CBSE Sample Paper -03 (solved)
SUMMATIVE ASSESSMENT –II
SCIENCE (Theory)
Class – IX

Time allowed: 3 hours   Maximum Marks: 90
General Instructions:
  a) All questions are compulsory.
  b) The question paper comprises of two sections, A and B. You are to attempt both the sections.
  c) Questions 1 to 3 in section A are one mark questions. These are to be answered in one word or in one sentence.
  d) Questions 4 to 7 in section A are two marks questions. These are to be answered in about 30 words each.
  e) Questions 8 to 19 in section A are three marks questions. These are to be answered in about 50 words each.
  f) Questions 20 to 24 in section A are five marks questions. These are to be answered in about 70 words each.
  g) Questions 25 to 42 in section B are multiple choice questions based on practical skills. Each question is a one mark question. You are to select one most appropriate response out of the four provided to you

Section A

1.   What are the charge and mass of the neutron?

2.   What is haemocoel? Which group of animals have haemocoel?

3.   What is the use of hydrometer?

4.   The number of electrons in the outermost shell of chlorine is 7. What is its valency and why?

5.   Which organisms are called primitive and how are they different from the so-called advanced organisms?

6.   Explain why sheet of paper falls slowly than a coin under gravity through air.

7.   Write the chemical formula, using criss cross method:

   a.   Ammonium sulphate

   b.   Magnesium bicarbonate

   c.   Barium nitrate

8.   What is meant by the term mole? Calculate the number of moles in

   a. 3.011×10^{23} atoms of C

   b.   32 g of oxygen gas

   [$N_A = 6.022 \times 10^{23}$ mol^{-1} , At. Mass of O = 16 u and C = 12 u]

9. Describe the characteristics of the division Thallophyta.

10. On what basis plants and animals are divided into two different categories?

11. List the names of three diseases caused by virus stating their mode of communication in each mode.

12. A. why is making of anti-viral medicines harder than anti-bacterial medicines?

    B. how can we prevent exposure to infectious microbes?

13. Define pressure and its SI Unit. The dimensions of a metallic cuboid are 30 cm x 20 cm x15 cm and its mass is 30 kg. If the acceleration due to gravity be 10 m/sec^2, Calculate the pressure exerted by the cuboid, when it is resting on the face having sides 20cm x 15 cm on a table.

14. Water is falling on the blades of a turbine at the rate of 8 x 10^2 kg per minute, height of fall is 50m. calculate the power given to turbine. (g = 10 m/s^2)

15. Give an example in each case where work done by a force is :

    a. Zero

    b. Positive

    c. Negative

16. Manoj's Grandfather is very fond of gardening so he waters the plant in their garden everyday. Manoj asks him why does he do so. Grandfather explains him and says plant help us to derive energy from the sun as sun is the center of all energy. Manoj again ask how this is possible. Grandfather tells him how plants prepare food and store energy, which is used by us as food or fuel.

    (a) In what form do we obtain energy of the sun directly?

    (b) How does growing more plants help to derive solar energy?

    (c) What do you infer about qualities of Manoj?

17. Can an object have momentum even if its mechanical energy is zero. Explain.

18. (a) Why are the roof and walls of an auditorium /hall generally

    covered with sound absorbent materials?

    (b) The sound of ringing bell inside a vacuum chamber can't be heard. Why?

19. A silver ornament of mass 'm' gram is polished with gold equivalent to 1% of the mass of silver. Compute the ratio of the number of atoms of gold and silver in the ornament.

20. What are the causes, symptoms and the methods of prevention and control of rabies.

21. What do you mean by work? Give an example of negative work done? What is the work to be done to increase the velocity from 18km/hr to 19km/hr, if the mass of the car is 2000 Kg.

22. (a) State two factors on which the magnitude of buoyant force acting on a body immersed in a fluid depends.

(b) Will buoyant force exerted by a liquid increase, if its volume increased?

(c) Name the devices based on Archimedes principle.

23. OTBA

24. OTBA

Section B

25. Silver nitrate solution was mixed with 5g of sodium chloride solutions to verify law of conservation of mass.8.1 gram of silver chloride was formed and sodium nitrate formed was equal to half of the amount of silver nitrate solution used. What is the amount of $AgNO_3$ used and $NaNO_3$ formed.

26. Write the difference between male and female cone of Pinus?

27. The length , breadth and height of a cuboidal mass m kg are 5cm, 3 cm and 2 cm respectively. Calculate the surface area where the pressure on the floor will be more.

28. In the experiment for verification of Law of conservation of mass with barium chloride and sodium sulphate the white precipitate is of:

(a) Barium Sulphate (b) Barium chloride (c) Sodium Chloride (d) Sodium Sulfate

29. In a chemical reaction, the sum of masses of the reactants and the products remain unchanged. This is called:

   (a) Law of constant Proportions

   (b) Law of Multiple Proportions

   (c) Law of Conservation of Mass.

   (d) Dalton's Principle

30. Life span of a male mosquito is normally

   (a) 1 Month

   (b) 1 day

   (c) 2Months

   (d) 1 Week

31. Before becoming a pupa, a larva sheds skin:

   (a) 3 times

(b) 4 times

(c) 1 times

(d) 2 times

32. The earthworm belongs to group :

(a) Arthropods

(b) Echinodermata

(c) Annelida

(d) Platyhelminthes

33. Needle shaped structure in pinus plant is

(a) Leaf

(b) Shoot

(c) Stem

(d) Reproductive Part

34. Echo can be heard clearly, if the minimum distance between the source of sound and reflecting surfaces

(a) 10 Meter

(b) 12 Meter

(c) 15.2 Meter

(d) 17.2 Meter

35. If the air in the room warms up, the speed of sound

(a) Increases

(b) Remains Same

(c) Decreases

(d) Fluctuates

36. Which of the following has the highest density?

(a) Alcohol

(b) Glycerin

(c) Water

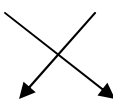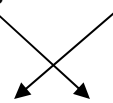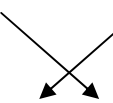(d) Sea Water

Solution

1. Neutron does not have any charge. Its mass is 1.675×10^{-27} kg.

2. Haemocoel is a psedocoel with blood. It is found in arthropods and mulluscs.

3. To find density of water

4. Its valency is one because it can gain one electron to become stable like noble gases.

5. The group of organisms which have ancient body designs and have not changed much are called "Primitive" organisms. They are different from the advanced organisms as advanced organisms are group of organisms which have acquired their particular body designs recently.

6. Air resistance depends on surface area which is more in case of sheet of paper.

7. a. NH_4^+ SO_4^{2-} b. $Mg2+$ HCO_3^- c. Ba^{2+} NO_3^-

     $(NH_4)_2$ SO_4 $Mg(HCO_3)_2$ $Ba(NO_3)_2$

8. Mole is defined as counting unit and is equal to 6.022×10^{23} atoms.

   a. number of moles of carbon= number of atoms/ 6.022×10^{23}

      = 3.011×10^{23} / 6.022×10^{23}

      = ½ = 0.5 mol

   b. number of moles of oxygen gas= given mass/ molar mass = 32/ 32 = 1 mole

9. The characteristics features of Thallophyta are :

   a. The plant body consists of individual thallus.

   b. The sex organs are single celled.

   c. After fertilization, no embryo is formed.

10. Plants and animals are put into different categories on the following basis:

    a. plants are stationary while animals are not.

    b. plants make their own food whereas animals eat plants or animals as food.

    c. plants grow indefinitely whereas animals stop growing after attaining a certain size.

    d. plant cells are surrounded by a cell wall whereas animals cells are not.

e. plant cells contain chlorophyll while animals cells do not.

11. Jaundice – Contaminated food and water

Rabies – Saliva of infected animal

AIDS – Through sexual contact, blood transfusion, contaminated needle from mother to foetus.

12. (a) Antibiotics block the bacterial process that build cell wall in bacteria. As a result, the growing bacteria become unable to make cell wall and die easily. Viruses do not have biochemical mechanisms of their own. They enter our cells and use our machinery for their life processes. Therefore making of anti viral medicine is difficult than anti bacterial medicine.

(b) We can prevent exposure to air borne microbes by providing living conditions that are not overcrowded. Exposure to water borne microbes can be prevented by providing safe drinking water. This can be done by treating the water to kill any microbial contamination. Exposure to vector-borne infections can be prevented by providing clean environments.

13. Pressure is defined as thrust per unit area. Its SI unit is pascal.(Pa)

m= 30 kg

A= 20cm x 15 cm

= 300 cm^2 = 0.03m^2

g= 10 m/s^2

P=mg/V = 30 x 10 / 0.03 = 10^4 Pa

14. h = 50 m

g= 10 m/s^2

m= 8 x 10^2 kg

t= 1 min = 60 s

Power= W/t = mgh /t = 8 x 10^2 x 10 x 50/ 60 = 6.67 x 10^3 W

15. a. work done by gravity on a rolling ball.

b. hitting a stationary ball.

c. work done by a friction of a rolling ball.

16. a. Heat and light

b. Plants store energy in the form of ATP's which is used as food (directly or indirectly) or fuel (in the form of fossil fuels).

c. Manoj is curious, inquisitive and courageous to ask questions.

17. Yes, when the object is thrown up, P.E (in the form of mechanical energy) is non-zero at the highest point of a projectile, even if kinetic is zero due to zero velocity.

18. a. If absorbent materials are absent there will be multiple echoes due to which sound cannot be heard clearly.

   b. Sound waves are mechanical waves and cannot pass through vaccum.

19. Mass of silver in the ornament =m gram

   Mass of gold in the ornament =m x 1/100 = 0.01 m gram

   108 g of Ag contains 6.022 x 10^{23} atoms

   M gram of Ag Contains (6.022 x 10^{23}/108)x m

   $\qquad$ m/108 x 6.022 x 10^{23}

   197 g of Au contains 6.022 x 10^{23} atoms

   m/100 g of Au contains (6.022 x 10^{23}/197) x m/100 atoms

   ratio of number of atoms of gold and silver = Au : Ag

   $\qquad$ = (6.022 x 10^{23}/197) x m/100 : (6.022 x 10^{23} x m)/108

   $\qquad$ = 108 : 19700 = 1:182.41

20. Cause: Rabies is a viral disease caused by rabies virus, present in the saliva of the infected animal, particularly Dog.

   Symptoms :

   (a)   Severe Headache

   (b)   Painful Contraction of muscles of throat and chest.

   (c)   High fever and restlessness.

   (d)   Difficulty in taking even liquid food.

   Prevention:

   (a)   Wound caused after the bite should be immediately washed with carbolic soap and clean water and antiseptic medicine should be applied. Then a doctor should be soon consulted.

   (b)   All dogs, cats and pet dogs in the neighborhood should be immunised.

   (c)   The rabies animal showing excessive salivation and seeking isolation must be killed.

   Control: A course of five anti-rabies vaccines are prescribed at an interval of 0-3-7-14-30 days of dog bite. This is called Pasteur's treatment.

21. Work is said to be done when a force applied on an object moves it in its own direction.

   Example of negative work- When a body is sliding on a surface, work done by force of friction is negative.

   m = 2000 Kg

   u= 18 Km/hr

v= 90Km/hr

  = (18 x 5/18) m/s= 5 m/s

v= (90 x 5/18)= 25 m/s

Work done to increase velocity,

W= ½ m(v²-u²)

  =1/2 x 2000 (25² – 5²)

  = 1000 (625-25) = 6 x 10⁵ J

22. (a) Buoyant force = Weight of liquid displaced

         = (Volume immersed) x (Density of liquid) x (acceleration due to gravity)

         So, density of liquid and volume immersed affect buoyant force.

         Buoyant force exerted by liquid does not depend upon its volume.

    (B) Hydrometer and lactometer are based on Archimedes' principle. Submarines are also
         designed according to Archimedes' principle.

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25. Let mass of AgNO3 used be x.

    Mass of NaNO3 formed will be x/2

    Mass of reactants= mass of products

    x+ 5 = 8.1 + x/2

    x/2 = 3.1

    x = 6.10g

    mass of AgNO$_3$ used = 6.10 g

    mass of NaNO$_3$ used = 6.10/2 = 3.05 g

26. Female cones are:

    Large and woody

    Male cones are:

    Smaller and tender

27. (3 x 2) cm² Pressure is inversely area. If area is less , pressure is more.

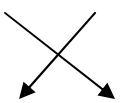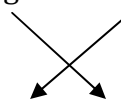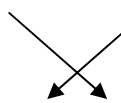| 28. a	31. b	34. d
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