KVS ZIET CHANDIGARH
Sample Question Paper (PT- II, Cumulative)
2023-24Class IX (Science)

Max. Marks: 80 **Time Allowed: 3 hours**

General Instructions:

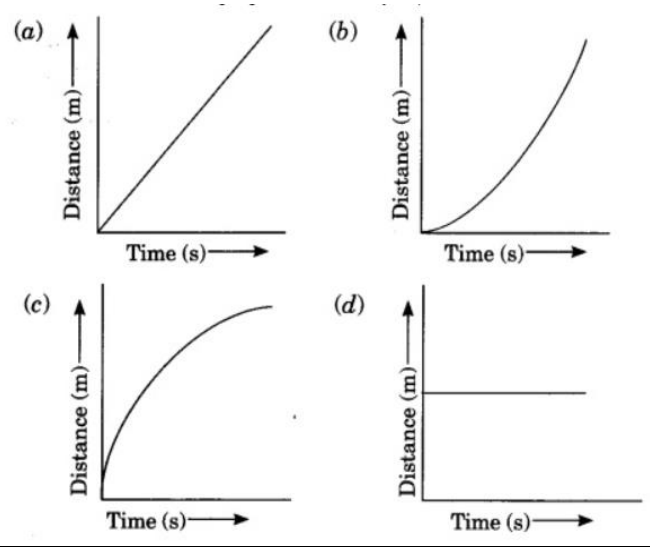
i. *This question paper consists of 39 questions in 5 sections.*
ii. *All questions are compulsory. However, an internal choice is provided in some questions. A student isexpected to attempt only one of these questions.*
iii. *Section A consists of 20 objective-type questions carrying 1 mark each.*
iv. *Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questionsshould 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. Answers to thesequestions 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 the most appropriate option out of the four options given for eachof the questions 1 - 20. There is no negative mark for an incorrect response.

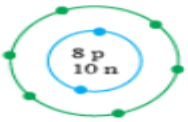
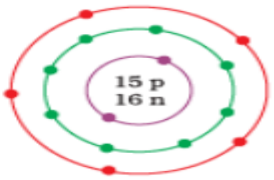
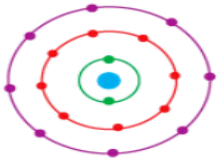
Q. No.	Questions	Marks
1	Which one of the following sets of phenomena would increase on raising the temperature? (a) Diffusion, evaporation, compression of gases (b) Evaporation, compression of gases, solubility (c) Evaporation, diffusion, expansion of gases (d) Evaporation, solubility, diffusion, compression of gases	1
2	The boiling points of diethyl ether, acetone and n-butyl alcohol are 35°C, 56°C and 118°C respectively. Which one of the following correctly represents their boiling points in kelvin scale? (a) 306 K, 329 K, 391 K (b) 308 K, 329 K, 392 K (c) 308 K, 329 K, 391 K (d) 329 K, 392 K, 308 K	1
3	Which of the following is not a physical change? (i) Melting of iron metal (ii) Rusting of iron (iii) Bending of an iron rod (iv) Drawing a wire of iron metal	1
4	According to the following reaction $2A + B \rightarrow A_2B$. Which of the following statement concerning this reaction is correct? (i) The product A_2B shows the properties of substances A and B (ii) The product will always have a fixed composition (iii) The product so formed cannot be classified as a compound (iv) The product so formed is an element	1
5	Which of the following correctly represents 36 g of water? (i) 2 moles of H_2O (ii) 20 moles of water (iii) 6.022×10^{23} molecules of water (iv) 1.2044×10^{24} molecules of water	1

	(a) (i) (b) (i) and (iv) (c) (ii) and (iii) (d) (ii) and (iv)	
6	Mass of one atom of oxygen is (a) $\frac{16}{6.023\times10^{23}}$ g (b) $\frac{32}{6.023\times10^{23}}$ g (c) $\frac{1}{6.023\times10^{23}}$ g (d) 8u	1
7	Which of the following are true for an element? (i) Atomic number = number of protons + number of electrons (ii) Mass number = number of protons + number of neutrons (iii) Atomic mass = number of protons = number of neutrons (iv) Atomic number = number of protons = number of electrons (a) (i) and (ii) (b) (i) and (iii) (c) (ii) and (iii) (d) (ii) and (iv)	1
8	Cell is discovered by- a- Antony Van Leeuwenhoek b- Robert Kotch c- Robert Hooke d- Darwin	1
9	Guard cells are easily observed in- a. Epidermis b. Cortex c. Vascular bundle d. Collenchyma	1
10	In what aspect bacteria differs from plants- a. Cell membrane b. Cell wall c. Nuclear membrane d. All of these	1
11	Which of the following belongs to Monera a. Flowering plants b. Plants with no flower c. Viruses d. Bacteria	1
12	While observing onion peel under microscope which of the following is not visible- a. Cell membrane b. Nucleus c. Cytoplasm d. All of these	1

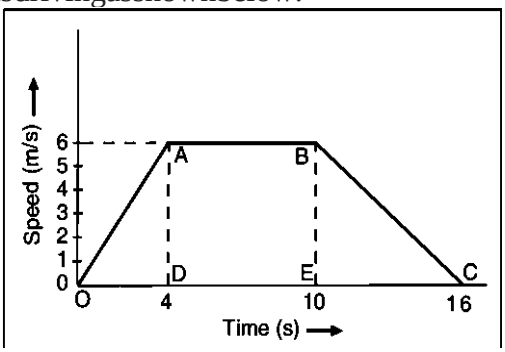
13	Which of the following graph represents the uniform motion?  	1
14	What does an area velocity time graph give? (a) Distance (b) Acceleration (c) Displacement None of the above	1
15	The gravitational force between two iron balls is 4N. If the distance between the balls is reduced to half, the gravitational force between the balls will be (a) 1/2 N (b) 2N (c) 4N (d) 16N	1
16	The rate of change of momentum of an object is proportional to (a) Mass of the body (b) Velocity of the body (c) Net force applied on the body (d) None of these	1
	Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: a) Both A and R are true, and R is the correct explanation of A. b) Both A and R are true, 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: Dalton's theory states that an atom is indivisible. Reason: An atom is made up of electrons, protons and neutrons.	1
18	Assertion: In addition to carrying nutrients and gases, blood cells also contribute to the body's immune system. Reason: White blood cells are also essential to the immune system. a. Both assertion and reason are correct and the reason is the correct explanation of assertion. b. Both assertion and reason are correct and the reason is not a correct explanation of assertion. c. Assertion is true but the reason is false d. Assertion is false but the reason is true.	1

19	**Assertion:** Universal gravitational constant G is a scalar quantity. **Reason:** The value of G is the same throughout the universe.	1
20	**Assertion:** When a firefly hits a bus, each of them exerts the same force. **Reason:** Firefly has more mass as compared to the windshield.	1
	Section-B **Question No. 21 to 26 are very short answer questions**	
21	Classify the following into osmosis/diffusion (a) Shrinking of grapes kept in thick sugar syrup. (b) Preserving pickles in salt. (c) Spreading of smell of cake being baked throughout the house. (d) Aquatic animals using oxygen dissolved in water during respiration.	2
22	Why do bacteria are considered as prokaryotic cells?	2
23	Write the functions of the followings- i- Sieve tubes ii- Companion cells	2
24	Identify the type of tissue based on the given features- a- Contains Long narrow, thick-walled cells b- Conduct food from leaves to the other parts c- Thin cell wall and present in the soft part of the plants. d- cell walls irregularly thickened at the corners	2
25	Distinguish between uniform and non-uniform motion.	2
26	A sharp knife is more effective than a blunt knife. Why?	2

Section-C **Question No. 27 to 33 are short answer questions**		
27	(i) Write the formulae for the following compounds and calculate the molecular mass for each one of them. (a) Baking powder (b) Limestone (ii) Calculate the number of moles of magnesium present in a magnesium ribbon weighing 12 g. Molar atomic mass of magnesium is 24 g mol^{-1}.	3
28	Name the process associated with the following (a) Dry ice is kept at room temperature and at one atmospheric pressure. (b) A drop of ink placed on the surface of water contained in a glass spread throughout the water. (c) A potassium permanganate crystal is in a beaker and water is poured into the beaker with stirring. (d) Acetone bottle is left open and the bottle becomes empty. (e) Milk is churned to separate cream from it. (f) Settling of sand when a mixture of sand and water is left undisturbed for some time.	3
29	Provide and two comparison in between different types of skeletal muscles present in the human body. **OR** Explain the structure of human neuron with the help of labelled diagram.	3
30	On a 120 km track, a train travels the first 30 km at a uniform speed of 30km/h. Calculate the speed with which the train should move the rest of the track so as to get the average speed of 60km/h for the entire trip.	3
31	(a) Name the factor on which the inertia of the body depends. (b) State Newton's second law of motion. (c)What change will force bring in a body?	1+1+1
32	A ball is thrown upward from the surface of the moon with a velocity of 19.6m/s. (a) How much time will it take to attain the maximum height? (b) How high will it go?	2+1
33	What happens to the force between two objects if (a) The mass of one object is doubled? (b) The distance between the object is doubled and tripled? The masses of both objects are doubled?	2+1
Section-D **Question No. 34 to 36 are long answer questions.**		
34	(a) Name the process, when a drop of ink placed on the surface of water contained in a glass spread throughout the water. (b) Write the molecular formulae of Calcium (II) phosphate. (c) Write the atomic number, mass number and valency of atoms (x), (y) and (z)? Give your answer in a tabular form.	5

	 (x)  (y)  (z) OR (a) What are ionic compounds? Give a suitable example. (b) Give the formulae of the compounds formed from the following sets of elements. (a) Calcium and fluorine (b) Hydrogen and sulphur (c) Nitrogen and hydrogen (e) Sodium and oxygen (c) Find out the valency of the atoms represented by the figure (a) and (b).  (a)  (b)	
35	Compare the plant cell and animal cell by giving only well labelled diagram. **OR** Make labelled diagram of a bacterial cell, label the following parts and write their functions also- i- Nucleoid ii- Pilli iii- Ribosome iv- Cell wall v- Plasmids	5 3+2
36	Two objects A and B, having mass 100 kg and 75 kg, move with velocities of 40 km/h and 6 km/h respectively. Answer the following: (a) Which will have greater inertia? (b) Which will have greater momentum? (c) Which will stop first if equal negative acceleration is applied on both? (d) Which will travel a greater distance? (e) Which will impart greater impulse if collides with a wall?	5
SECTION - E **Questions 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.**		
37	**Read the passage and answer the following questions:** Gases are highly compressible as compared to solids and liquids. The liquefied petroleum gas (LPG) cylinder that we get in our home for cooking or the oxygen supplied to hospitals in cylinders is compressed gas. Compressed natural gas (CNG) is used as fuel these days in vehicles. The liquid takes up the shape of the container in which they are kept. Liquids flow and change shape, so they are not rigid but can be called fluid. Solids and liquids can diffuse into liquids. The aquatic animals can	4

	breathe underwater. The rate of diffusion of liquids is greater than solid. 1. Why Compressed natural gas (CNG) is used as fuel these days in vehicles? (a) due to its high compressibility (b) large volumes of a gas can be compressed into a small cylinder (c) transported easily (d) all of these 2. liquids have no fixed _____ but have a fixed_____. (a) shape, volume (b) volume, shape (c) shape, size (d) size, shape 3. The aquatic animals can breathe underwater due to (a) the presence of dissolved carbon dioxide in water (b) the presence of dissolved oxygen in the water (c) the presence of dissolved Nitrogen in the water (d) all of these 4. The rate of diffusion of liquids is greater than solid due to (a) liquid particles move freely (b) liquid have greater space between each other (c) both (a) and (b) (d) none of these	
38	Chloroplast is pigment present in the autotrophic organisms. The chloroplast is the basis of food for another organism. Without it the food chain cannot exist. It converts photoenergy into chemical energy. Chloroplasts are surrounded by a double membrane and contain a third inner membrane. i- Beside plant give an example of any other living organism which possesses chloroplast? ii- Chloroplast converts photoenergy into chemical energy. Explain. iii- Write the chemical equation of photosynthesis. iv- List any two components of chloroplast which are present inside it. **OR** Mitochondria are membrane-bound cell organelles (mitochondrion, singular). In bacteria it is not present as in eukaryotic cells. in bacteria it is named as mesosomes and these are infoldings in the plasma membranes. mesosomes are analogous to the eukaryotic mitochondria and mesosomes also help in carrying out the respiration in the bacteria. i- What is your point of view in true / false for the following statement- "Mitochondria are strange organelles in the sense that they have their own DNA and ribosomes". ii- What is role of mitochondria in animals and mesosomes in bacteria? iii- Expand "ATP" iv- Do viruses and fungi contain Mitochondria?	4

39	Aditya started driving his car. He increases the speed for 4 seconds and then he kept his car at a constant speed for 6 seconds. Then after he decreased the speed of the car up to another 6 seconds. After reaching the starting place, he draws the speed-timegraphofhis16secondsdrivingasshownbelow:  (i) What type of motion is represented by OA? (a) uniform velocity (b) uniform acceleration (c) negative acceleration (d) no acceleration (ii) What type of motion is represented by BC? (a) uniform velocity (b) uniform acceleration (c) negative acceleration (d) no acceleration (iii) Find out the acceleration of the body. (a) 1.5 m/s^2 (b) 2 m/ s^2 (c) 3 m/ s^2 (d) 1 m/s^2 **OR** Calculate the retardation of the body. (a) 1.5 m/ s^2 (b) 2 m/ s^2 (c) 3 m/ s^2 (d) 1 m/ s^2	1+1+2

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