

O. P. JINDAL SCHOOL, SAVITRI NAGAR
ANNUAL EXAMINATION (2022 – 2023)
SAMPLE PAPER

Subject: Science
Class : IX

MM: 80
Time:3 Hrs.

(Fifteen minutes extra will be given for reading the question paper.)

General Instructions:

- This question paper consists of 39 questions in 5 sections.
 - All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
 - Section A consists of 20 objective type questions carrying 1 mark each.
 - Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
 - Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words
 - Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
 - Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.
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Section A

Q1. Wave transfers a physical quantity X from one place to other, where X is

- (a) mass (b) energy
(c) density (d) velocity

Q2. If a particle moves with a constant speed, the distance - time graph is

- (a) A straight line (b) A circle
(c) A staircase - like line (d) A polygon.

Q3. Seema visited a Natural Gas Compressing Unit and found that the gas can be liquefied under specific conditions of temperature and pressure. While sharing her experience with friends she got confused. Help her to identify the correct set of conditions.

- (a) Low temperature, low pressure (b) High temperature, low pressure
(c) Low temperature, high pressure (d) High temperature, high pressure

Q4 The ion of an element has 3 positive charges. Mass number of the atom is 27 and the number of neutrons are 14. What is the number of electrons in the ion?

- (a) 13 (b) 10
(c) 14 (d) 16

Q5. Cell wall of fungi is made up of

- (a) Cellulose (b) Chitin
(c) Pectin (d) All of these

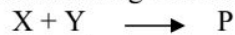
Q6. Which of the following plastids imparts red colour to pomegranate?

- (a) Chloroplast (b) Chloroplast
(c) Amyloplast (d) Leucoplast

Q7. Parenchyma cells are

- (a) Relatively unspecified and thin walled (b) Thick-walled and specialized
(c) Lignified (d) None of the above

Q8. Two chemicals X and Y combine together to form a product P which contains both X and Y, X and Y cannot be broken down into simpler substances by simple chemical reactions. Which of the following concerning the species X, Y and P are correct?



- (i) P is a compound (ii) X and Y are compounds
(iii) X and Y are elements (iv) P has a fixed composition
(a) (i), (ii) and (iii) (b) (i), (ii) and (iv)
(c) (ii), (iii) and (iv) (d) (i), (iii) and (iv)

Q9. Which of the following helps in repair of tissue and fills up the space inside the organ ?

- (a) Tendon (b) Adipose tissue
(c) Areolar (d) Cartilage

Q10. Which type of honeybees are useful for apiary industries in India?

- (a) Apis florae (b) Apis mellifera
(c) Apis dorsata (d) Apis indica

Q11. The change in the momentum of a body is 0.01 s is 10 kg^{-1} . The force acting on this body is:

- (a) 20 N (b) 0.1 N
(c) 100 N (d) 1000 N

Q12. Which one of the following fishes is surface feeder ?

- (a) Rohu (b) Mrigals
(c) Common carps (d) Catlas

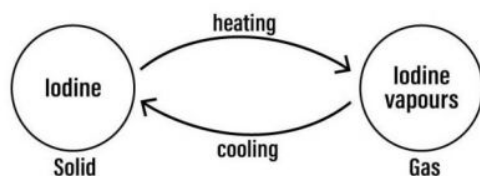
Q13. In case of negative work done the angle between force and displacement is

- (a) 0° (b) 90°
(c) 180° (d) 45°

Q14. The atomic number of calcium and argon are 20 and 18 respectively, but the mass number of both these elements is 40. What is the name given to such a pair of elements?

- (a) Isotopes (b) Isotones
(c) Isobars (d) Isoelectronic

Q15. Given figure represents the process of:



- (a) Fractional distillation (b) filtration
(c) condensation (d) sublimation

Q16. Foam is the example of

- (a) Suspension (b) Colloids
(c) Saturated solution (d) Unsaturated solutions

Note: Questions 17 to 20 consist of two statements – Assertion (A) and Reason (R).

Answer these Questions selecting the appropriate option given below:

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true

Q17. Assertion : The Tyndall effect can be observed when sunlight passes through the canopy of dense forest.

Reason: In the forest, mist contains tiny droplets of water, which act as particles of colloid dispersed in air.

Q18. Assertion: A tiger can accelerate from rest at the rate of 4 m/s^2 .

Reason: The velocity attained by it in 10s is 40 m/s.

Q19. Assertion: Legume crops do not require nitrogenous fertilizers.

Reason: Nitrogen- fixing bacterium is present in leguminous roots.

Q20. Assertion: An object may acquire acceleration even if it is moving at a constant speed.

Reason: With change in the direction of motion, an object can acquire acceleration.

Section B (2 Marks Questions)

Q21. (i) Name the process in which diffusion takes place through a semi permeable membrane.

(ii) What is the function of cellulose in plant cell ?

OR

(i) Why does plant cell possess large –sized vacuoles?

(ii) Why lysosome are known as ‘scavengers of the cell’?

Q22. A certain household has consumed 250 units of energy during a month. How much energy is this in joules?

OR

A horse pulls a cart with a force of 300 N, such that the system of horse and cart moves with uniform speed of 18 kmh^{-1} on a level road. Calculate the power developed by the horse in watt and also find its equivalent horse power. (Take $1 \text{ hp} = 746 \text{ W}$)

Q23. Which wave property determines: (a) loudness, (b) pitch?

Q24. What happens when

(i) Buoyant force exerted by the fluid is less than the weight of the body.

(ii) Buoyant force exerted by the fluid is equal to the weight of the body.

OR

(i) List the factors on which buoyant force depends.

(ii) Find the pressure, when a thrust of 20 N is applied on the surface area 10 m^2 .

Q25. (i) The relative atomic mass of oxygen atom is 16. Explain its meaning.

(ii) Write the molecular mass of Calcium sulphate.

Q26. What information do you get from the table about the atomic number, mass number, valency and symbols of atoms X, Y and Z? Give your answer in a tabular form.

symbol	proton	neutron
X	7	7
Y	11	12
Z	8	8

OR

- (i) One electron is present in the outermost shell of the atom of an element X with atomic number 11. What would be the nature and value of charge on the ion formed if this electron is removed from the outermost shell?
- (ii) Write down the electron distribution of chlorine atom. How many electrons are there in the L-shell? (Atomic number of chlorine is = 17)

Section- C

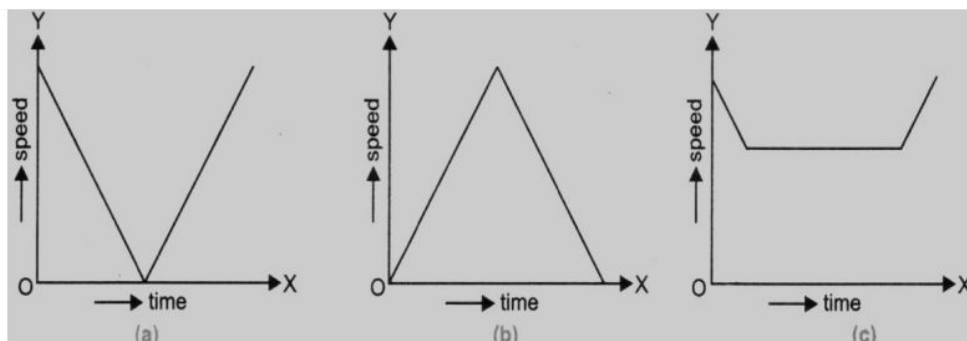
- Q27.(i)** Suresh's mother mixed oil and water in kitchen by mistake. Suresh told her that he can separate the mixture. Name the technique used by Suresh and explain how he will do. write the principle of this technique.
- (ii)** A solution contains 40 g of salt dissolved in 240 g of solution .calculate the mass percentage concentration of of the solution..
- Q28.(i)** We can easily move our hand in air but to do the same through a solid block of wood we need a karate expert. Give reason.
- (ii)** Out of boiling and evaporation, which is a surface phenomenon? Explain.
- (iii)** Why do we get the smell of perfume sitting several meters away? Explain.

OR

Questions (i) to (iv) are based on the Table .Study this table related to melting points and boiling points of different substances and answer the following questions.

Name of the components	Boiling point $^{\circ}\text{C}$	Melting point $^{\circ}\text{C}$
CO_2	-57	-78
Ethanol	78.4	-144
water	100	0
Glycerol	290	17.8

- (i) Name the substances from Table A that we cannot find in liquid state at room temperature (25°C)
- (ii) We are heating a bowl of water and a bowl of ethanol separately. We start from the same temperature and heat them on a similar kind of flame. Which bowl will get empty first?
- (iii) What does the melting point of a solid indicate?
- Q29.** Name the organelle of the cell, which has membrane –bound sac filled with powerful. Digestive enzymes. Write any four common functions it performs inside the cell.
- Q30.** List any six characteristics of parenchyma.
- Q31.(i)** Which graph represents the case of a ball thrown vertically upwards and returning to the hand of the thrower?



(ii) A train starting from a railway station and moving with uniform acceleration attains a speed 40 km h^{-1} in 10 minutes. Find its acceleration.

Q32. Gravitational force on the surface of the moon is only $\frac{1}{6}$ as strong as gravitational force on the earth. What is the weight and mass in of a 10 kg object on the moon and on the earth?

Q33. What is manure? State two advantages of using manure. How does green manure differ from ordinary manure ?

Section D

Q34. (i) Find out the valency of the atoms with atomic number 15 and 19.

(ii) Why do Helium, Neon and Argon have a zero valence?

(iii) The average atomic mass of a sample of copper is **63.5 u**. What are the percentages of isotopes $^{63}_{29}\text{Cu}$ and $^{65}_{29}\text{Cu}$ in the sample?

OR

(i) In the atom of an element X, 6 electrons are present in the outermost shell. If it acquires noble gas configuration by accepting requisite number of electrons, then what would be the charge on the ion so formed? Explain.

(ii) Is it possible for the atom of an element to have one electron, one proton and no neutron. If so, name the element.

(iii) The number of electrons in an element X is 15 and the number of neutrons is 16. Draw atomic structure for the atom and write symbol of the element.

Q35. (i) Describe three functions of protective tissue in plants.

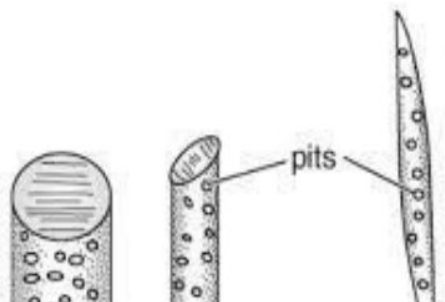
(ii) Name the type of epithelium present in respiratory tract. What is its specialization.

OR

(i) Write a note about structure and significance of striated muscle with diagram.

(ii) (a) Identify the given figures.

(b) Mention the role performed by these two in plant body.



Q36.(i) Explain why is it difficult for a fireman to hold a hose which ejects large amounts of water at a high velocity.

(ii) From a rifle of mass 4 kg, a bullet of mass 50 g is fired with initial velocity of 35 ms^{-1} . Calculate the initial recoil velocity of the rifle.

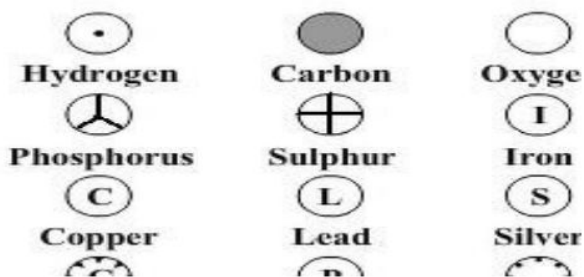
OR

(i) Explain why is it advised to tie any luggage kept on the roof of a bus with a rope?

(ii) A force of 10 N acts on masses m_1 and m_2 to accelerate them by 2 m/s^2 and 4 m/s^2 . If they are tied together, find the acceleration.

Section E

Q37. John Dalton was the first scientist to introduce symbols for the elements. Modern symbols were given by J.J. Berzelius. A symbol in general may be defined as short hand representation of the name of an element.



(i) How do symbols help in identifying elements in compounds?

(ii) Do we use symbols in daily life?

(iii) What values do you find for using symbols?

OR

(iii) Write symbols of elements boron and sulphur.

Q38. Work done by force acting on an object is equal to the magnitude of the force multiplied by the distance moved in the direction of the force. Work has only magnitude and no direction. Work done is negative when the force acts opposite to the direction of displacement. Work done is positive when the force is in the direction of displacement. The unit of work is newton-metre (N m) or joule (J).

- (i) Is work done by a force vector or scalar?
- (ii) When work done is said to be positive?
- (iii) Write the SI unit of work.
- (iv) What are two conditions when work done is zero?

Q39. Every cell has at least three features, i.e. plasma membrane, nucleus and cytoplasm. All the activities inside the cell and interactions of the cell with its environment are possible due to these features. Plasma membrane is the outermost covering of the cell that separates the contents of the cell from its external environment. It allows entry and exit of some materials in and out of the cell. The nucleus is the dense and spherical organelle. It plays a central role in cellular reproduction. It controls all the metabolic activities of the cell. The cytoplasm is a jelly-like, colourless semi-fluid substance inside plasma membrane. It contains specialized cell organelles.

- (i) What is the function of plasma membrane ?
- (ii) How plasma membrane is formed ?
- (iii) What is nucleus ? Write its functions.

OR

- (iii) What is cytoplasm ? Write its functions.
