



INDIAN SCHOOL MUSCAT

ANNUAL EXAMINATION

SCIENCE

CLASS: IX

Sub. Code: 086

Time Allotted: 3 Hrs.

12.02.2020

Max. Marks: 80

General Instructions:

- The question paper comprises three sections – A, B and C. Attempt all the sections.
- All questions are compulsory.
- Internal choice is given in each section.
- 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.
- All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50 - 60 words each.
- All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80 – 90 words each.
- This question paper consists of a total of 30 questions.

SECTION - A

- 1 Define Latent heat of vapourisation. 1
- 2 Name two cattle breeds which show excellent resistance of diseases. 1
- 3 A force is a push or a pull that acts upon an object as a result of its interaction with another object. When you sit on a chair, your body exerts a downward force on the chair and the chair exerts an upward force on your body. There are two forces resulting from this interaction – a force on the chair and a force on your body. These two forces are called *action and reaction forces* and are the subject of Newton's third law of motion. Newton's third law is :

For every action, there is an equal and opposite reaction.
 - 3(a) Rocket works on the principle of conservation of 1
 i) mass ii) energy iii) velocity iv) momentum
 - 3(b) When a bullet is fired from a gun the gun moves backwards. The velocity with which the gun moves is 1
 i) uniform velocity ii) recoil velocity iii) non-uniform velocity iv) none of these

- 3(c) According to Newton's third law of motion, action and reaction 1
 i) always act on the same body
 ii) always act on different bodies in opposite direction
 iii) have same magnitudes and direction
 iv) act on either body at normal to each other
- 3(d) A boy pushes a wall with a force of 20 N. What is the magnitude and direction of the force 1
 experienced by the boy?
 i) 20 N away from the wall ii) 20 N towards the wall
 iii) No force is acting iv) None of the above
- 4 Air pollution is a type of environmental pollution that affects the air and is usually caused by 1
 smoke or other harmful gases, mainly oxides of carbon, sulphur and nitrogen. Also these gases are
 the cause of many respiratory diseases. Environment and also air are so significant for all living
 beings. So people should do whatever they can to keep our environment clean.
- 4(a) Smog is a mixture of : 1
 (a) Smoke + CO₂ (b) Smoke + N₂ (c) Smoke + fog (d) Smoke + O₃
- 4(b) When water mixes with the Carbon dioxide in the air , it forms : 1
 (a) Carbonic acid (b) Sulphuric acid (c) Hydrochloric acid (d) none of these
- 4(c) All of earth's water, land and atmosphere, within which life exists is known as : 1
 (a) Biosphere (b) Population (c) Biome (d) Community
- 4(d) Solid CO₂ is : 1
 (a) Camphor (b) Dry ice (c) Tincture Iodine (d) Naphthalene
- 5 The least count of a spring balance is 5g. When a solid is suspended from its hook, the pointer 1
 came to 20th division. What would be the mass of the solid?
 a) 50 g b) 100g c) 25g d) 125g

OR

The mass of a body is 64g. The volume of water displaced by the body, when it is immersed in water is 8mL. Calculate the density of the substance.

- a) 10g/ mL b) 12g/mL c) 6g/mL d) 8g/mL
- 6 In an experiment to verify the laws of reflection of sound, the angle between the incident sound 1
 wave and the reflected sound wave was measured as 130. What would be the angle of incidence?
 a) 130 b) 70 c) 65 d) 60
- 7 A slinky is stretched between A and B and a pulse is created along it. If the distance between A 1
 and B is 2m and the time taken for the pulse to travel from A to B and back to A is 50 seconds
 calculate the velocity of propagation of the pulse along the slinky.
 a) 8cm/sec b) 25cm/sec c) 10cm/sec d) 1cm/sec
- 8 The proteins and lipids essential for building the cell membrane, are manufactured by 1
 a) Endoplasmic reticulum b) Golgi apparatus c) Plasma membrane d) Mitochondria

OR

Which of the following organelle is not present in an animal cell?

- a) Ribosome b) Plastid c) Mitochondria d) Nucleus

- 9 In which group of animals, coelom is filled with blood? 1
 a) Arthropoda b) Annelida c) Nematoda d) Echinodermata
- 10 Which is not a function of epidermis? 1
 a) Protection from adverse condition b) Gaseous exchange
 c) Conduction of water d) Transpiration
- 11 If you live in an overcrowded and poorly ventilated house, it is possible that you may suffer from which of the following disease? 1
 a) Cancer b) AIDS c) Air borne diseases d) Cholera
- 12 Which of the following conditions will increase the rate of evaporation? 1
 (a) Increase in temperature of water (b) Decrease in wind speed.
 (c) Decrease in surface area of water (d) Adding sugar to water.

OR

The physical state of matter depends upon :

- (a) Temperature and pressure (b) Temperature only
 (c) Pressure only (d) Nature of the substance

For question numbers 13 and 14, two statements are given- one labeled *Assertion (A)* and the other labeled *Reason (R)*. Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below

- i) Both A and R are true and R is correct explanation of the assertion.
 ii) Both A and R are true but R is not the correct explanation of the assertion.
 iii) A is true but R is false.
 iv) A is false but R is true

- 13 Assertion: A saturated solution becomes super saturated on cooling. 1
 Reason : It is because solubility decreases with decrease in temperature.
- 14 Assertion (A): The value of acceleration due to gravity depends upon mass of the body. 1
 Reason (R): Acceleration due to gravity is not constant.

SECTION - B

- 15 A. Name the separation technique you would follow to separate: 3
 (a) Dyes from black ink.
 (b) A mixture of NaCl and NH₄Cl.
 (c) Cream from milk.
 (d) Sodium chloride from its solution in water.
 B. State the principle used in separating a mixture of immiscible liquids.
- 16 Using criss cross method , write the chemical formula of: 3
 (a) Copper(II) chloride (b) Calcium sulphate (c) Sodium phosphate

OR

- (a) Define one mole. How is it related to Avogadro's constant?
 (b) An element X has valency 2. Write the formula of its oxide.

- 17 What were the conclusions of Rutherford's α -particle scattering experiment. 3
- 18 Name the person who gave the term Golgi apparatus. Name one cell organelle that is formed by Golgi apparatus. Write any two functions of Golgi apparatus. 3

OR

- a) Mention the change in human red blood cells when they are placed in hypertonic solution and name the phenomenon behind it.
- b) Identify and name the following cell structures.
(i) The undefined nuclear region of prokaryotic cell
(ii) Site of energy release inside the cell
- c) State any two functions of vacuole.
- 19 a) A person is suffering from chest pain, Breathlessness, loss of body weight, persistent cough and produces blood stained sputum. Name the disease and the causative organism. 3
b) Write two ways by which HIV may get transmitted from one person to the other.
- 20 a) Mention any one difference between nitrogen fixation and nitrification. 3
b) Ozone is poisonous gas and is found in upper atmosphere of earth yet the world is worried about its depletion. Explain why?
- 21 a) What is meant by composite fish culture? 3
b) What is the basis of selecting the different species of fish?
c) Which method is used to get pure fish seeds?
- 22 a) Write 2 differences between distance travelled and displacement. 3
b) Draw velocity time graph for uniformly accelerated motion.
- 23 a) Write mathematical representation of Newton's second Law of motion. 3
b) What would be the force required to produce an acceleration of 2m/s^2 in a body of mass 12kg ?
What would be the acceleration if the force were doubled?
- 24 a) State Universal Law of Gravitation. 3
b) How does the force of gravitation between two objects change when the distance between them is reduced to half?
c) When two bodies of masses 3 kg and 8 kg are dropped simultaneously from the top of a tower, which one will reach the ground first? Why?

OR

- a) State Archimedes' principle
- b) State the factors on which buoyant force depends.
- c) If the relative density of a substance is 0.8 . Calculate the density of the substance in kg/m^3
Density of water is 1000 kg/m^3

SECTION - C

- 25 The description of atomic particles of two elements X and Y is given below: 5

	X	Y
Protons	8	8
Neutrons	8	9
Electrons	8	8

- (a) What is the atomic number of Y?
- (b) What is the mass number of X?
- (c) What is the relation between X and Y?
- (d) Which element/elements do they represent?
- (e) Write the cation / anion formed by the element.

OR

- (a) An ion X^{2+} contains 18 electrons and 20 neutrons. Calculate the atomic number and mass number of element X. Name the element X.
- (b) With the help of schematic representation of atomic structure of X, show how electrons are distributed in different orbits?

- 26 (a) State the Law of Constant Proportion. 5
 (b) Calculate the number of molecules present in 50g of Calcium carbonate.
 (At. Mass of Calcium= 40, Carbon= 12, Oxygen=16)
 (c) What is atomicity? Give an example of a triatomic molecule of an element.

- 27 a) Give reason for the following 5
 (i) In desert plants, epidermis has a thick waxy coating.
 (ii) Epidermal cells of the roots generally have hair like parts.
 b) Draw a well labeled diagram to show the location of the three types of meristem.
 What is the function of Apical meristem?

- 28 a) To which division of plantae do algae belong? Write two characteristics of the same. 5
 b) State three criteria for five Kingdom classification.
 c) Write any two differences between Gymnosperms and Angiosperms.

OR

- a) What is the system of scientific naming of organisms called? State two important conventions followed while giving such names.
- b) "Tape worm is triploblastic". What does it mean? Name the phylum to which tape worm and earthworm belong to.

- 29 a) Write down the expression for work done. 5
 b) What is meant by negative work done? Explain with the help of an example.
 c) A boy of mass 40 kg runs up a flight of 50 steps, each of 10cm high, in 5 s. Find the power developed by the boy. (Given $g = 10\text{m/s}^2$)

- 30 a) Write the full form of acronym SONAR. 5
 b) Explain with the help of a figure how the method of echo- ranging is used to determine the depth of sea.

OR

- a) What are longitudinal and transverse waves?
- b) What is the difference between echo and reverberation? (One difference)
- c) Name the principle on which stethoscope works?

End of the Question Paper



INDIAN SCHOOL MUSCAT ANNUAL EXAMINATION SCIENCE

CLASS: IX

Sub. Code: 086

Time Allotted: 3 Hrs.

12.02.2020

Max. Marks: 80

General Instructions:

- The question paper comprises three sections – A, B and C. Attempt all the sections.
- All questions are compulsory.
- Internal choice is given in each section.
- 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.
- All questions in Section B are three-mark, short-answer type questions. These need to be answered in about 50 - 60 words each.
- All questions in Section C are five-mark, long-answer type questions. These need to be answered in about 80 – 90 words each.
- This question paper consists of a total of 30 questions.

SECTION - A

- | | | |
|---|--|---|
| 1 | Define Latent heat of fusion. | 1 |
| 2 | Name any two factors for which variety improvement is done. | 1 |
| 3 | A force is a push or a pull that acts upon an object as a result of its interaction with another object. When you sit on a chair, your body exerts a downward force on the chair and the chair exerts an upward force on your body. There are two forces resulting from this interaction – a force on the chair and a force on your body. These two forces are called <i>action and reaction forces</i> and are the subject of Newton's third law of motion. Newton's third law is : | |

For every action, there is an equal and opposite reaction.

- | | | |
|------|---|---|
| 3(a) | According to Newton's third law of motion, action and reaction | 1 |
| | i) always act on the same body
ii) always act on different bodies in opposite direction
iii) have same magnitudes and direction
iv) act on either body at normal to each other | |
| 3(b) | Rocket works on the principle of conservation of | 1 |
| | i) mass ii) energy iii) velocity iv) momentum | |

- 3(c) When a bullet is fired from a gun the gun moves backwards. The velocity with which the gun moves is 1
 i) uniform velocity ii) recoil velocity iii) non-uniform velocity iv) none of these
- 3(d) A boy pushes a wall with a force of 20 N. What is the magnitude and direction of the force experienced by the boy? 1
 i) 20 N towards the wall ii) 20 N away from the wall
 iii) No force is acting iv) None of the above
- 4 Air pollution is a type of environmental pollution that affects the air and is usually caused by smoke or other harmful gases, mainly oxides of carbon, sulphur and nitrogen. Also these gases are the cause of many respiratory diseases. Environment and also air are so significant for all living beings. So people should do whatever they can to keep our environment clean.
- 4(a) Solid CO₂ is: 1
 i) Tincture iodine ii) Camphor iii) Naphthalene iv) Dry ice
- 4(b) Smog is a mixture of : 1
 i) Smoke + CO₂ ii) Smoke + N₂ iii) Smoke + fog iv) Smoke + O₃
- 4(c) When water mixes with the carbon dioxide in the air , it forms : 1
 i) Carbonic acid ii) Sulphuric acid iii) Hydrochloric acid iv) none of these
- 4(d) All of earth's water , land and atmosphere , within which life exists is known as : 1
 i) Biosphere ii) Population iii) Biome iv) Community
- 5 The least count of a spring balance is 5g. When a solid is suspended from its hook, the pointer came to 20th division. What would be the mass of the solid? 1
 i) 80 g ii) 120g iii) 25g iv) 100g

OR

The mass of a body is 80g. The volume of water displaced by the body, when it is immersed in water is 8mL. Calculate the density of solid.

- i) 40g/ mL ii) 12g/mL iii) 10g/mL iv) 8g/mL
- 6 In an experiment to verify the laws of reflection of sound, the angle between the incident sound wave and the reflected surface was measured as 50. What would be the angle of incidence? 1
 i) 30 ii) 20 iii) 40 iv) 60
- 7 A slinky is stretched between A and B and a pulse is created along it. If the distance between A and B is 2m and the time taken for the pulse to travel from A to B and back to A is 50 seconds calculate the velocity of propagation of the pulse along the slinky. 1
 i) 8cm/sec ii) 25cm/sec iii) 10cm/sec iv) 1cm/sec
- 8 The proteins and lipids essential for building the cell membrane, are manufactured by 1
 i) Endoplasmic reticulum ii) Golgi apparatus
 iii) Plasma membrane iv) Mitochondria

OR

Which of the following organelle is not present in an animal cell?

- i) Ribosome ii) Plastid iii) Mitochondria iv) Nucleus
- 9 Which among the following produce seeds 1
 i) Thallophyta ii) Bryophyta iii) Pteridophyta iv) Gymnosperms

- 10 Which is not a function of epidermis? 1
 i) Protection from adverse condition ii) Gaseous exchange
 iii) Conduction of water iv) Transpiration
- 11 If you live in an overcrowded and poorly ventilated house, it is possible that you may suffer from which of the following disease? 1
 i) Cancer ii) AIDS iii) Air borne diseases iv) Cholera
- 12 Which of the following sets of phenomena would increase on raising the temperature? 1
 (a) Diffusion , Evaporation , Compression of gases
 (b) Evaporation , Compression of gases , Solubility
 (c) Evaporation , Diffusion , Expansion of gases
 (d) Evaporation , Diffusion , Solubility, Compression of gases

OR

Which of the following will produce severe burns :

- i) Hot water ii) Boiling water iii) Steam iv) All of these

For question numbers 13 and 14, two statements are given- one labeled

Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (i), (ii).(iii) and (iv) as given below

- i) Both A and R are true and R is correct explanation of the assertion.
 ii) Both A and R are true but R is not the correct explanation of the assertion.
 iii) A is true but R is false.
 iv) A is false but R is true

- 13 Assertion: A saturated solution becomes unsaturated solution on heating. 1
 Reason : It is because solubility decreases with increase in temperature.
- 14 Assertion (A): The value of acceleration due to gravity depends upon mass of the body. 1
 Reason (R): Acceleration due to gravity is not constant.

SECTION - B

- 15 (a) Give any one point of difference between True solution, Colloidal solution and Suspension. 3
 (b) Name the separating technique you would follow to separate the different components of air.
 (c) Define Tyndall effect
- 16 Using criss- cross method, write the chemical formulae of : 3
 (a) Ammonium sulphate (b) Potassium hydroxide (c) Magnesium nitrate
- OR**
- An element "X" forms an oxide with formula X_2O_3 .
 (a) State the valency of X.
 (b) Write the formula of chloride X and sulphate of X.
- 17 Write the observations of Rutherford's α -particle scattering experiment. 3
- 18 Mention the role of : 3
 a) Cellulose in cell wall

- b) Presence of deeply folded membrane in mitochondria
- c) Digestive enzymes in lysosomes.

OR

- a) Define plasmolysis.
- b) State any two differences between a prokaryotic and eukaryotic cell.

- 19 a) A person is suffering from chest pain, Breathlessness, loss of body weight, persistent cough and produces blood stained sputum. Name the disease and the causative organism. 3
b) Write two ways by which HIV may get transmitted from one person to the other.
- 20 a) Mention any one difference between nitrogen fixation and nitrification. 3
b) Ozone is poisonous gas and is found in upper atmosphere of earth yet the world is worried about its depletion. Explain why?
- 21 a) What is the difference between compost and vermi-compost? 3
b) How is manure prepared?
- 22 a) Draw velocity time graph for a body which is moving with negative acceleration. 3
b) Define uniform circular motion.
c) What is the direction of acceleration of an object moving along a circular path?
- 23 a) State Newton's Second Law of motion. 3
b) Define 1 newton force.
c) Why do bicycles begin to slow down when we stop pedaling?
- 24 a) Distinguish between mass and weight. (2 differences) 3
b) Why does a body reach the ground quicker at poles than at the equator when dropped from the same height?

OR

A stone is thrown vertically upward with an initial velocity of 40m/s. Taking $g = 10\text{m/s}^2$, find the maximum height reached by the stone. What is the net displacement and the total distance covered by the stone?

SECTION - C

25

Elements	Mass No.	Atomic No.
A	2	1
B	3	1
C	3	2
D	6	3
E	9	4
F	11	5
G	19	9

5

The mass number and atomic number of certain elements are given in the above table.

- (a) How many neutrons are present in F.?
- (b) Which atoms are isotopes of the same element?
- (c) Which atom will form singly positively charged ion?
- (d) Which is the atom of an inert gas?
- (e) Which of these form singly negatively charged ion?

OR

- (a) An atom of an element has 7 electrons in its L shell.
(i) What is its atomic number?
(ii) State its valency.
(iii) Identify the element.
(b) With the help of schematic representation of atomic structure of Aluminium, show how electrons are distributed in different shells.

- 26 (a) Write any four postulates of Daltons Atomic Theory. 5
(b) What are Poly atomic ions? Give one example.
(c) Calculate the moles present in 50g of Sodium chloride.
At: mass of Sodium = 23 , Chlorine = 35.5

- 27 Draw a well labeled diagram of a neuron (Any four labelings) 5
How are voluntary muscles different from involuntary muscles? (Two differences)

- 28 a) To which division of plantae do algae belong? Write two characteristics of the same. 5
b) State three criteria's for five Kingdom classification.
c) Write any two differences between Gymnosperms and Angiosperms.

OR

- a) What is the system of scientific naming of organisms called? State two important conventions followed while giving such names.
b) "Tape worm is triploblastic". What does it mean? Name the phylum to which tape worm and earthworm belong to.

- 29 a) Derive the expression for Kinetic Energy. 5
b) If the velocity of an object is doubled, What will be the change in Kinetic Energy?(steps should be shown)
- 30 a) What is reverberation? How is reverberation reduced in halls? (1 point) 5
b) How can ultrasound be used to detect the defects in a metal block? Explain with the help of a figure.

OR

- a) What is meant by longitudinal wave? Give an example.
b) Draw graphical representation of sound wave. Mark the position of compression and rarefaction on this graph. Also mark wavelength and amplitude on this graph.

End of the Question Paper



INDIAN SCHOOL MUSCAT ANNUAL EXAMINATION SCIENCE

CLASS: IX

Sub. Code: 086

Time Allotted: 3 Hrs.

12.02.2020

Max. Marks: 80

General Instructions:

- The question paper comprises three sections – A, B and C. Attempt all the sections.
- All questions are compulsory.
- Internal choice is given in each section.
- 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.
- All questions in Section B are three-mark, short-answer type questions. These need to be answered in about 50 - 60 words each.
- All questions in Section C are five-mark, long-answer type questions. These need to be answered in about 80 – 90 words each.
- This question paper consists of a total of 30 questions.

SECTION - A

- | | | |
|---|--|---|
| 1 | What is Boiling? | 1 |
| 2 | Name two cattle breeds which show excellent resistance of diseases. | 1 |
| 3 | A force is a push or a pull that acts upon an object as a result of its interaction with another object. When you sit on a chair, your body exerts a downward force on the chair and the chair exerts an upward force on your body. There are two forces resulting from this interaction – a force on the chair and a force on your body. These two forces are called <i>action and reaction forces</i> and are the subject of Newton's third law of motion. Newton's third law is : | |
| For every action, there is an equal and opposite reaction. | | |
| 3(a) | When a bullet is fired from a gun the gun moves backwards. The velocity with which the gun moves is
a) uniform velocity b) recoil velocity c) non-uniform velocity d) None of these | 1 |
| 3(b) | According to Newton's third law of motion, action and reaction
a) always act on the same body b) always act on different bodies in opposite direction
c) have same magnitudes and direction d) act on either body at normal to each other | 1 |

- 3(c) Rocket works on the principle of conservation of 1
 a) mass b) energy c) velocity d) momentum
- 3(d) A boy pushes a wall with a force of 20 N. What is the magnitude and direction of the force 1
 experienced by the boy?
 a) 20 N away from the wall b) 20 N towards the wall
 c) No force is acting d) None of the above
- 4 Air pollution is a type of environmental pollution that affects the air and is usually caused by 1
 smoke or other harmful gases, mainly oxides of carbon, sulphur and nitrogen. Also these gases are
 the cause of many respiratory diseases. Environment and also air are so significant for all living
 beings. So people should do whatever they can to keep our environment clean.
- 4(a) Smog is a mixture of : 1
 a) Smoke + CO₂ b) Smoke + N₂ c) Smoke + fog d) Smoke + O₃
- 4(b) When water mixes with the carbon dioxide in the air , it forms : 1
 a) Carbonic acid b) Sulphuric acid c) Hydrochloric acid d) None of these
- 4(c) All of earth's water , land and atmosphere , within which life exists is known as : 1
 a) Biosphere b) Population c) Biome d) Community
- 4(d) Solid CO₂ is : 1
 a) Camphor b) Dry ice c) Tincture Iodine d) Naphthalene
- 5 The least count of a spring balance is 5g. When a solid is suspended from its hook, the pointer 1
 came to 20th division. What would be the mass of the solid?
 a) 100g b) 120g c) 25g d) 80g

OR

If the mass of a body is 120g. The volume of water displaced by the body, when it is immersed in water is 8mL. Calculate the density of the substance.

- a) 14g/ mL b) 12g/mL c) 10g/mL d) 15g/mL
- 6 In an experiment to verify the laws of reflection of sound, the angle between the incident sound 1
 wave and the reflected sound wave was measured as 70. What would be the angle of incidence?
 a) 35 b) 70 c) 45 d) 60
- 7 A slinky is stretched between A and B and a pulse is created along it. If the distance between A 1
 and B is 2m and the time taken for the pulse to travel from A to B and back to A is 50 seconds
 calculate the velocity of propagation of the pulse along the slinky.
 a) 8cm/sec b) 25cm/sec c) 10cm/sec d) 1cm/sec
- 8 The proteins and lipids essential for building the cell membrane, are manufactured by
 a) Endoplasmic reticulum b) Golgi apparatus
 c) Plasma membrane d) Mitochondria

OR

Which of the following organelle is not present in an animal cell?

- a) Ribosome b) Plastid c) Mitochondria d) Nucleus

- 9 In which group of animals, coelom is filled with blood? 1
 a. Arthropoda b) Annelida c) Nematoda d) Echinodermata
- 10 Which is not a function of epidermis? 1
 a) Protection from adverse condition b) Gaseous exchange
 c) Conduction of water d) Transpiration
- 11 If you live in an overcrowded and poorly ventilated house, it is possible that you may suffer from which of the following disease? 1
 a) Cancer b) AIDS c) Air borne diseases d) Cholera
- 12 Which of the following conditions will increase the rate of evaporation? 1
 a) Increase in temperature of water b) Decrease in wind speed
 c) Increase in surface area of water d) Adding sugar to water

OR

Which of the following will produce severe burns :

- a) Hot water b) Boiling water c) Steam d) All of these

For question numbers 13 and 14, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below

- i) Both A and R are true and R is correct explanation of the assertion.
 ii) Both A and R are true but R is not the correct explanation of the assertion.
 iii) A is true but R is false.
 iv) A is false but R is true

- 13 Assertion: A saturated solution becomes supersaturated solution on cooling. 1
 Reason : It is because solubility decreases with decrease in temperature.
- 14 Assertion : Earth is attracted towards the object but with a very small acceleration. 1
 Reason: According to Newton's law of motion, if earth attracts an object towards itself, then the object should also attract the earth.

SECTION – B

- 15 (i) Name the separation technique you would follow to separate: 3
 a) Dyes from black ink.
 b) A mixture of NaCl and NH₄Cl.
 c) Cream from milk.
 d) Sodium chloride from its solution in water.
 (ii) State the principle used in separating a mixture of immiscible liquids
- 16 (i) Using criss-cross method ,write the chemical formulae of : 3
 (a) Iron (III) oxide (b) Barium sulphate (c) Sodium bicarbonate

OR

- (a) Define Avogadro's constant.
 (b) Write any two differences between an atom and an ion.

- 17 What are the features of Rutherford's Nuclear model of atom? 3
- 18 Name the person who gave the term Golgi apparatus. Name a cell organelle that is formed by Golgi apparatus. Write any two functions of Golgi apparatus. 3
- OR**
- a) Mention the change in human red blood cells when they are placed in hypertonic solution and name the phenomenon behind it.
- b) Identify and name the following cell structures.
 (i) The undefined nuclear region of prokaryotic cell
 (ii) Site of energy release inside the cell
- c) State any two functions of vacuole.
- 19 a) A person is suffering from chest pain, Breathlessness, loss of body weight, persistent cough and produces blood stained sputum. Name the disease and the causative organism. 3
- b) Write two ways by which HIV may get transmitted from one person to the other.
- 20 a) Mention any one difference between nitrogen fixation and nitrification. 3
- b) Ozone is poisonous and is found in upper atmosphere of earth yet the world is worried about its depletion. Explain why?
- 21 a) What is the difference between compost and vermi-compost? 3
- b) How is manure prepared?
- 22 a) Draw velocity time graph for a body which is moving with negative acceleration. 3
- b) Define uniform circular motion.
- c) What is the direction of acceleration of an object moving along a circular path?
- 23 a) Write mathematical representation of Newton's second Law of motion. 3
- b) What would be the force required to produce an acceleration of 2m/s^2 in a body of mass 12kg? What would be the acceleration if the force were doubled?
- 24 a) Distinguish between mass and weight. (2 differences) 3
- b) Why does a body reach the ground quicker at poles than at the equator when dropped from the same height?

OR

A stone is thrown vertically upward with an initial velocity of 40m/s . Taking $g = 10\text{m/s}^2$, find the maximum height reached by the stone. What is the net displacement and the total distance covered by the stone?

SECTION - C

- 25 The description of atomic particles of two elements X and Y is given below: 5

	X	Y
Protons	8	8
Neutrons	8	9
Electrons	8	8

- (a) What is the atomic number of Y?
- (b) What is the mass number of X?
- (c) What is the relation between X and Y?

- (d) Which element/elements do they represent?
(e) Write the cation / anion formed by the element

OR

- (a) An atom of an element has 7 electrons in its L shell.
(i) What is its atomic number?
(ii) State its valency.
(iii) Identify the element.
(b) With the help of schematic representation of atomic structure of Aluminium, show how.

- 26 (a) State the Law of Conservation of mass. 5
(b) Calculate the number of molecules present in 25g of Calcium carbonate.
(At: mass of Calcium =40 , Carbon = 12 , Oxygen =16)
(c) What are polyatomic molecules? Give an example of a triatomic molecule of a compound.

- 27 a) Give reason for the following 5
(i) In desert plants, epidermis has a thick waxy coating.
(ii) Epidermal cells of the roots generally have hair like parts.
b) Draw a well labeled diagram to show the location of the three types of meristem.
What is the function of Apical meristem?

- 28 a) To which division of plantae do algae belong? Write two characteristics of the same. 5
b) State three criteria for five Kingdom classification.
c) Write any two differences between Gymnosperms and Angiosperms.

OR

- a) What is the system of scientific naming of organisms called? State two important conventions followed while giving such names.
b) "Tape worm is triploblastic". What does it mean? Name the phylum to which tape worm and earthworm belong to.

- 29 a) Derive the expression for Kinetic Energy. 5
b) Calculate the units (kWh) of energy consumed by 100 W electric bulb in 5 hours daily for 10 days
30 Write the full form of acronym SONAR. Explain how the method of echo- ranging is used to 5
determine the depth of sea.

OR

- a) What is meant by longitudinal wave? Give an example.
b) Draw graphical representation of sound wave. Mark the position of compression and rarefaction on this graph. Also mark wavelength and amplitude on this graph.

End of the Question Paper