IDEAL INDIAN SCHOOL, DOHA-QATAR
ANNUAL EXAMINATION, FEBRUARY 2024
SCIENCE (086)

SET 2

Class: IX **Max marks: 80**
Date: 18-02-2024 **Duration: 3 hours**

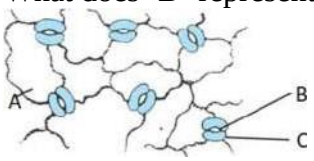
General Instructions:

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

SECTION–A

Select and write one most appropriate option out of the four options given for each of the questions 1–20

Q. No	Questions	Marks
1	What happens when saturated solution is allowed to cool? (a) crystals of pure substance will be formed (b) a colloidal solution will be formed (c) a suspension will be formed (d) a true solution will be formed	1
2	Latent heat of sublimation is (a) heat supplied to increase the pressure (b) heat supplied to decrease the temperature (c) heat supplied to convert solid into its gaseous state (d) heat supplied to convert solid into its liquid state	1
3	Who discovered electron? (a) J J Thomson (b) J Chadwick (c) Rutherford (d) Goldstein	1
4	Iodine in alcohol known as (a) tincture iodine (b) iodine blue	1

	(c) methyl blue (d) iodoform	
5	Sodium chloride solution is an example of (a) colloidal solution (b) true solution (c) suspension (d)saturated solution	1
6	Which of the following is correct order of compressibility? (a) Sugar solution > oxygen > stone (b) Sugar solution > stone > oxygen (c) Stone > oxygen > Sugar solution (d) Oxygen > Sugar solution > stone	1
7	"In a chemical substance the elements are always present in a definite proportion by mass". Identify the law: (a) Law of constant proportion (b) Law of conservation of mass (c) Law of chemical equilibrium (d) Bohr's law	1
8	What does 'B' represent in the given diagram?  (a)stoma (b)guard cell (c)epithelial cell (d)cork	1
9	Find out the false sentence (a) Golgi apparatus is involved with the formation of lysosomes. (b) Nucleus, mitochondria and plastid have DNA; hence they are able to make their own structural proteins. (c) Mitochondria is said to be the powerhouse of the cell as ATP is generated in them. (d) Cytoplasm is called as protoplasm	1
10	The cell theory was further expanded by ---------- (a) Robert brown (b) Leeuwenhoek (c) Virchow (d) Schleiden and Schwann	1
11	Lipid molecules in the cell are synthesised by (a) smooth endoplasmic reticulum (b) rough endoplasmic reticulum (c) golgi apparatus (d) plastids	1

12	---------- forms the lining of kidney tubules and the duct of salivary glands where it provides mechanical support. (a) cuboidal epithelium (b) glandular epithelium (c) squamous epithelium (d) columnar epithelium	1
13	A force of 10N is applied on an object at rest to accelerate it at $0.2m/s^2$. What is the mass of the object? (a) 50kg (b) 5kg (c) 500kg (d) 0.5kg	1
14	What measures the speed in an automobile? (a) Speedometer (b) Barometer (c) Odometer (d) Anemometer	1
15	What are the components of cartilage matrix? (a) RBC, WBC, platelets (b) proteins, sugars (c) proteins, salts, hormones (d) calcium, phosphorus	1
16	Name two vitamins that should be included in high amount in poultry feed. (a) vitamin A&K (b) vitamin A&B (c) vitamin B12 and A (d) vitamin A &E	1
	Q.no17 to 20 are Assertion – Reasoning based questions. **These consist of two statements–Assertion(A)and Reason(R). Answer these questions selecting the appropriate option given below:** **(a) Both A and R are true and R is the correct explanation of A** **(b) Both A and R are true and R is not the correct explanation of A** **(c) A is true but R is false** **(d) A is False but R is true**	
17	**Assertion (A):** We feel colder after taking bath with hot water. **Reason (R):** Evaporation of hot water takes place faster which causes cooling.	1
18	**Assertion (A):** The ER acts as a cytoplasmic framework. **Reason (R):** Endoplasmic reticulum does not provide a surface for some of the biochemical activities of the cell.	1
19	**Assertion (A**): The displacement of a body may be zero, though its distance is finite	1

	Reason (R): If body has moved, the displacement is zero when initial and final positions are same, while distance is finite	
20	**Assertion (A):** The nervous tissue are highly specialized for being stimulated and transmitting the stimulus very rapidly within the body. **Reason (R):** The skin, spinal cord and brain are all composed of the nervous tissue .	1
	SECTION–B Q. no. 21 to 26 are very short answer questions.	
21	Define Tyndall effect. Give two examples of Tyndall effect observed in your surroundings.	2
22	 Identify the given connective tissue and write its function in human body.	2
23	What would happen if the plasma membrane ruptures or breaks down? **OR** What would happen to the life of a cell if there was no golgi apparatus?	2
24	What is reverberation? How is reverberation reduced in auditoriums?	2
25	An object experiences a force of 29N and is pushed horizontally in the opposite direction by 6m. What is the work-done by the external force? What can we say about the work done if no displacement takes place after applying the force?	2
26	How do biotic and abiotic factors affect crop production?	2
	SECTION–C Q.no.27 to 33 are short answer questions.	
27	(a) Write the chemical name of the following. i) CCl_4 ii) $(NH_4)_3 PO_4$ (b) Write the chemical formulae of the following. i) Potassium nitrate ii) Aluminium chloride (c) Calculate the molecular mass of the following compounds. i) H_2SO_4 ii) CH_3OH (atomic masses of C=12u, S=32u, O=16u) **OR** a) Define atomicity. Give one example of each of monoatomic, diatomic, tetra-atomic, and poly atomic molecules. b) Define one atomic mass unit.	3

<table>
<tr><td>28</td><td>a) Composition of the nuclei of two atomic species X and Y are given as under
<table><tr><td></td><td>X</td><td>Y</td></tr><tr><td>Protons</td><td>18</td><td>20</td></tr><tr><td>Neutrons</td><td>22</td><td>20</td></tr></table>Give the mass number of X and Y. What is the relation between the two species? Explain.
b) An atom has 3 electrons in its M shell. Identify the element and write its electronic configuration.</td><td>3</td></tr>
<tr><td>29</td><td>Differentiate between diffusion and osmosis. Write any two examples where a living organism uses osmosis to absorb water.</td><td>3</td></tr>
<tr><td>30</td><td>Distinguish between intercropping and crop rotation. List any two advantages of intercropping.</td><td>3</td></tr>
<tr><td>31</td><td>a) Define uniform circular motion
b) A racing car has a uniform acceleration of 8m/s^2. What distance will it cover in 10s after start?</td><td>3</td></tr>
<tr><td>32</td><td>a) Define Potential energy and derive its mathematical expression
b) The mass of a wooden box is 40kg. To what height should it be raised so that its potential energy may become 2000J
OR
a) Derive the mathematical equation of kinetic energy.
b) Name the energy possessed by the following objects:
i. An oscillating pendulum held at its extreme position
ii. Wheels on a moving bicycle</td><td>3</td></tr>
<tr><td>33</td><td>a) Give any two applications of ultrasound.
b) A sound wave is travelling at a speed pf 345m/s. If the wavelength is 10cm, what is the frequency of the wave? Will it be audible?</td><td>3</td></tr>
<tr><td></td><td>SECTION–D
Q.no.34 to 36 are Long answer questions.</td><td></td></tr>
<tr><td>34</td><td>a) How will you find the valency of sodium and nitrogen and with the help of a diagram draw the Bohr model of sodium and nitrogen.
b) Write the electronic configuration of any one pair of isotopes and isobars.
c) Differentiate between valency and valence electron.
OR
a) Differentiate between isotopes and isobars. Explain the isotopes of hydrogen. Write any two applications of isotopes.
b) If bromine atom is available in the form of, say two isotopes $^{79}_{35}Br$ (49.7%) and $^{81}_{35}Br$ (50.3%), calculate the average atomic mass of bromine atom.</td><td>5</td></tr>
<tr><td>35</td><td>a) Differentiate between striated, smooth muscle and cardiac muscles on the basis of their structure and location in the body with the help of suitable diagrams.
OR
a) What are the differences between simple permanent tissue and complex permanent tissue.
b) Give differences between Ligaments and Tendons.</td><td>5</td></tr>
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<tr><td>36</td><td>a. State the Universal law of Gravitation and derive its mathematical expression
b. State Archimedes principle and give one of its applications.
OR
a. Define acceleration due to gravity and give the expression to calculate g.
b. An object weighs 10N when measured on the surface of the earth. What would be its weight when measured on the surface of the moon?
c. Define Pressure and give its SI unit</td><td>5</td></tr>
<tr><td></td><td>SECTION–E

Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts.</td><td></td></tr>
<tr><td>37</td><td>Read the text carefully and answer the questions:

The formula unit mass of a substance is a sum of the atomic masses of all atoms in a formula unit of a compound. Formula unit mass is calculated in the same manner as we calculate the molecular mass. The only one difference is that we use the word formula unit for those substances whose constituent particles are ions. The atomic masses of Zn=65u, Na=23u, K=39u, O=16u.

i) Calculate the formula unit masses of
a) ZnO b) Na_2O
ii) Give the names of the elements present in the following compounds.
a) Hydrogen sulphate b) Quick lime c) dry ice d) potassium bromide</td><td>2

2</td></tr>
<tr><td>38</td><td>Read the text carefully and answer the questions:

The practice of keeping or rearing, caring, and management of honeybee on a large scale for obtaining honey and wax is called apiculture. The place where bees are raised is called an apiary. The value or quality of honey depends upon the pasturage or the flowers available to the bees for nectar and pollen collection. In addition to adequate quantity of pasturage, the kind of flowers available will determine the taste of the honey.

Following are the Honeybee varieties that are used for bee-keeping as follows:

<table><tr><td>Indigenous varieties</td><td>Exotic varieties</td></tr><tr><td>Apis cerana indica (Indian bee)</td><td>Apis mellifera (Italian bee)</td></tr><tr><td>Apis dorsata (Rock bee), Apis florae (Little bee)</td><td>Apis adamsoni (South African bee)</td></tr></table></td><td></td></tr>
</table>

	 (a) Mention the products obtained from the honeybee. (b) What is pasturage? (c) Does honeybee help in pollination? Which type of flowers attracts the honey bee? **OR** (c) How is pasturage related to honey production ?	1 1 2
39	Newton postulated three laws which govern the moving objects. Newton's first law of motion states that a body at rest will remain at rest and a body which is in motion will continue to be in motion unless otherwise they are acted upon by an external force. In other words, all objects resist a change in their state of motion. The second law explains that the force on an object is equal to its mass times its acceleration. In the third law, when two objects interact, they apply forces to each other of equal magnitude and opposite direction. a. The first law of motion is also known as i) Law of Inertia ii) Law of Thermodynamics iii) Law of Momentum iv) None of the above b. Inertia depends on i) Momentum ii) Weight iii) Force iv) Mass c. The mathematical expression of Newton's second law of motion- i) F=m.a ii) F=m/a iii) p=m.v iv) p=m/v d. The SI unit of force is i) Kgm/s ii) $kgms^{-2}$ iii) Newton iv) Pascal **********	1 1 1