CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-1

Time : 3 Hours **Maximum Marks : 80**

General Instructions :

(i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
(ii) All questions are compulsory.
(iii) Internal choice is given in each sections.
(iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
(v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
(vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
(vii) This question paper consists of a total of 30 questions.

SECTION - A

DIRECTION : For question numbers 1 and 2, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :

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

Q1. **Assertion (A) :** The particles of a solution are smaller than 1 nm (10^{-9} metre) in diameter [1]
Reason (R) : Solution can scatter a beam of light passing through it

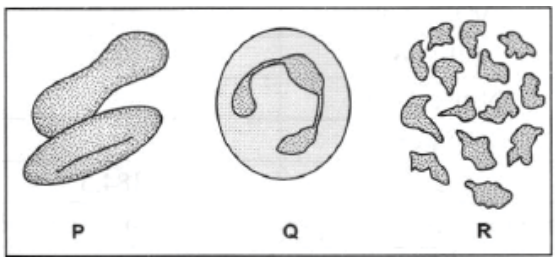
Q2. **Assertion (A) :** In solids, molecules are tightly packed. [1]
Reason (R) : Force of attraction between molecules in solids is very weak.

Q3. Which soil is derived from basaltic rock ? [1]
(a) Red soil (b) Black soil
(c) Laterite soil (d) Both A and C

Q4. A ball is rolling down a slope at a steady speed. Which of the following statements is correct ? [1]
(a) Frictional force is greater than the forward force.
(b) There is an unbalanced force downwards.
(c) There are no forces acting on the ball.
(d) The forces acting on the ball are balanced.

Q5. What does the area of a velocity—time graph give ? [1]
(a) Distance (b) Acceleration
(c) Displacement (d) None of these

Q6. Which of the following is/are true about P, Q and R ? [1]



(a) P-transports food, Q-develops immunity, R-clots blood.
(b) P-transports carbon dioxide, Q-produces antibodies, R-clots blood.
(c) P-transports bacteria, Q-eats foreign material, R-clots blood.
(d) P-transports oxygen, Q-kills bacteria, R-clots blood.

Q7. The electrons present in the outermost shell are called [1]
(a) Valency electrons (b) Octet electrons
(c) Duplet electrons (d) Valence electrons

OR

The nucleons are
(a) Protons and electrons (b) Neutrons and electrons
(c) Protons and neutrons (d) None of these

Q8. What is the alternate name for Apis cerana indica ? [1]
(a) Indian bee (b) Indian buffalo
(c) Indian cow (d) None of these

Q9. Which of the following is true for two bodies separated by some distance ? [1]
(a) When the distance between them is halved, gravitational force becomes 4 times.
(b) When one of the mass becomes halved, gravitational force becomes halved.
(c) When the distance between them is increased four times, gravitational force becomes 1/16 times.
(d) All of the above.

OR

First man who came up with idea of gravity was
(a) Henry Briggs (b) Isaac Newton
(c) John Napier (d) Jobst Burgi

Q10. Name the disease that affects our lungs. [1]
(a) AIDS (b) Rabies
(c) Polio (d) Tuberculosis

OR

Penicillin is capable of one of the following. Which one ?
(a) Interfere in the biological pathway of bacteria.
(b) An antibiotic that can kill bacteria.
(c) Both A and B
(d) None of these

Q11. Define one watt of power. [1]

Q12. 1 carat of diamond is equal to ..... [1]

Q13. Questions 13.1-13.4 are based on the Table A and Table B. Study these tables related to boiling points of different substances and humidity and answer the following questions.

Table A : Boiling points of different substances

Substance	**Boiling point (°C)**
Methanol	64.7
Ethanol	78.4
Nitric Acid	83
Water	100
Iodine	184.3

Table B : Humidity percentage in three situations

	Humidity (%)
Situation A	>75

	Humidity (%)
Situation B	50 – 75
Situation C	<50

13.1 Refer Table B and find out in which situation a bowl of water will evaporate away the fastest and in which situation the slowest. [1]

13.2 A bowl of water and a bowl of ethanol are kept inside a room. Which bowl will get empty first? [1]

13.3 "Evaporation is a surface phenomenon." Explain. [1]

13.4 Refer Table A and Table B and find in which situation out of the following, the substance will evaporate the fastest. [1]

(a) Methanol in situation C (b) Iodine in situation A

(c) Nitric acid in situation A (d) Iodine in situation C

Q14. Read the passage and answer the following questions.
Rohan has a brother who is an athlete. One day Rohan had gone to see his brother in a racing competition. The race starts and after sometime, Rohan sees his brother in pain and not able to run properly. He sees that the doctor immediately applies ice on his knees.

14.1 Rohan is confused as to why the doctor is applying ice on his brother's knees. Can you clear his confusion by stating an appropriate reason ? [1]

14.2 State one function of a skeletal connective tissue. [1]

14.3 What is ligament? [1]

14.4 What values are shown by Rohan ? [1]

SECTION -B

Q15. A body starts from rest and moves with a uniform acceleration of 2 $\mathrm{m/s^2}$- until it travels a distance of 625 m. Find its velocity. [3]

Q16. (a) The smell of hot sizzling food reaches you several meters away, but to smell the cold food you have to go close. Why?
(b) After rains, the rain drops dry away easily on a sunny day or on a cloudy day? Give reasons. [3]

Q17. Draw a neat diagram of the section of the tissue that is responsible for the translocation of food from the leaves to the different parts of the plant. [3]

Q18. (a) Why does a passenger jumping out of a rapidly moving bus fall forward with his face downwards?
(b) Why is it difficult for a fireman to hose, which ejects large amount of water at a high velocity? [3]

OR

Which of the following has more inertia:
(a) A rubber or a stone of the same size?
(b) A bicycle or a train?
(c) A five-rupee coin or a one-rupee coin?

Q19. Name three basic scientific approaches for increasing the yield of a crop. [3]

Q20. What are the properties of a periodic table? [3]

OR

Define ionization energy and electron affinity.

Q21. (a) The mass of the body on earth is 60kg, what is its weight on the earth and on moon ? [3]
(b) How is the weight of an object related to its mass ?

Q22. What is classification? What is the need for classification? What is the basis of classification ? [3]

OR

Describe the general characteristics of gymnosperms.

Q23. (a) What amount of energy in kWh is consumed in 10 h by a machine of power 500 W? [3]
(b) An archer stretches the string of his bow to shoot an arrow. Name :
(i) The type of energy he uses in the process.
(ii) The type of energy into which it is converted.
(iii) The energy transformation taking place when the arrow is shot.
(c) If a body is thrown vertically upward, its velocity goes on decreasing. What happens to its kinetic energy when it stops at the top and its velocity becomes zero ?

Q24. What are the main functional regions of a cell? Explain with the help of diagram. [3]

SECTION -C

Q25. (a) How can ultrasound be used to detect the defects in a metal block ? [5]
(b) What is reverberation and what is done to reduce it ?

OR

Sound requires a medium to travel. Justify experimentally.

Q26. Describe an activity that rate of intermixing depends upon the forces of attraction between the particles. [5]

Q27. Explain in detail what do you know about the structure of nucleus. [5]

OR

What are lysosomes and centrosomes? Write their function.

Q28. An 8000 kg engine pulls a train of 5 wagons, each of 2000 kg along with a horizontal track. If the engine exerts a force of 40000 N and the track offers a friction force of 5000 N, then calculate : [5]
(a) The net accelerating force
(b) The acceleration of the train
(c) The force of wagon 1 on wagon 2.

Q29. (a) Explain with examples. [5]
(i) Mono atomic molecules
(ii) Diatomic molecules
(iii) Triatomic molecules
(iv) Polyatomic molecules
(b) What is formula unit of mass? How is it different from molecular mass ?

OR

Which has more number of atoms, 100 grams of sodium or 100 grams of iron (given, atomic mass of Na = 23 u, Fe = 56 u) ?

Q30. Describe the water cycle with the help of a diagram. [5]

CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-2

Time : 3 Hours **Maximum Marks : 80**

General Instructions :

(i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
(ii) All questions are compulsory.
(iii) Internal choice is given in each sections.
(iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
(v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
(vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
(vii) This question paper consists of a total of 30 questions.

SECTION - A

Q1. When a body is stationary : [1]
(a) There is no force acting on it.
(b) The force acting on it is not in contact with it.
(c) The combination of forces acting on it balances each other.
(d) The body is in vacuum.

OR

A ball is rolling down a slope at a steady speed. Which of the following statements is correct?
(a) Frictional force is greater than the forward force.
(b) There is an unbalanced force downwards.
(c) There are no forces acting on the ball.
(d) The forces acting on the ball are balanced.

Q2. A 1 kg mass falls from a height of 10 m into a sand box. What is the speed of the mass just before hitting the sand box? If it travels a distance of 2 cm into the sand before coming to rest, what is the average retarding force? [1]
(a) 12 ms^{-1} and 3600 N (b) 14 ms^{-1} and 4900 N
(c) 16 ms^{-1} and 6400 N (d) 18 ms^{-1} and 8100 N

Q3. What does the mass number of an atom represent? [1]
(a) Only the number of protons.
(b) The sum of protons and neutrons.
(c) The sum of protons and electrons.
(d) Only the number of neutrons.

Q4. If the distance between two bodies is increased by 25%, then the % change in the gravitational force is : [1]
(a) Decreases by 36% (b) Increases by 36%
(c) Increases by 64% (d) Decreases by 64%

Q5. Which one of the following is a liquid non-metal? [1]
(a) Gallium (b) Bromine
(c) Lead (d) Hydrogen

Q6. Which of the following are negative effects on the environment from the excessive use of fertilizers in a farm situated near a lake? [1]
(a) Decreased oxygen content in the water.

(b) Decreased light penetration in the water.
(c) Decreased population of aquatic organisms.
(d) All of these.

OR

Which is a desirable characteristic in poultry?
(a) Low maintenance requirements.
(b) Reduced quality of chicken.
(c) Low tolerance to high temperature.
(d) Large size of the egg laying bird.

DIRECTION : For question numbers 7 and 8, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :

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

Q7. **Assertion (A) :** Plasma membrane is a selectively permeable membrane. [1]
Reason (R) : Plasma membrane allows entry and exit of substance from cell through the process of diffusion.

Q8. **Assertion (A) :** The growth of plants occurs only in certain specific regions. [1]
Reason (R) : Meristematic tissue is located only at certain points in a plant.

Q9. The period of revolution of a certain planet in an orbit of radius R is T. Its period of revolution in an orbit of radius 4R will be : [1]
(a) 2 T (b) 22 $\sqrt{T}$
(c) 4 T (d) 8 T

Q10. The HIV viruses spread from an infected person to a healthy person by ..... [1]
(a) Blood transfusion (b) Sexual intercourse
(c) Placental transfusion (d) All of the above

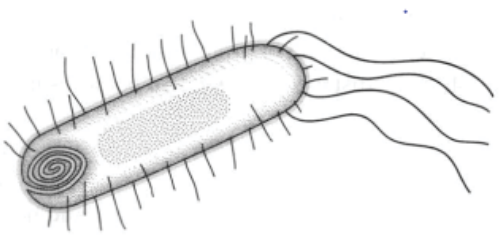
OR

HIV virus attacks one of the following cells in our body. Which one?
(a) Red blood cells (b) White blood cells
(c) Liver cell (d) None of the above

Q11. What are the two laws of chemical combination? [1]

Q12. Why do bicycles begin to slow down when we stop pedalling? [1]

Q13. Answer question numbers 13.1–13.4 on the basis of your understanding of the following paragraph and the related studied concepts. [1]
Mohan had a biology practical exam. The biology laboratory in his school had lots of microscopes of different precision. When he reached the laboratory, he found that many microscopes were already mounted with a slide. Just for fun, he went and looked at a slide through the microscope and found the above image. He wasn't able to identify the organism or type of organism, so he called his friend Shyam to look at the slide. Shyam found out immediately what kind of organism this was.



13.1 What is this organism? [1]

13.2 How did Shyam find out the kind of organism? [1]

13.3 Give two examples of such kind of organisms. [1]

13.4 What should a person ensure before looking at a slide through a microscope? [1]

Q14. Questions 14.1 to 14.4 are based on the Table A. Study this table related to melting points and boiling points of different substances and answer the following questions. [1]

Table : A

Component name	Boiling point (°C)	Melting point (°C)
Carbon dioxide	-57	-78
Propane	-42	-188
Ethanol	78.4	-114
Water	100	0
Glycerol	290	17.8

14.1 Name the substances from Table A that we can find in liquid state at room temperature (25 °C) [1]

14.2 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? [1]

14.3 What does the melting point of a solid indicate? [1]

14.4 Glycerol is heated from 0 °C to 50 °C. When the temperature reaches 17.8 °C, the temperature remains constant for a while and only after some time, it starts to increase again. Why? [1]

SECTION - B

Q15. When a body covers equal distances in equal time intervals, its velocity can be variable. Explain giving an example. [3]

Q16. 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. Draw the diagram and write the principle of this technique. [3]

Q17. Draw well labelled diagrams of various types of muscles found in human body. [3]

Q18. (a) A body of mass 9 kg is lying on a surface of table. Calculate the net force acting on it. [3]
(b) Do all action and reaction forces produce acceleration of equal magnitudes in both objects? Why or why not?
(c) A balloon is inflated and released. Whv does it fly forward as air escapes out of it?

OR

Explain the process of rocket propulsion in the light of Newton's third law of motion.

Q19. List some adaptations of reptiles towards terrestrial mode of life. [3]

Q20. Define force. What are the various types of forces? Mention at least four. [3]

OR

Why does a block of wood released under water come up to the surface of water?

Q21. Explain in details the structure of nucleus with the help of a diagram. [3]

Q22. Comment on the following statements: [3]
(a) Rate of evaporation of an aqueous solution decreases with increase in humidity.
(b) Evaporation produces cooling.
(c) Conversion of solid state to liquid state is called fusion. What is meant by latent heat of fusion?

OR

(a) Which gas is supplied to hospitals in cylinders for artificial respiration?
(b) What does the diffusion of gases tell us about their particles?
(c) Why do liquids easily flow?

Q23. A car travels at 54 km/h for first 20s, 36 km/h for next 30 s and finally 18 km/h for next 10 s. Find its average speed. [3]

Q24. What are the main practices involved in keeping of animals or animal husbandry? [3]

SECTION - C

Q25. (a) Force necessary to change the momentum of an object depends on the time rate at which momentum is changed." Discuss with an example.
(b) What would be the force required to produce an acceleration of 4 m/s2 on a body of mass 12 kg? [5]

OR

State which of the following situations are possible and give an example for each of these.
(a) An object with acceleration but with zero velocity.
(b) An object moving in a certain direction with an acceleration in the perpendicular direction.

Q26. (a) List any four properties of a colloid and mention any two properties in which colloids differ from suspension.
(b) Why does solution of sodium chloride not show tyndall effect whereas the mixture of water and milk shows?
(c) Write one difference between concentration and solubility? [5]

Q27. Why is mitochondria called 'powerhouse of cell'? Give three similarities and one difference between mitochondria and plastid. [5]

OR

Correlate the structure and location with the function in case of:
(a) Simple squamous epithelium
(b) Columnar epithelium

Q28. Describe the water cycle with the help of a diagram. [5]

Q29. (a) What was missing in Thomson's model of the atom?
(b) Write any two observations of Rutherford's model of atom. [5]

OR

(a) Why does an atom of argon have zero valency? Explain using the electronic configuration of argon.
(b) Define valency by taking the examples of magnesium (At. No. = 12) and oxygen (At. No. = 8).
(c) With the help of schematic representation of atomic structure of magnesium and sulphur, explain how electrons are distributed in different orbits.

Q30. (a) A stone is allowed to fall from a tower of height 200 m and at the same time another stone is projected vertically upwards from the ground at a velocity of 20 m/s. Calculate when and where the stones will meet.
(b) The walls of your classroom are in motion but appear stationary. Explain [5]

CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-3

Time : 3 Hours **Maximum Marks : 80**

General Instructions :

(i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
(ii) All questions are compulsory.
(iii) Internal choice is given in each sections.
(iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
(v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
(vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
(vii) This question paper consists of a total of 30 questions.

SECTION - A

Q1. What is the ultimate source of energy in an ecosystem? [1]

Q2. Which of the following method is used to separate a mixture of salt and camphor? [1]
(a) Distillation (b) Filtration
(c) Sublimation (d) Centrifugation

Q3. Which of the following organisms has tube feet as its locomotory organs? [1]
(a) Starfish (b) Jellyfish
(c) Cuttlefish (d) Silver fish

OR

Pteridophyta do not have :
(a) Root (b) Stem
(c) Flowers (d) Leaves

Q4. Why can't solids be compressed? [1]
(a) The movement of the constituent particles are not restricted.
(b) The inter particle attractive forces are very weak.
(c) The constituent particles are closely packed.
(d) None of the above.

Q5. The valency of silicon is [1]
(a) 2 (b) 4
(c) 6 (d) 8

OR

The isotope deuterium of hydrogen has :
(a) No neutrons and one proton
(b) One neutrons and two protons
(c) One electron and two neutron
(d) One proton and one neutron

Q6. Cell wall is mainly composed of [1]
(a) Glucose (b) Fructose
(c) Sucrose (d) Cellulose

Q7. Which is not true with respect to cathode rays ? [1]
(a) A stream of electrons.
(b) Charged particles
(c) Move with same speed as that of light.
(d) Can be deflected by magnetic field

Q8. Rohu and Catla are types of : [1]
(a) Marine water fish (b) Freshwater fish
(c) Both A and B (d) None of these

Q9. Barometer is an instrument that is used to measure : [1]
(a) Velocity (b) Gaseous pressure
(c) Atmospheric Pressure (d) Temperature

OR

Air shows the property of :
(a) N_2 (b) O_2
(c) Both (a) and (b) (d) None of these

DIRECTION : For question numbers 10 and 11, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below

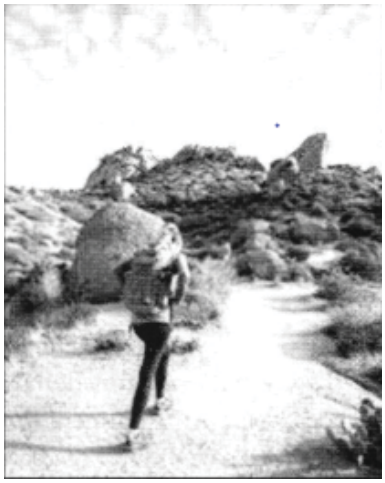
(a) Both A and R are true and R is correct explanation of the A.
(b) Both A and R are true but R is not the correct explanation of the A.
(c) A is true but R is false.
(d) Both A and R are false.

Q10. **Assertion (A) :** The value of acceleration due to gravity of earth does not depend upon mass of the body.
Reason (R) : Acceleration due to gravity is a constant quantity. [1]

Q11. **Assertion (A) :** The smell of incense can be felt in another room.
Reason (R) : With the increase in temperature of particles, their kinetic energy also increases. [1]

Q12. Write the molecular formula for following compounds: [1]
(a) Hydrogen sulphide (b) Calcium hydroxide

Q13. Answer question numbers 13.1–13.4 on the basis of your understanding of the following paragraph and the related studied concepts.
Sneha visited Egypt with her parents where she went on a tour of the Sahara desert. She didn't know that plants can grow also in the desert. She went and tore a leaf from one plant but they were very thick. When she was finally able to tear one small part, she found that the inside of the leaf was fresh and watery.



13.1 Why are the leaves of plants that grow in desert thick ? [1]

13.2 Sneha sees that there is a waxy coating on the epidermis of the leaf. What is the name of this coating and what is its function ? [1]

13.3 Define transpiration. [1]

13.4 Should Sneha be careful while touching a plant that grows in the deserts ? [1]

Q14. Questions 14.1 to 14.4 are based on the Table A. Study this table and answer the following questions :

Table A

Distance (m)	Height above the base of the mountain (m)	Uniform speed (m/s)
0-500	100	2
500-2000	250	3
2000-4000	450	1.5
4000-5000	500	0.5

Alok is travelling to Vaishnodevi on foot. He starts from the base of the mountain and the temple is at a distance of 5 km from the base and at a vertical height of 500 m. He also notes his uniform speed, distance and height from the base at regular intervals (shown in table). Alok weighs 50 kg.

14.1 Find the kinetic energy in the 500-2000 interval. [1]

14.2 Find his potential energy at the end of 2000-4000 interval. [1]

14.3 How much work has Alok done against the gravity when he reaches the summit? [1]

14.4 State the law of conservation of energy. [1]

SECTION -B

Q15. (a) Why does a passenger jumping out of a rapidly moving bus fall forward with his face downwards ?
(b) Why is it difficult for a fireman to hose, which ejects large amount of water at a high velocity ? [3]

Q16. Define isotopes and isobars and also give examples. [3]

Q17. Classify the kind of manures based on the kind of biological material used. [3]

Q18. A mass of 10 kg is at a point A on the table. It is moved to a point B. If the line joining A and B is horizontal, what is the work done on the object by the gravitational force? Explain your answer. [3]

OR

Ashish had a pain in his ear as he pricked it with a pin. He then goes to the doctor; the doctor advised we should take proper care of our ears and protect them from damage. Read the above passage and answer the following questions :
(a) Why we must not prick with hard and pointed things inside our ears ?
(b) What values you have learnt from the given passage ?

Q19. Define : [3]
(a) Bilateral symmetry,
(b) Coelom, and
(c) Triptoblastic.

Q20. (a) Birds and mammals share one common feature. Give details.
(b) Name the phylum in which animals has soft bodies covered with a hard shell.
(c) Ingestion of solid food occurs in which type of nutrition ? [3]

OR

(a) Which structure is found in plant cells but absent in animal cell ?
(b) What is the functional segment of DNA ?
(c) Name the pigment that imparts red and yellow colour to flowers.

Q21. What are the differences between the mass of an object and its weight ? [3]

Q22. (a) What is the combining capacity of an element called ?
(b) How many moles does 24 g of Mg contain ?
(c) What is the difference between sodium atom and sodium ion ? [3]

OR

Convert into mole :
(a) 20 g of water (Atomic masses of hydrogen and oxygen are 1 and 16 respectively).
(b) 22 g of carbon dioxide (Atomic masses of carbon and oxygen are 12 and 16 respectively).

Q23. What is SONAR? Write two uses of SONAR technique. [3]

Q24. Describe the way Amoeba consumes its food with the help of diagrams. [3]

SECTION -C

Q25. (a) A. truck starts from rest and rolls down the hill with constant acceleration. It travels a distance of 500 m in 25 seconds. Find the force acting on it if its mass is 6 metric tons.
(b) State Kepler's law of planetary motion. [5]

OR

(a) (i) Seema buys few grains of gold at the poles as per the instruction of one of her friends. She hands over the same when she meets her at the equator. Will the friend agree with the weight of gold bought? If not, why ?
(ii) If the moon attracts the earth, why does the earth not move towards the moon ?
(b) Sound requires a medium to travel. Justify experimentally.

Q26. (a) What was Thomson's model of an atom ?
(b) Write any two observations of Rutherford's model of atom. [5]

Q27. What are the different aspects of maintaining a good health ? [5]

OR

What are the limitations in the approach of treating the infectious diseases ? Also mention the principles of prevention.

Q28. Draw the diagram of a plant cell. Label all the important parts and write a short definition of each part. [5]

Q29. Iron filings and sulphur were mixed together and divided into two parts, A and B. Part A was heated strongly while part B was not heated. Dilute hydrochloric acid was added to both the parts and evolution of gas was seen in both the cases. How will you identify the gases evolved? [5]

OR

(a) While diluting a solution of salt in water, a student by mistake added acetone (boiling point 56°C).What technique can be employed to get back the acetone? Justify your choice.
(b) Rohit mixed starch with water, boiled the mixture well and stirred it. What did he observe ?
(c) What name is given to process of rusting of an article made up of iron and what type of change is it?

Q30. A 2000 kg car is moving at 25 m/s when brakes are applied. If the average force exerted by the brakes is 5000 N, find the distance travelled by the car before it comes to rest? [5]

CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-4

Time : 3 Hours **Maximum Marks : 80**

General Instructions :

(i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
(ii) All questions are compulsory.
(iii) Internal choice is given in each sections.
(iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
(v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
(vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
(vii) This question paper consists of a total of 30 questions.

SECTION -A

Q1. Which of the following solution scatter light ? [1]
(a) Suspension (b) Colloidal solution
(c) Both (a) and (b) (d) None of them

DIRECTION : For question numbers 2 and 3, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below

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

Q2. Assertion (A) : A body thrown vertically up with a velocity u reaches the maximum height h after T seconds. At a time 2T seconds its velocity be u.
Reason (R) : A particle thrown vertically up with a velocity comes back to its initial position with same magnitude of velocity but in opposite direction. [1]

Q3. Assertion (A) : The growth of plants occurs only in certain specific regions. [1]
Reason (R) : Meristematic tissue is located only at certain points in a plant.

Q4. Oxygen is : [1]
(a) Monovalent (b) Bivalent
(c) Trivalent (d) None of these

Q5. The SI unit of force is similar to the SI unit of : [1]
(a) Power (b) Mass
(c) Weight (d) Energy

Q6. What is the gravitational force between the two objects ? [1]
(a) Attractive at large distances only.
(b) Attractive at small distances only.
(c) Attractive at all distances.
(d) Attractive at large distances but repulsive at small distances.

Q7. In a salt-water solution : [1]
(a) Water is solvent and salt is solute. (b) Water is solute and salt is solvent.
(c) Water and salt both are solvent. (d) Water and salt both are solute.

OR

Which one of the following methods would you use to separate cream from milk ?

(a) Fractional distillation (b) Distillation

(c) Centrifugation (d) Filtration

Q8. If a body is stored at a height h = 0 m, then the energy possessed by it is : [1]

(a) Kinetic energy (b) Potential energy

(c) Both (a) and (b) (d) None of these

OR

How are Joule (J) and ergs (erg) related ?

(a) 1 J $=10^7$ erg (b) 1 erg $=10^7$ J

(c) 1 J $=10^{-7}$ erg (d) None of these

Q9. The fertility of soil is lost due to : [1]

(a) Strip cropping (b) Afforestation

(c) Soil erosion (d) Crop rotation

Q10. What is the process of growing two or more crops in a definite pattern ? [1]

(a) Crop rotation (b) Inter-cropping

(c) Mixed cropping (d) Organic cropping

OR

Which of the following species is an Indian cow ?

(a) Bos indicus (b) Bos domestica

(c) Bos bubalis (d) Bos vulgaris

Q11. What is the audible range of the average human ear? [1]

Q12. Which division among plants has the simplest organisms ? [1]

Q13. Answer question numbers 13.1–13.4 on the basis of your understanding of the following paragraph and the related studied concepts.

Plant Cell

Ravi was travelling to his school to give his final exams. Today it was the science exam and he was nervous. The teacher had told that there will be a surprise element in the exam that he didn't know of. When he reached the school, he found out that there will be a viva-voce exam for each of the student. When his turn came, he was given a very small task. First he was shown the above two images.

13.1 Help Ravi to correlate between these two images. [1]

13.2 What is the reason behind that correlation? [1]

13.3 Mark the solution to the above two questions in the given image. [1]

13.4 Name two other cell organelles in a plant cell. [1]

Q14. Questions 14.1 to 14.4 are based on the Table A. Study this table and answer the following questions.

Table A : Atomic Number and Valency

Element	Atomic Number	Valency
Beryllium	4	2
Boron	5	3

Element	Atomic Number	Valency
Carbon	6	4
Nitrogen	7	3
Oxygen	8	2
Fluorine	9	1

14.1 In the Table A, find out which element's atom has to gain or lose the highest number of electrons to complete its octet ? [1]

14.2 Nitrogen atom's outermost shell has 5 electrons. Then how is its valency 3, not 5? [1]

14.3 Which is more reactive among Oxygen and Fluorine? [1]

14.4 In what ways can an atom achieve an octet? [1]

SECTION - B

Q15. Calculate the work required to be done to stop a car of 1500 kg moving at a velocity of 50 km/h. [3]

Q16. Draw the diagrams of the following cells
(a) Fat cell
(b) Bone cell
(c) Smooth muscle cell. [3]

Q17. Mention the postulates of Dalton theory of atomic model. [3]

Q18. Why is the weight of an object on moon 1/6th its weight on earth? [3]

OR

Why will a sheet of paper fall slowly in comparison to one that is crumpled into a ball ?

Q19. Name the two main types of plant tissues. [3]

Q20. How do biotic and abiotic factors affect crop production ? [3]

Q21. Differentiate between mass and weight. [3]

Q22. Give three examples of the range of variations that you see in life forms around you. [3]

OR

Why do we classify organisms ?

Q23. Define latent heat of vaporisation. What is the value of latent heat of vaporization for water ? [3]

OR

Write the steps you would use for making tea. Use the words solution, solvent, solute, dissolve, soluble, insoluble, filtrate and residue.

Q24. How do you describe a motion ? [3]

SECTION - C

Q25. Differentiate vertebrates and invertebrates. [5]

Q26. Describe Bohr's atomic model. [5]

OR

Explain with examples.
(a) Atomic number (b) Mass number
(c) Isotopes (d) Isobars
Give two uses of isotopes.

Q27. Explain SONAR and its working with the help of a diagram. [5]

OR

Describe the structure and working of the human ear with the help of a rough diagram.

Q28. (a) How does the factories around Taj Mahal affect it ? [5]
(b) Can you justify why dust is called as pollutant ?

OR

(a) Why cultivation of legumes improve soil fertility ?
(b) How living organisms assist in erosion of rocks ?

Q29. Define chromatography. Underline the basic principle involved and mention its different applications. [5]

Q30. (a) State the law of conservation of momentum. Write its mathematical derivation.
(b) Two objects of masses 50 g and 100 g are moving along the same line and direction with velocities of 5 m/s and 10 m/s respectively. They collide and after the collision, the second object moves at a velocity of 8 m/s. Determine the velocity of the first object. [5]

CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-5

Time : 3 Hours **Maximum Marks : 80**

General Instructions :

(i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
(ii) All questions are compulsory.
(iii) Internal choice is given in each sections.
(iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
(v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
(vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
(vii) This question paper consists of a total of 30 questions.

SECTION -A

DIRECTION : For question numbers 1 and 2, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

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

Q1. Assertion (A) : If we push a massive truck parked along the roadside, it will not move.
Reason (R) : Two opposite and equal forces acted on two bodies in contact cancel each other. [1]

Q2. Assertion (A) : Molecular mass of water (H_2O) is 18 g.
Reason (R) : Atomic mass of a hydrogen atom is 2 g and atomic mass of an oxygen atom is 14 g. [1]

Q3. Which of the following micro-organisms is present in the root nodules of leguminous plants ? [1]
(a) Azotobacter (b) Nitrosomonas
(c) Rhizobium (d) Pseudomonas

OR

The two forms of oxygen found in the atmosphere are :
(a) Ozone and carbon dioxide (b) Oxygen and carbon dioxide
(c) Ozone and oxygen (d) Water and oxygen

Q4. What is the S.I. unit of momentum ? [1]
(a) kgms (b) mskg^{-1}
(c) kgms^{-1} (d) $\mathrm{kg(ms)}^{-1}$

Q5. Which of the following is not a perfectly in elastic collision ? [1]
(a) Capture of an electron by proton.
(b) Man jumping on to a moving cart.
(c) Collision between glass balls.
(d) A bullet fired into a block of wood such that it is embedded in the wood.

Q6. Who is known as Father of Taxonomy ? [1]
(a) Linnaeus (b) Darwin
(c) Mendel (d) Watson

Q7. If the temperature of a place is increasing, then the rate of evaporation at that place [1]

(a) Decreases (b) Increases

(c) Remains same (d) None of the above

Q8. If you live in an over crowded and poorly ventilated house, it is possible that you may suffer from one of the following diseases. Which one ? [1]

(a) Cancer (b) AIDS

(c) Air borne disease (d) Cholera

Q9. If the force applied on the body displaces it in the opposite direction of applied force, then the work done is : [1]

(a) Positive (b) Negative

(c) Zero (d) Data is inadequate

OR

Which Newton's law is applicable in the case of swimming ? [1]

(a) Law of gravitation (b) Newton's first law

(c) Newton's second law (d) Newton's third law

Q10. A long tree has several branches. The tissue that helps in the sideways conduction of water in the branches is [1]

(a) Collenchyma (b) Xylem parenchyma

(c) Parenchyma (d) Xylem vessels

OR

The tissue present in the lining of kidney tubules and ducts of salivary glands is

(a) Squamous epithelium tissue (b) Glandular epithelium tissue

(c) Cuboidal epithelium tissue (d) Columnar epithelium tissue

Q11. What was the limitation of J. J. Thomson's atomic model ? [1]

Q12. In what direction does the buoyant force on an object fully immersed in a liquid act ? [1]

Q13. Answer question numbers 13.1–13.4 on the basis of your understanding of the following paragraph and the related studied concepts.

Michael was having dinner with his family on the occasion of Christmas. When it was the time for dessert, Michael became curious. When he saw that the dessert was plum pudding, he became happy because he had learned about a similar term in his chemistry class on that day.

13.1 Correlate the plum pudding with hat Michael studied in his chemistry class. [1]

13.2 Why did the name "plum pudding" originate? [1]

13.3 Give the postulates of the model discussed here. [1]

13.4 Give one drawback of the atomic model discussed here. [1]

Q14. Questions 14.1 to 14.4 are based on the Table A. Study this table and answer the following questions.

Table A : 6 person and their serum osmolality levels

Person	Serum Osmolality (mmol/kg)
A	260

Person	Serum Osmolality (mmol/kg)
B	243
C	220
D	280
E	276
F	315
G	342

Table B : Range for normal and dangerous levels of serums osmolali of a person's blood

Situation	Serum osmolality (mmol/kg)
Should visit the doctor	<275
Normal range	275–295
Should visit the doctor	>295

Osmolality can be used to measure the amount of solute dissolved in a solution.If the level of solute of a solution is higher than the concentration of solute inside of the cell, water will flow out of the cell during osmosis. If the level of solute outside the cell is lower than the levels of solute inside of the cell, water will flow into the cell.

14.1 If we place a red blood cell (osmolality is 280 mmol/kg) in the serum of person F, will the plasma flow into the cell or out of the cell ? [1]

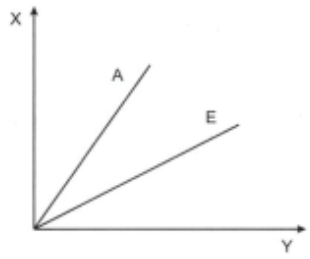
14.2 Which person (refer A and B) should visit the doctor ? [1]

14.3 Define osmosis. [1]

14.4 What is the difference between diffusion and osmosis ? [1]

SECTION - B

Q15. The velocity, time graph of two bodies A and B travelling along the $+x$ direction are given in the figure. [3]



(a) Are the bodies moving with uniform acceleration ?
(b) Which body is moving with greater acceleration ?
Give reasons.

Q16. Give any two uses of isotopes. [3]

Q17. Why are manures and fertilisers used in the fields? [3]

OR

How do storage grain losses occur ?

Q18. State Newton's third law of motion and also tell how it explains the walking of a man on the ground. [3]

Q19. What would happen if the plasma membrane ruptures or breaks down? [3]

Q20. A person holds a bundle of hay over his head and walks for 20 minutes and gets tired. Has he done some work for holding the bundle or not? Justify your answer. [3]

OR

Define average power.

Q21. Which organisms are called primitive and how are they different from the so called advanced organisms? [3]

Q22. What is crystallisation? Where is it used? Why is this better than simple evaporation technique? [3]

Q23. Explain how bats use ultrasonic waves to catch prey. [3]

OR

How is ultrasound used for cleaning ?

Q24. (a) Why is epidermis important for the plants ?
(b) Draw a rough diagram of collenchyma tissue and label it properly. [3]

SECTION - C

Q25. What is the importance of universal law of gravitation ? [5]

OR

State the factors on which acceleration due to gravity depends.

Q26. Describe the J. J. Thomson's model of atom. Also state the drawback of his model. [5]

Q27. Write the characteristics of kingdom Animalia. [5]

OR

(a) Name the group of plants known as "Amphibians of plant world". Mention their four important characteristics.
(b) Give three points on how birds have adapted themselves to an aerial mode of life.

Q28. Describe the nitrogen cycle with appropriate diagrams. [5]

Q29. Differentiate between mixture and compounds by giving appropriate examples. [5]

OR

What are colloids? What are its various properties ?

Q30. What do you understand by the units of electrical energy? How many joules of energy is consumed if the electrical meter shows 200 units of energy ? [5]

CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-6

Time : 3 Hours **Maximum Marks : 80**

General Instructions :

(i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
(ii) All questions are compulsory.
(iii) Internal choice is given in each sections.
(iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
(v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
(vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
(vii) This question paper consists of a total of 30 questions.

SECTION - A

Q1. A person is sitting in a travelling train and facing the engine. He tosses up a coin and the coin falls behind him. It can be concluded that the train is : [1]
(a) Moving forward and gaining speed.
(b) Moving forward and losing speed.
(c) Moving forward with uniform speed.
(d) Moving backward with uniform.

Q2. Ms. Shukla, a science teacher gave different mixtures to four groups of students to separate their components. Which group was not following the correct method? [1]
(a) Group 1 was separating a mixture of ethyl alcohol and water by using separating funnel.
(b) Group 3 was separating a mixture of iron pins and sand by using a magnet.
(c) Group 2 was separating a mixture of ammonium chloride and sodium chloride using sublimation.
(d) Group 4 was separating mud particles suspended in water using sedimentation and decantation.

OR

What happens when graphite is burnt?
(a) There will be remaining residue.
(b) There will be no residue.
(c) It will not catch fire.
(d) It will turn into diamond.

DIRECTION : For question numbers 3 and 4, two statements are given- one labelled Assertion (a) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :

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

Q3. Assertion (A) : Electron microscope uses very high voltage electricity. [1]
Reason (R) : An electron microscope uses electromagnets instead of glass lenses and beam of electrons instead of light.

Q4. Assertion (A) : If we push a massive truck parked along the roadside, it will not move. [1]
Reason (R): Two opposite and equal forces acted on two bodies in contact cancel each other.

Q5. Calculate the number of moles 23.3 g of zinc. [1]
(a) 0.37 moles (b) 0.36 moles
(c) 0.5 moles (d) 0.53 moles

OR

What is the full form of IUPAC?

(a) International Union Power of Applied Chemistry.

(b) International Union of Pure and Applied Chemistry.

(c) Internal Union of Pure Applied Chemistry.

(d) International Universal Pure and Applied Chemistry.

Q6. The phenomenon of increase in concentration of non-biodegradable organic compounds with each trophic level in a food chain is called : [1]

(a) Biological evolution (b) Biological fixation

(c) Bioenlargement (d) Biomagnification

Q7. The electronic configuration of elements A, B, C and D are (2, 8, 4), (2, 8, 5), (2, 8, 6) and (2, 8, 7) respectively. Which of them can make an ion with two negative charges? [1]

(a) A (b) B

(c) C (d) D

Q8. Select the incorrect match of disease and its vector/carrier. [1]

(a) Cholera - Housefly (b) Sleeping sickness - Tsetse fly

(c) Typhus fever - Body louse (d) Chikungunya - Sandfly

Q9. If the change in the value of g at a height h above the surface of earth is same as at a depth d below it, then (both d and h being much smaller than the radius of the earth). [1]

(a) $d = h/2$ (b) $d = h$

(c) $d = 2h$ (d) $d = h^2$

OR

A sphere of mass 40 kg is attached by another of mass 15 kg when their centers are 0.2 m apart, with a force of 9.8×10^{-7}N. Calculate the constant of gravitation.

(a) $9.2 \times 10^{-7}\mathrm{Nm^0kg^{-2}}$ (b) $6.13 \times 10^{-11}\,\mathrm{Nm^2kg^{-2}}$

(c) $6.53 \times 10^{-18}\,\mathrm{Nm^2kg^{-2}}$ (d) $6.53 \times 10^{-11}\,\mathrm{Nm^2kg^{-2}}$

Q10. What happens to collagen when boiled in water at normal pressure and temperature? [1]

(a) Changes into gelatin (b) Changes into fibrine

(c) Changes into elastin (d) No changes

Q11. An atom has mass number A and atomic number Z [1]

(a) How many protons are present in the nucleus?

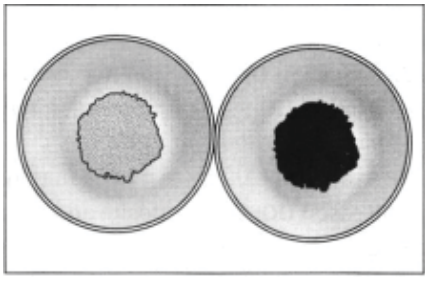
(b) How many electrons revolve around the nucleus?

(c) How many neutrons are present in the nucleus?

Q12. If wavelength of a sound wave in a medium is reduced by 50%, then what is the percentage change in its frequency? [1]

Q13. Answer question numbers 13.1–13.4 on the basis of your understanding of the following paragraph and the related studied concepts.

Aaron went to the chemical laboratory in his school to do an experiment on iron filings and sulphur. First he took 3 g of sulphur powder and 5 g of iron filings. He put them on a china dish and heated it till the mixture became red hot. Then he let the mixture cool and weighed the mixture. The quantity seemed less to the naked eyes, but after he saw the weight he was surprised.



13.1 How much did the mixture weight at the end? [1]

13.2 Which law is applicable here? [1]

13.3 State one property of a compound. [1]

13.4 What is the name of the compound formed? [1]

Q14. Questions 14.1 to 14.4 are based on the Table A. Study this table and answer the following questions.

Table A: Cell size and number of chromosomes

Cells	Size (pm)	Number of chromosomes
Cell A	5	3
Cell B	26	2
Cell C	12	4
Cell D	2	1
Cell E	45	6

14.1 Can you find any discrepancy in the above given (Table A) table? [1]

14.2 Find out the eukaryotic cells from the given table. [1]

14.3 State two differences between prokaryotic cell and eukaryotic cell. [1]

14.4 Give two examples of an eukaryote. [1]

SECTION B

Q15. (a) A bat can hear sound at frequency upto 120 kHz. Determine the wavelength of sound in air at this frequency. Take speed of sound as 344 m/s.
(b) How are the wavelength and frequency of a sound wave related to its speed?
(c) How does sonic boom occur? [3]

Q16. With the help of an activity show that gases are more easily compressible than liquids and solids. [3]

Q17. (a) Why mitochondria are able to make some of their own proteins?
(b) For what reason do we need to stain bacteria? [3]

OR

Explain your observation in the following with reason involved in the process.
(a) Salt is applied to raw mango pieces.
(b) Dried raisins are kept in water for a few hours.

Q18. (a) What should be the mass of a man if he has to do 2500 joules of work in climbing a tree 5 m tall? ($g = 10\ \mathrm{m/s^2}$)
(b) List two conditions which need to be satisfied for the work to be done on an object.
(c) If energy of universe is constant, why are we facing energy crisis? [3]

Q19. Draw a phylogenetic tree to show the natural relationship among various animal phyla. [3]

Q20. (a) Name the principle used to separate kerosene and water. Draw a neat and labelled diagram of the apparatus used in this separation.
(b) Can physical and chemical changes happen at the same time? Support your answer with illustrative example. [3]

OR

(a) Why did Rutherford select a gold foil in his alpha scattering experiments?
(b) Mention any two drawbacks of Rutherford's model.

Q21. (a) Describe an activity to demonstrate balanced forces.
(b) Why is it advised to wear a seat belt in a moving car? [3]

Q22. Given below are the names of some connective tissues. Mention the composition and function of each of them: Blood, cartilage and bone. [3]

OR

(a) Write a note on the protective tissue in plant.
(b) What is differentiation plant tissue?

Q23. State the universal law of gravitation. Derive its expression. [3]

Q24. What are the desirable characters of bee varieties suitable for honey production? [3]

SECTION - C

Q25. Describe Galileo's experiment to demonstrate motion of objects on an inclined plane. [5]

OR

Explain the following briefly:
(a) A greater force is required to impart greater velocity to an object.
(b) An applied unbalanced force causes a change in momentum.
(c) A cricket ball causes much severe injury than a tennis ball on hitting a spectator.

Q26. What is chromatography? State its principle with the help of a diagram. [5]

Q27. (a) In what way smooth muscles are different from striated muscles with respect to the number of nuclei?
(b) Water hyacinth floats on water surface. Explain.
(c) Why is epidermis present as a thick waxy coating of cutin in desert plants? [5]

OR

What are simple permanent tissues of plants? Explain in detail (also give differences in them).

Q28. The brakes applied to a car produce an acceleration of 6m/s. in opposite direction to the motion. If the car takes 2 second to stop after the application of break, calculate the distance its travel during this time? [5]

Q29. (a) What are ionic and molecular compounds? Give examples.
(b) Calculate the number of moles of magnesium present ribbon weighing 14 g. Molar atomic mass of magnesium is 24 $gmol^{-1}$. [5]

OR

How will you prove experimentally the law of conservation of mass?

Q30. Describe the nitrogen cycle with appropriate diagrams. [5]

CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-7

Time : 3 Hours **Maximum Marks : 80**

General Instructions :

(i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
(ii) All questions are compulsory.
(iii) Internal choice is given in each sections.
(iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
(v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
(vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
(vii) This question paper consists of a total of 30 questions.

SECTION - A

Q1. Which of the following actions a force can do? [1]
(a) Can move a stationary object.
(b) Can stop a moving object.
(c) Can change the speed of a moving object.
(d) All of the above.

Q2. Ozone layer protects us from which one of the following? [1]
(a) X- rays. (b) UV rays.
(c) Beta rays. (d) Gamma rays.

Q3. The slope of kinetic energy-displacement curve of a particle in motion is [1]
(a) Equal to the acceleration of the particle.
(b) Inversely proportional to the acceleration.
(c) Directly proportional to the acceleration.
(d) None of these.

Q4. Law of gravitation gives the gravitational force between : [1]
(a) The earth and a point mass only.
(b) The earth and sun only.
(c) Any two bodies having some mass.
(d) Two charged bodies only.

OR

A body freely falling under gravity will have uniform :
(a) Speed (b) Velocity
(c) Momentum (d) Acceleration

Q5. Light is a : [1]
(a) Longitudinal wave (b) Transverse wave
(c) Both (a) and (b) (d) None of these

Q6. Who proposed the fluid mosaic model of protoplasm? [1]
(a) Singer and Nicolson (b) Watson and Crick
(c) Robert Hook (d) Robert Brown

OR

Which of the following are complex tissues?

(a) Xylem and Phloem (b) Collenchyma and Sclerenchyma

(c) Parenchyma and Collenchyma (d) Xylem and Parenchyma

Q7. Leghorn is related to [1]

(a) Apiculture (b) Dairy Farming

(c) Pisciculture (d) Poultry

OR

Which of the following is cultured for pearls?

(a) Prawns (b) Oysters

(c) Mullets (d) Bhetki

Q8. What is classification? [1]

(a) Grouping things together on the basis of the features they have in common.

(b) Grouping things together on the basis of how they respire.

(c) Grouping things together on the basis of how they feed.

(d) Grouping things together on the basis of how they survive.

DIRECTION : For question numbers 9 and 10, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

(a) Both A and R are true and R is correct explanation of the A.

(b) Both A and R are true but R is not the correct explanation of the A.

(c) A is true but R is false.

(d) Both A and R are false.

Q9. **Assertion (A) :** The specific charge of anode ray particles depends on nature of the gas taken in the discharge tube.
Reason (R) : The particles in anode rays carry positive charge. [1]

Q10. **Assertion (A):** Solid CO_2 changes its state when exposed to air. [1]
Reason (R) : CO_2 undergoes sublimation.

Q11. What does odometer of an automobile measure? [1]

Q12. Helium atom has 2 electrons in its valence shell but its valency is not 2. Explain. [1]

Q13. Answer question numbers 13.1–13.4 on the basis of your understanding of the following paragraph and the related studied concepts.

Aarti went on a trip organised by her school to the botanical gardens in Delhi. She was very excited to use the knowledge she had learned in her class to relate it with the flora and fauna in the gardens. When Aarti was looking at all different kind of plants, she spotted some leaves with yellowish colour. She had studied that leaves were green in colour so she was confused. Aarti took one piece of that leaf to her school laboratory, boiled it and then mounted it on a slide to observe under microscope. She then poured a strong sugar solution over it and observed the slide through the microscope.

13.1 Which pigment gives green colour to the leaves? [1]

13.2 What is the function of the above mentioned pigment? [1]

13.3 What did Aarti observe when she poursed sugar solution over the slide? [1]

13.4 Define plasmolysis. [1]

Q14. Questions 14.1 to 14.4 are based on the Table A. Study this table related to boiling points of different compounds and answer the following questions.

Table A: Boiling points

Compound	Boiling point (°C)
Ethane	-89
Butane	0
Methanol	64.7
Hexane	69
Pentadecane	270
Heptadecane	302

14.1 A mixture of pentadecane and heptadecane can be separated by ..... [1]

14.2 When is the fractional distillation preferred over distillation? [1]

14.3 A mixture of methanol and hexane can be separated by ..... [1]

14.4 Which of the following pair of compounds are the easiest to separate? [1]

(i) Ethane and Pentadecane

(ii) Ethane and Heptadecane

(iii) Butane and Hexane

(iv) Butane and Heptadecane

SECTION - B

Q15. The kinetic energy of an object of mass m, moving with a velocity of 10 m/s is 25 J. What will be its kinetic energy when its velocity is halved? What will be its kinetic energy when its velocity is increased by 5 times? [3]

Q16. (a) What are cork cells and their functions? [3]
(b) Which substance is present in the adipocytes? How does it help?
(c) What is xylem? Name the four elements of xylem.

Q17. (a) Classify the following compounds as diatomic, triatomic and polyatomic molecules. HCl, H_2, H_2O and NH_3.
(b) Define the term atomicity. [3]

Q18. (a) What causes the phenomenon of sunrise, sunset and change of seasons? How do we perceive this cause?
(b) Is it possible that the train in which you are sitting appears to move while it is at rest? [3]

OR

(a) In what situation the velocity-time graph a straight line with negative slope?
(b) Why is the motion of a train starting from one station and stopping at the other is non-uniform?

Q19. Give a scientific reason for the following: [3]
(a) Mitochondria are able to make some of their proteins.
(b) A cell having equal water concentration to its surrounding medium.
(c) Inner membrane of mitochondria is deeply folded.

Q20. (a) Birds and mammals share one common feature. Give details.
(b) Name the phylum in which animals has soft bodies covered with a hard shell.
(c) Ingestion of solid food occurs in which type of nutrition ? [3]

OR

(a) Which structure is found in plant cells but absent in animal cell ?
(b) What is the functional segment of DNA ?
(c) Name the pigment that imparts red and yellow colour to flowers.

Q21. A person with mass 10 kg weighs 100 N on earth. What will be his corresponding mass and weight on moon? [3]

Q22. (a) Most mature plant cells have a large central vacuole. Why?
(b) Which type of vacuoles are found in plant cells and animal cells? [3]

OR

(a) How bacterial cell different from an onion peel cell?
(b) Why are lysosomes also known as "scavengers of the cells"?

Q23. A certain particle has a weight of 20 N at a place where the acceleration due to gravity is 10 m/s^2.
(a) What are its mass and weight at a place where acceleration due to gravity is 5 m/s^2?
(b) What will be its mass and weight at a place where acceleration due to gravity is zero? [3]

Q24. (a) What is the term used for the scientific management of livestock?
(b) What do you understand by composite fish culture? Describe in detail with advantages and disadvantages. [3]

SECTION - C

Q25. (a) Identify the type of inertia in each case and give one more example for the following:
(i) A ball thrown upwards by a child in a train returns to his hands.
(ii) Mudguards are provided in bikes and cars.
(b) A stone released from the top of a tower of height 19.6 m. Calculate its first velocity just before touching the ground. [5]

OR

(a) Define inertia and list its type. Give two examples to describe each type.
(b) Define momentum. State its SI unit.

Q26. Describe the model of atom proposed by Rutherford with his observations and conclusions. Discuss also the drawbacks in his model. [5]

Q27. (a) A person takes concentrated solution of salt, after sometime, he starts vomiting. What is the phenomenon responsible for such situation? Explain.
(b) Bacteria do not have chloroplast but some bacteria are photoautotrophic in nature and perform photosynthesis. Which part of bacterial cell performs this?
(c) Which cell organelle controls most of the activities of the cell? [5]

OR

In brief state what happens when
(a) Rheo leaves are boiled in water first and then a drop of sugar syrup is put on it?
(b) Dry apricots are left for some time in pure water and later transferred to sugar solution?
(c) A red blood cell is kept in concentrated saline solution?
(d) Golgi apparatus is removed from the cell?

Q28. A stone is thrown upwards with a velocity of 30 m/s.
(a) At what height will its kinetic energy be half of its potential energy?
(b) Calculate the potential energy of the body if it's mass = 5 kg. [5]

Q29. (a) Describe the process of diffusion of O_2 and CO_2 through the cell membranes.
(b) Define osmosis. [5]

OR

You are provided with a mixture containing sand, iron filing, ammonium chloride and sodium chloride. Describe the procedures you would use to separate these constituents from the mixture?

Q30. Describe the oxygen cycle with appropriate diagrams. [5]

CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-8

Time : 3 Hours **Maximum Marks : 80**

General Instructions :

(i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
(ii) All questions are compulsory.
(iii) Internal choice is given in each sections.
(iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
(v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
(vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
(vii) This question paper consists of a total of 30 questions.

SECTION -A

Q1. If a body starts from rest, what can be said about the acceleration of the body ? [1]
(a) Positively accelerated (b) Negatively accelerated
(c) Uniformly accelerated (d) None of the above

Q2. Which of the following represents the correct increasing order of the densities of given substances? [1]
(a) Cotton < Exhaust from chimneys > Honey < Iron < Air.
(b) Air < Exhaust from chimneys < Cotton < Honey < Iron.
(c) Air < Cotton < Exhaust from chimneys < Iron < Honey.
(d) Cotton < Air < Exhaust from chimneys < Iron < Honey.

OR

Which of the following is incorrect about plasma ? [1]
(a) Fluorescent tube and neon sign bulbs consist of plasma.
(b) The gas gets ionised when electrical energy flows through it.
(c) It consists of super energetic and super excited particles.
(d) The plasma glows with colour which does not depend upon nature of gas.

Q3. The white fibre of connective tissue is made up of which one of the following ? [1]
(a) Lignin (b) Keratin
(c) Collagen (d) Elastin

OR

Active division takes place in which one of the following cells?
(a) Cambium (b) Phleom
(c) Parenchyma (d) Xylem

Q4. A motorcycle and a car are moving on a horizontal road with the same velocity. If they are brought to rest by the application of brakes which provided equal retardation, then : [1]
(a) Motorcycle will stop at shorter distance. (b) Car will stop at a shorter distance.
(c) Both will stop at the same distance. (d) Nothing can be predicted.

Q5. Nanometer is an : [1]
(a) Instrument used for measuring micro distance.
(b) Instrument used for measuring macro distance.
(c) Unit for measuring micro distance.
(d) Unit for measuring macro distance.

OR

Heating of iron fillings and sulphur powder for formation of iron sulphide should be done in a

(a) Petri dish (b) Watch glass

(c) Copper dish (d) China dish

Q6. Which body part is not composed of nervous tissue ? [1]

(a) Brain (b) Muscles which connect eyes to brain

(c) Spinal cord (d) Nerves

DIRECTION : For question numbers 7 and 8, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

(a) Both A and R are true and R is correct explanation of the A.

(b) Both A and R are true but R is not the correct explanation of the A.

(c) A is true but R is false.

(d) Both A and R are false.

Q7. **Assertion (A) :** Nucleus of an atom is Positively charged.
Reason (R) : Nucleus of atom consists of protons and neutrons. [1]

Q8. **Assertion (A) :** Atom is not the smallest particle in the universe.
Reason (R) : An atom consists of proton, neutron and electron. [1]

Q9. The distance between two bodies becomes 6 times more than the usual distance, so the F becomes ..... [1]

(a) 36 times (b) 6 times

(c) 12 times (d) 1/36 times

Q10. A student carries a bag weighing 5 kg from the ground floor to his class on the first floor that is 2 m high. The work done by the boy is ..... [1]

Q11. Name the bio-indicator which is highly sensitive to SO_2 pollutions ? [1]

Q12. What is the alternate name for Apis cerana indica? [1]

(a) Indian bee (b) Indian buffalo

(c) Indian cow (d) None of these

Q13. Answer question numbers 13.1–13.4 on the basis of your understanding of the following paragraph and the related studied concepts.

Bharat went to Kerala with his parents for a nature trip. The family landed in Kochi in the morning from where they had plans for going to Alapuzzha at night. Bharat knew that Kochi is famous for its Bharat Petroleum Oil Refinery and coerced his father to take him there. Bharat had studied separation techniques at his school and wanted to see the same in the refinery in reality.

13.1 What separation technique did Bharat expect to see at the oil refinery ? [1]

13.2 What is the most important condition for this particular technique to be implemented ? [1]

13.3 Give two examples of components that are separated in an oil refinery. [1]

13.4 What is the ideal location of an oil refinery in a city ? [1]

Q14. Questions 14.1 to 14.4 are based on the Table A. Study this table and answer the following questions.

Days	Jar 1 (cm)	Jar 2 (cm)
Day 1	1	1
Day 2	1.3	1.4
Day 3	1.7	0.8
Day 4	2.1	0.8
Day 5	2.5	0.8

Two glass jars filled with water are taken. Two onion bulbs are taken and placed in each of the jars. Observe the growth of roots in both the jars. Measure the length of the roots daily. On Day 3 cut the root tips of the onion in Jar 2 by 1 cm and measure their lengths each day for 2 to 3 more days. By this activity, the Table A was constructed.

14.1 Does the root of onion in Jar 2 continue growing even after its tip is removed ? [1]

14.2 Why does it stop growing after the root tip is removed ? [1]

14.3 What is apical meristem ? [1]

14.4 What happens to the cells formed by meristematic tissue ? [1]

SECTION - B

Q15. Derive the first equation of motion mathematically. [3]

Q16. (a) Camphor disappears without leaving any residue. Explain.
(b) Why do we feel cool when we touch a piece of ice ? [3]

Q17. (a) How are simple tissues different from complex tissues ?
(b) What happens to the plants if their tips are removed ? [3]

Q18. Why is the weight of an object on moon 1/6th its weight on earth? [3]

OR

Why will a sheet of paper fall slowly in comparison to one that is crumpled into a ball ?

Q19. What are the advantages of composite fish culture ? [3]

Q20. Write the postulates of Bohr's theory. [3]

OR

Why is atomic number more important than atomic weight in predicting the chemical properties of elements ?

Q21. (a) The mass of the body on earth is 60 kg, what is its weight on the earth and on moon ?
(b) How is the weight of an object related to its mass ? [3]

Q22. Write the main characteristics of mammalia. [3]

OR

Write some characteristics of angiosperms.

Q23. Explain the following :
(a) An object increases its energy when raised through a height.
(b) Why is the work done by a body said to be negative ?
(c) When we push the wall, the wall does not move and no work is done. [3]

Q24. (a) In brief state what happens when
(i) Dry apricot are left for sometimes in pure water and later transferred to sugar solution.
(ii) Rheo leaves are boiled in water first and then a drop of sugar syrup is put on it.
(iii) Golgi apparatus removed from the cell.
(b) Draw a neat and well labelled diagram of a typical prokaryotic cell. [3]

SECTION -C

Q25. Sound waves of wavelength A travel from a medium in which its velocity is υ m/s into another medium in which velocity is 3υ m/s. What is the wavelength of the sound in the second medium ? [5]

OR

What are wavelength, frequency, time period and amplitude of a wave ?

Q26. Describe an activity to determine the boiling point of water and melting point of ice. [5]

Q27. (a) Mention the role of atmosphere in climate control.
(b) How does the air move to become a wind ? [5]

OR

Differentiate between acute and chronic diseases and outline their effects on our health.

Q28. A motorcar of mass 1200 kg is moving along a straight line with a uniform velocity of 90 km/h. Its velocity is slowed down to 18 km/h in 4 s by an unbalanced external force. Calculate the acceleration and change in momentum. Also calculate the magnitude of the force required. [5]

Q29. What is the relationship between mole, avogadro number and mass ? [5]

OR

(a) Define the term valency. What is the valency for magnesium and copper ?
(b) What is atomicity? What is the atomicity of phosphorus and nitrogen ?
(c) Calculate the number of molecules of sulphur (S_8) present in 16 g of solid sulphur.

Q30. Differentiate between vertebrates and invertebrates. [5]

CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-9

Time : 3 Hours **Maximum Marks : 80**

General Instructions :

(i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
(ii) All questions are compulsory.
(iii) Internal choice is given in each sections.
(iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
(v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
(vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
(vii) This question paper consists of a total of 30 questions.

SECTION -A

DIRECTION : For question numbers 1 and 2, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d)as given below :

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

Q1. Assertion (A) : If a light body and a heavy body possess the same momentum, the lighter body will possess more kinetic energy. [1]
Reason (R) : The kinetic energy of a body varies as the square of its velocity.

Q2. Assertion (A) : All molecules in a gas travel in same speed.
Reason (R) : Gas contain molecules of different shape and size. [1]

Q3. Nitrogen, hosphorous and otassium are examples of : [1]
(a) Macro–nutrients (b) Fertilizers
(c) Both (a) and (b) (d) None of these

Q4. A rider on a horseback falls back when horse starts running all of a sudden because of : [1]
(a) Pressure (b) Gravitational force
(c) Inertia (d) None of the above

OR

Newton's law of gravitation applies to .....
(a) Small bodies only (b) Plants only
(c) All bodies irrespective of their size (d) For solar system

Q5. The components of the water can be separated by : [1]
(a) Physical methods (b) Chemical methods
(c) Both (a) and (b) (d) They can't be separated

OR

Brass is a solution of molten copper in :
(a) Solid zinc (b) Molten zinc
(c) Gaseous zinc (d) Molten tin

Q6. Cartilage and bone are the types of : [1]
(a) Muscular tissue (b) Connective tissue
(c) Meristematic tissue (d) Epithelial tissue

Q7. Which of the following pairs are isotopes ? [1]
(a) H and O (b) O and N
(c) H and deuterium (d) Ice and steam

Q8. Where do we found areola connective tissue in our body? [1]
(a) Cortex (b) Skin and Muscles
(c) Blood Vessel (d) Muscles

OR

Ribosomes are the site of :
(a) Photosynthesis (b) Respiration
(c) Protein synthesis (d) Absorption

Q9. A stone is dropped into a lake from a tower 500 m high. The sound of the splash will be heard by a man on the tower after a time of (velocity of sound in air = 350 m/s) [1]
(a) 21 s (b) 10 s
(c) 11.4 s (d) 1 s

Q10. What does the slope of velocity–time graph give? [1]
(a) Acceleration (b) S peed
(c) Displacement (d) Distance

Q11. What are the characteristics of a sound wave? [1]

Q12. Common fungi used in preparing the bread are ..... [1]

Q13. Questions 13.1 to 13.4 are based on the Table A and B. Study this table and answer the following questions. [1]

Table A : Thickness of epidermis

Plant	**Thickness of epidermis (mm)**
A	0.05
B	2.3
C	0.02
D	1.9
E	2.7
F	0.1

Table B : Terrains and thickness of the epidermis of the plants found in that terrain

Terrains	**Thickness of epidermis (mm)**
Desert	> 2.0
Grasslands	1.0> x >0.5
Forests	< 0.5

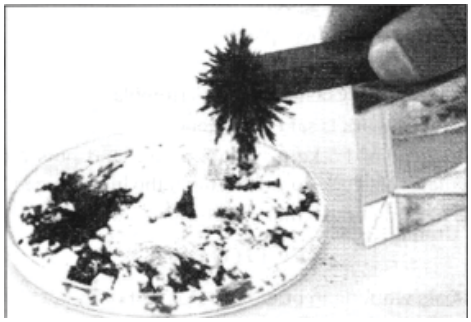
13.1 Which plants (from Table A) can be found in desert ? [1]

13.2 What is the reason they have a thicker epidermis than the plants found in grasslands or forests ? [1]

13.3 What is the name of the thick waxy coating found on the leaves of the plants found in desert ? [1]

13.4 Give one example of a desert plant. [1]

Q14. Answer question numbers 14.1 to 14.4 on the basis of your understanding of the following paragraph and the related studied concepts.



Keith and his friends visit the chemical laboratory in their school to know the difference between elements and compounds. They asked the lab assistant about the same but the assistant did not respond to them directly but instead told them to do an experiment. The lab assistant divided them in two groups, A and B. Both the groups were told to take 5 g of iron filings and 3 g of Sulphur powder in a china dish. Group A has to mix and crush the iron filings and sulphur. Group B has to do the same and then heat the china dish till the mixture becomes red hot and then remove from flame and let it cool. To one part of both the mixtures, they added carbon disulphide and stirred well and filtered. To another part, they added dilute sulphuric acid.

14.1 What gas is obtained by Group A ? [1]

14.2 What gas is obtained by Group B and how is it identified ? [1]

14.3 What is the difference between material obtained by Group A and Group B ? [1]

14.4 Give one property of mixtures. [1]

SECTION -B

Q15. Derive the second equation of motion numerically. [3]

Q16. (a) How can you show that evaporation causes cooling ?
(b) What are heterogeneous mixtures ? [3]

Q17. (a) How are simple tissues different from complex tissues ?
(b) What happens to the plants if their tips are removed ? [3]

Q18. "According Newton's Third law of motion, For every action force there is an equal and opposite reaction force." Keeping this law in mind, explain how a horse pulls a cart. [3]

OR

Take two eggs, a raw egg and a hard boiled egg. Try to spin both the eggs with the same force on the same surface. Which one will spin for more time? You can see that the hard boiled egg spins for more time than the raw egg. What made the boiled egg spin for more time? Can you explain?

Q19. What are the main practices involved in keeping of animals or animal husbandry ? [3]

Q20. A student weighs 30 kg. Suppose his body is entirely made up of electrons. How many electrons are there in his/her body. (Mass of an electron is 9.1×10^{-31} Kg) [3]

OR

(a) How would you confirm that a colorless liquid given to you is pure water ?
(b) What is meant by a substance ?

Q21. A car falls of a ledge and drops to the ground in 0.5s. Let $g = 10\text{ms}^{-2}$
(a) What is its speed on touching the ground ?
(b) What is its average speed during 0.5 s ?
(c) How high is the ledge from the ground ? [3]

Q22. Differentiate between monocot and dicot plants. [3]

OR

Define (a) Bilateral symmetry, (b) Coelom and (c) Triptoblastic.

Q23. (a) Under what conditions work is said to be done ?
(b) A porter lifts a luggage of 1.5 kg from the ground and puts it on his head 1.5 m above the ground. Calculate the work done by him on the luggage. [3]

Q24. Which type of plastids help in photosynthesis? Draw its diagram. [3]

SECTION -C

Q25. What is SONAR? Write its working in brief. [5]

OR

(a) Define frequency and amplitude of a wave.
(b) Define wavelength and time period of a wave

Q26. (a) What temperature in Kelvin scale is equal to 50°C ?
(b) Describe an activity to show that rate of evaporation increases with surface area (with a diagram). [5]

Q27. What are the two principles of treatment? Why is making anti-viral medicines harder than making anti-bacterial medicines? [5]

OR

Explain how clouds are formed and result in rain.

Q28. An 8000 kg engine pulls a train of 5 wagons, each of 2000 kg, along a horizontal track. If the engine exerts a force of 40000 N and the track offers a friction force of 5000 N, then calculate: [5]
(a) The net accelerating force
(b) The acceleration of the train; and
(c) The force of wagon 1 on wagon 2.

Q29. State the following laws with examples.
(a) Law of conservation of mass.
(b) Law of constant proportion. [5]

OR

What is chromatography? What are its various applications and underline the basic principle involved.

Q30. (a) Name the group of plants known as “Amphibians of plant world”. Mention their four important characteristics.
(b) Give three points on how birds have adapted themselves to an aerial mode of life.
(c) Draw a labeled diagram of a bacteria. [5]

CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-10

Time : 3 Hours **Maximum Marks : 80**

General Instructions :

(i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
(ii) All questions are compulsory.
(iii) Internal choice is given in each sections.
(iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
(v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
(vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
(vii) This question paper consists of a total of 30 questions.

SECTION -A

Q1. The phenomenon by which protoplast of a cell shrinks from the wall is [1]
(a) Osmosis (b) Plasmolysis
(c) Diffusion (d) Glycolysis

Q2. What could be the diameters of the molecules of matter? [1]
(a) 10^{-7} m (b) 10^{-11} m
(c) 10^{-9} m (d) 10^{-15} m

DIRECTION : For question numbers 3 and 4, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :

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

Q3. **Assertion (A) :** Turtles lay eggs outside the water.
Reason (R) : Turtles are amphibians. [1]

Q4. **Assertion (A) :** Plasma membrane is a selectively permeable membrane. [1]
Reason (R) : Plasma membrane allows entry and exit of substance from cell through the process of diffusion.

Q5. Diamond is lustrous because : [1]
(a) It is colourless. (b) It is hard.
(c) It is pure. (d) Its refractive index is high.

Q6. The tissue present in the lining of kidney tubules and ducts of salivary glands is : [1]
(a) Squamous epithelium tissue (b) Glandular epithelium tissue
(c) Cuboidal epithelium tissue (d) Columar epithelium tissue

OR

Parenchyma is a type of : [1]
(a) Complex tissue (b) Organ
(c) Simple tissue (d) Organelle

Q7. Plasmodium is an example of [1]

(a) Virus (b) Bacteria

(c) Protozoa (d) Worm

Q8. If proton (P^+) number of an element change : [1]

(a) It becomes an isotope. (b) It becomes another element.

(c) It will sublimate immediately. (d) It will be an electrolyte.

OR

The atomic number of sodium is 11 and its mass number is 23. It has :

(a) 11 neutrons and 12 protons (b) 12 protons and 11 electrons

(c) 11 electrons and 12 neutrons (d) 12 electrons and 11 neutrons

Q9. Which irrigation system is more useful in the areas where canal flow is insufficient or irregular? [1]

(a) Canal system (b) Tanks

(c) Wells (d) River lift system

Q10. The earth attracts the moon with a gravitational force of 1020 N. The moon attracts the earth with a gravitational force of [1]

(a) Less than 10^{20} N (b) 10^{20} N

(c) Greater than 10^{20} N (d) 10^{-20} N

OR

The gravitational force causes

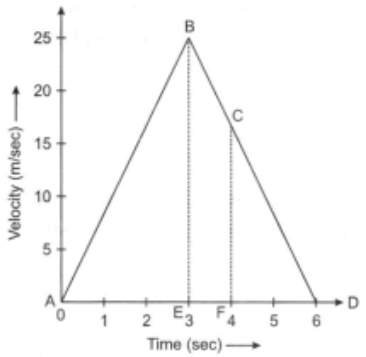
(a) Tides (b) Motion of moon

(c) Revolution of earth (d) Both (a) and (b)

Q11. What is the role of "International Code of Binomial Nomenclature"? [1]

Q12. Calculate the mass of one atom of oxygen. [1]

Q13. Answer the question numbers 13.1–13.4 on the basis of your understanding of the following paragraph and the related studied concepts. Study the given velocity-time graph and calculate the following :



Mohan bought a new car and wanted to test it on highways. He thought he will find out the acceleration of his car at different velocities in the first 6 seconds. He called his friend Shyam and told him to sit alongside him and note down the different speeds. Shyam prepared the following (graph 1) graph. Mohan's son, who studied in 9th class wanted to do an experiment with the car. He had recently learned a peculiar thing about circular motion and coerced his father to take the car to a circular track and drive at constant speed.

13.1 Find out the car's acceleration from A to B. [1]

13.2 Find out the car's acceleration from B to C. [1]

13.3 What peculiar thing had Mohan's son learned about circular motion in his class that he wanted to test in the track? [1]

13.4 What did Mohan and their son notice when they drove their car in the circular track? [1]

Q14. Question 14.1 to 14.4 are based on the Table A. Study the table and answer the following question given below :

Table A

S. No.	Processes
1.	Conversion of solid into liquid.
2.	Conversion of liquid into gases.
3.	Conversion of solid into gases.
4.	Conversion of gases into liquid.
5.	Conversion of liquid into solid.

14.1 Give the name of the process that is involved in conversion of solid into liquid. [1]

14.2 Give the conditions for conversion of gases into liquid. [1]

14.3 Name the process for conversion of solid into gases. [1]

14.4 Give the conditions for conversion of liquid into gases. [1]

SECTION B

Q15. When will you say a body is in
(a) Uniform acceleration.
(b) Non–uniform acceleration. [3]

Q16. The element whose atomic number is 10 and the one whose atomic number is 11? [3]

Q17. Name and give the function of each cell of xylem and phloem. Draw a labelled diagram of each tissue. [3]

Q18. A car of mass 400 kg travelling at 72 km/h crashes into a truck of mass 4000 kg and travelling at 9 km/ h in same direction. The car bounces back at a speed of 18 km/h. Find the speed of the truck after the impact. [3]

OR

Two blocks A and B of mA mass and mi, respectively are kept in contact on a frictionless table. The experimenter pushes the block A from behind so that the blocks accelerate. If the block A exerts a force F on the block B. What is the force exerted by the experimenter on A?

Q19. (a) What are secretory proteins? Give an example of secretory protein.
(b) What is membrane biogenesis? How is plasma membrane formed during this process? [3]

Q20. (a) On a hot sunny day, why do people sprinkle water on the roof or open ground?
(b) Cotton is solid but it floats on water. Why? [3]

OR

Explain giving examples the various factors on which rate of evaporation depends.

Q21. State universal law of gravitation? [3]

Q22. (a) Explain the basis for grouping organisms into the five kingdoms.
(b) How would you choose between two characteristics to be used for developing a hierarchy in classification? [3]

OR

How do annelids animal differ from arthropods?

Q23. Show that when a body is dropped from a certain height, the sum of its kinetic energy at any instant during its fall is constant. [3]

Q24. What are the desirable characters of bee varieties suitable for honey production? [3]

SECTION -C

Q25. (a) What do you understand by low pitch and high pitch sound? Draw appropriate diagrams to support your answer.
(b) How is ultrasound used for cleaning? [5]

Q26. (a) What temperature in Kelvin scale is equal to 50°C?
(b) Describe an activity to show that rate of evaporation increases with surface area. [5]

Q27. (a) Write the name of different plant parts in which chromoplast, chloroplast and leucoplast are present.
(b) Which type of plastids help in photosynthesis? Draw its diagram. [5]

OR

What are the main functional regions of a cell? Explain with the help of diagram.

Q28. (a) State the law of conservation of momentum.
(b) How much momentum will a dumb bell of mass 10 kg transfer to the floor if it falls from a height of 80 cm. Take its downward acceleration to be 10 ms^{-2}. [5]

OR

(a) Why is it advised to tie a rope on the luggage while you travel by the bus?
(b) Why does an athlete take a longer jump if he comes running from a distance than when he jumps suddenly from the take-off line?
(c) A motorcar of mass 1200 kg is moving along a straight line with a uniform velocity of 90 km/h. Its velocity is slowed down to 18 km/h in 4 s by an unbalanced external force. Calculate the acceleration and change in momentum. Also calculate the magnitude of the force required.

Q29. How will you separate a mixture containing kerosene and petrol (difference in their boiling points is more than 25°C), which are miscible with each other? [5]

OR

To make a saturated solution, 30 g of sodium chloride is dissolved in 100 g of water at 293 K. Find its concentration at this temperature.

Q30. What are the limitations in the approach of treating the infectious diseases? Also mention the principles of prevention. [5]