)

Section - C

17.   Define Eutrofication.   (1)

18.   A farmer cultivated soyabeans in the field of maize in well planned rows. Name the method
       of cultivation. Explain the method. What are the advantages of this agricultural practice?   (2)

19.   Draw a large diagram of an animal cell as seen through an electron microscope.
       Label the parts that carry on the function of Respiration, secretion, protein synthesis,
       cell regulation and control.   (3)

20.   a)   Why xylem and phloem are known as complex permanent tissues?
       b)   Where is apical meristem found? What would happen if apical meristem is damaged?
       c)   Name the fat-storing tissues? How do these tissue help?   (1x3=3)

21.   a)   Write the modes by which insects affect the crop yield. (Any 2)
       b)   Why is excess use of fertilizers detrimental for the environment?
       c)   What are milch animals? Name two cattle breeds which show excellent
             resistance of diseases.   (1x3=3)

22.   a)   Why excessive irrigation of crops should be avoided?
       b)   Complete the following:
             i)   Growing of wheat and groundnut in the same field _____.
             ii)   Xanthium and parthenium are called_____.
             iii)   Causal organism of any disease is called_____.
             iv)   Farming without the use of chemicals_____.   (1,2)
23.   Differentiate between striated, unstriated and cardiac muscles with the help of
       neat and labelled diagrams.   (5)

24.   a)   Define Plasmolysis. Give one example for the same in our daily life.
       b)   Who gave the cell theory? Write main postulates of it.   (1,4)

                                 -x-x-x-x-x-x-x-

SECTION - D   TIME : 20 min.

Instructions:
1. Question numbers 25 - 33 carry 1 mark each.
   Question numbers 34 to 36 carry 2 marks each.
2. Select the most appropriate response out of the four provided and write the correct answer in the box provided.

25. The least count of an instrument is: (1)
    a) The minimum value it can measure.
    b) The lowest measurement on its scale.
    c) The difference between the minimum and maximum value on its scale.
    d) The highest measurement on its scale.

26. The mass of a body can be measured using which of the following instrument: (1)
    a) Spring balance   b) Weighing machine
    c) Letter balance   d) None of these

27. What is true about Archimedes Principle?   (1)
    a) the loss in weight is less than the weight of water displaced
    b) the loss in weight is more than the weight of water displaced
    c) the loss in weight is equal to the weight of water displaced
    d) none of these.

28. Which out of the following form a suspension with water?   (1)
    a) Sand   b) Milk   c) Sugar   d) $CuSO_4$

29. Which of the following is true about iron and sulphur mixture?   (1)
    a) It is homogeneous.   b) It can be separated by heating.
    c) Its composition is not fixed.   d) Its formula is FeS.

30. The organelle not present in human cheek cell is   (1)
    a) nucleus   b) mitochondria
    c) cell membrane   d) chloroplast

31. Given below four operations for preparing a temporary mount of human cheek cells -   (1)
    (i) taking scraping from inner side of cheek and spreading it on a clean slide.
    (ii) putting a drop of glycerine on the material.
    (iii) adding 2-3 drops of methylene blue.
    (iv) rinsing the mouth with fresh water and disinfectant solution.
    Choose the correct sequence :
    a) (i, ii, iii, iv)   b) (iii, i, iv, i)   c) (iv, i, iii, ii)   d) (ii, iv, iii, i)

32. You are given 2 slides of parenchyma and sclerenchyma. Sclerenchyma can be
    identified by   (1)
    a) location of nucleus   b) size of cells
    c) thickness of cell wall   d) position of vacuole

33. Growing two or more crops simultaneously on the same field in a definite pattern is
    referred to as   (1)
    a) Crop rotation   b) Inter cropping
    c) Mixed cropping   d) Crop alternation

34. Xylem consists of _____, _____, Xylem parenchyma and Xylem fibers.   (2)
    a) Sieve tube, Companion cell   b) Tracheid, Sieve tube
    c) Tracheid, vessel   d) Vessel, Companion cell

35. The volume of a solid object is 15ml and its mass is 135g .The density of the material
    in SI unit is: (2)
    a) 111.1 kg/m^3 b) 9000 kg/m^3
    c) 900 kg/m^3 d) 90000 kg/m^3

36. i) The white coloured powder formed due to burning of Magnesium wire is:
       a) Magnesium hydroxide   b) Magnesium oxide
       c) impurities present in the wire d) Magnesium carbonate

    ii) The white coloured precipitate formed due to mixing of Sodium Sulphate
        and Barium Chloride is:
        a) Sodium Hydroxide   b) Sodium Sulphate
        c) Barium Hydroxide   d) Barium Sulphate   (2)

-x-x-x-x-x-x-x-