



**Sample Paper 2**  
**Half Yearly Examination, 2018-19**  
**Sub: Science**  
**Class – IX**

**Time Allowed: 3 hr.**

**Maximum Marks : 80**

**Name** \_\_\_\_\_

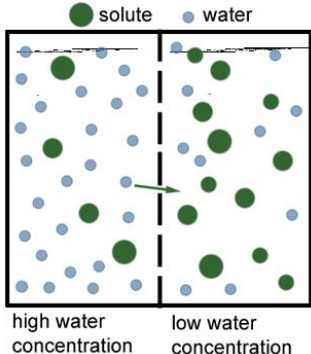
**Sign of Invigilator** \_\_\_\_\_

**GENERAL INSTRUCTIONS:**

- *The question paper comprises of two sections A and B. You are to attempt both the sections.*
- *All questions are compulsory.*
- *All questions of section A and all questions of section B are to be attempted separately*
- *Question number 1 to 2 in section A are one mark questions. These are to be answered in one word or in one sentence*
- *Question number 3 to 5 are two marks questions. These are to be answered in about 30 words each.*
- *Question number 6 to 15 are three marks questions including a value based question. These are to be answered in about 50 words each.*
- *Question number 16 to 21 are five marks questions. These are to be answered in about 70 words each.*
- *Question numbers 22 to 27 in Section-B are Practical based questions. Each question carry two marks.*

**Section-A**

1	A rubber band changes its shape when it is pulled, yet it is classified as a solid. Give reasons.	1
2	State Newton's Third Law of motion.	1
3	On what factors is the growth of plants and flowering dependent?	2
4	Give reason for the following: [a] Air is a mixture and not a compound. [b] Solubility of a solution increases if it is heated.	2
5	What do you mean by uniform circular motion? Is it an accelerated motion?	2
6	An object initially moving with a velocity of 36 km/h is brought to 18 km/h in 5 s. Calculate the distance travelled by the object. If now the object suddenly starts accelerating at the rate of 2 m/s <sup>2</sup> , find the velocity attained by the object after 10 s.	3
7	It is observed that in the outer space, sound cannot be heard. Why is it so? Can you describe an activity to support your claim?	3

8	A motor car of mass 1200 kg is moving along a straight line with 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 external force acting on it.	3
9	Write the significance of following cell organelles with respect to a plant cell. [a]Cell wall [b]Chloroplasts [c]Big vacuoles	3
10	Identify the process shown in the picture and write the importance of this process with respect to a living cell.   <p>The diagram shows a rectangular container divided by a vertical dashed line representing a semi-permeable membrane. On the left side, there are many small blue dots (water) and a few large green dots (solute). Below this side is the label 'high water concentration'. On the right side, there are fewer blue dots and more green dots. Below this side is the label 'low water concentration'. A green arrow points from the left side to the right side, indicating the direction of water movement. Above the container, a legend shows a green dot for 'solute' and a blue dot for 'water'.</p>	3
11	Write the formulae and names of the compounds formed between : [a] Ferrous and sulphide ions [b] Aluminium and sulphate ions [c]Potassium and chlorate ions	3
12	Distinguish between: [a] ligament and tendon [b]parenchyma and collenchyma [c]striated and unstriated muscle	3
13	Draw a well labeled diagram to show the location of meristematic tissues in plant body.	3
14	[a] Calculate the number of moles for the following: [i] 52 g of He [ii] 17 g of H <sub>2</sub> O [b]How many molecules are present in 34 g of Ammonia?	3
15	[a] In a slum area many people suffer from malaria. Mention any two unhygienic conditions that must be prevailing in that locality. [b] Write the principles of treatment of a disease.	3
16	[a]Write short notes on: [i] Food requirement of broilers and layers. [ii] Disadvantages of mixed cropping.	5

	<p>[iii] Prevention of storage losses of food grains.</p> <p>[b] Animal husbandry is the scientific management of livestock which includes housing, feeding, breeding and disease control. What precautions are to be taken while making a cattle shed?</p>	
17	<p>[a] A large crystal of Potassium permanganate was placed at the bottom of a beaker of cold water and left for several hours.</p> <p>[i] Describe what would be seen (i) after 5 minutes, (ii) after several hours.</p> <p>[ii] Explain your answer using idea of particles.</p> <p>[iii] Name the two processes that take place during the experiment.</p> <p>[b] Name the process involved in the given observations.</p> <p>[i] Naphthalene balls disappear with time without leaving any solid.</p> <p>[ii] Desert coolers cool better on hot summer days.</p>	5
18	<p>Prove with the help of 3rd Law of motion that total momentum of two bodies is conserved during collision provided no external force acts. A car 'A' of mass 1500 kg travelling at 25 m/s collides with another car 'B' of mass 1000 kg travelling at 15 m/s in the same direction. After collision the velocity of car A becomes 20 m/s. Calculate the velocity of car B after collision.</p>	5
19	<p>Using the idea of particles explain why?</p> <p>[a] Smell of burnt food travels throughout the house.</p> <p>[b] When two solids are placed on the top of each other, they do not mix.</p> <p>[c] For any substance temperature remains constant during change in state.</p> <p>[d] A gas completely fills a vessel in which it is kept.</p> <p>[e] A heap of sand doesn't have a fixed shape yet it is a solid.</p>	5
20	<p>Taking the example of Carbon cycle explain how transfer of matter and energy takes place between different components of biosphere.</p>	5
21	<p>The following is the velocity time graph of a moving body.</p> <p>Find:</p> <p>(a) The velocity with which the motion started.</p> <p>(b) Velocity at point C.</p> <p>(c) Acceleration acting on the body between A and B.</p> <p>(d) Acceleration acting on the body between C and D.</p>	5

<b>Section-B</b>		
22	To separate the components of a mixture of sand, iron fillings ,pebbles(a few), Ammonium Chloride .What type of separating techniques are required?	2
23	[a]What may happen if the bulb of thermometer is dipped below the surface of water while determining boiling point of water? [b]What happens to the boiling point of a liquid when volatile impurities are added to it?	2
24	Write the steps for preparing a temporary mount of onion peel. How will you remove excess fluids from your slide?	2
25	Draw and write the identifying features of a nerve cell.	2
26	The brakes applied to a car produces an acceleration of $6 \text{ m/s}^2$ in the opposite direction to the motion. If the car takes 2 s to stop after the application of the brakes, calculate the distance it travels during this time.	2
27	A body starts from rest and rolls down a hill with a constant acceleration. If it travels 400 m in 20 s, calculate the force acting on the body if its mass is 10 kg.	2

**MARKING SCHEME - SAMPLE PAPER-2  
HALF YEARLY EXAMINATION-2018-19**

**SUB: SCIENCE  
CLASS - IX**

**Section-A**

1	It regains its shape back after releasing pressure.	1
2	Every action has an equal and opposite reaction and they act on two different bodies.	1
3	Duration of sunlight.	2
4	[a] It can be separated by physical methods. [b] Increase in temperature increases unsaturation.	2
5	Refer page 110 NCERT Textbook	2
6	$U = 36 \text{ km/h} = 10 \text{ m/s}$ ; $V = 18 \text{ km/h} = 5 \text{ m/s}$ ; $t = 5 \text{ s}$ Using $V = U + At$ , $A = -1 \text{ m/s}^2$ $S = ut + \frac{1}{2}at^2$ ; $s = 37.5 \text{ m}$ For the other part $u = 5 \text{ m/s}$ ; $a = 2 \text{ m/s}^2$ ; $t = 10 \text{ s}$ Using $V = U + AT$ ; $V = 25 \text{ m/s}$	3
7	Refer page 162, NCERT textbook.	3
8	$U = 90 \text{ km/h} = 25 \text{ m/s}$ ; $V = 18 \text{ km/h} = 5 \text{ m/s}$ ; $t = 4 \text{ s}$ ; $m = 1200 \text{ kg}$ Using $v = u + at$ ; $a = -5 \text{ m/s}^2$ Change in momentum = $mv - mu = -24000 \text{ kg.m/s}$ Force = Change in momentum/ time = $-24000/4 = -6000 \text{ N}$	3
9	[a]Cell wall gives rigidity to plant. [b]Chloroplasts are important for photosynthesis. [c]Big vacuoles give turgidity and rigidity to cell and help in storage of amino acids, sugars etc.	3
10	Osmosis, transfer of material in and out of cell.	3
11	[a] Ferrous sulphide $\text{FeS}$ [b] Aluminium sulphate $\text{Al}_2(\text{SO}_4)_3$ [c]Potassium chlorate $\text{KClO}_3$	3

12	<p>[a] Ligament connects two bones ,tendon connects muscles to bones.</p> <p>[b]Parenchyma stores food and provides support to the plant, collenchyma provides elasticity.</p> <p>[c]Striated muscle are voluntary and un striated muscles are involuntary.</p>	3
13	Diagram and labelling.	3
14	<p>[a]</p> <p>[i] <math>1/4 \times 52 = 13</math> moles                      [ii] <math>1/18 \times 17 = 0.94</math> moles.</p> <p>[b]</p> <p>Molecular mass of Ammonia <math>14 + 1 \times 3 = 17u</math></p> <p>1 mole of Ammonia = 17g</p> <p>34g will contain = <math>1/17 \times 34 = 2</math> molecules.</p>	3
15	<p>[a] Stagnant water ,dirty surroundings.</p> <p>[b] Reduce the effect of disease, kill the cause.</p>	3
16	<p>[a]</p> <p>[i] Broilers-rich in proteins and layers-rich in Calcium and Phosphorus.</p> <p>[ii] It is difficult to use specific fertilizers.</p> <p>[iii] Storage losses of food grains can be prevented by fumigation, spraying pesticides.</p> <p>[b] Well ventilated, slanting floor, clean, pest and rodent free.</p>	5
17	<p>[a]</p> <p>[i] After 5 minutes molecules of Potassium permanganate will slowly mix with water. After few hours it will completely mix.</p> <p>[ii] Diffusion.</p> <p>[b]</p> <p>[i] Sublimation</p> <p>[ii] Evaporation</p>	5
18	<p>Refer to page 123 and 124 NCERT Textbook for derivation.</p> <p><math>M_1 = 1500</math> kg; <math>U_1 = 25</math> m/s ; <math>V_1 = 20</math> m/s</p> <p><math>M_2 = 1000</math> kg; <math>U_2 = 15</math> m/s ; <math>V_2 = ?</math></p> <p>According to law of conservation of momentum,</p> <p><math>M_1U_1 + M_2U_2 = M_1V_1 + M_2V_2</math></p>	5

	$V_2 = 22.5 \text{ m/s}$	
19	<p>[a] Diffusion ,intermixing of particles.</p> <p>[b] Diffusion is least in solids. It is superficial.</p> <p>[c]Energy is used for breaking of bonds.</p> <p>[d]Molecules are constantly moving.</p> <p>[e]Single grain is a solid.</p>	5
20	Detailed account on utilization of Carbon dioxide from atmosphere ,photosynthesis ,carbonates in water,organic compounds , utilization by animals, back to atmosphere.	5
21	<p>(a) 20 m/s</p> <p>(b) 40 m/s</p> <p>(c) <math>a = (v-u)/t</math>; <math>u = 20 \text{ m/s}</math>; <math>v = 40 \text{ m/s}</math> ; <math>t = 3 \text{ s}</math>  <math>a = 6.67 \text{ m/s}^2</math></p> <p>(d) <math>a = (v-u)/t</math>; <math>u = 40 \text{ m/s}</math>; <math>v = 0 \text{ m/s}</math> ; <math>t = 2 \text{ s}</math>  <math>a = -10 \text{ m/s}^2</math></p>	5
<b>Section-B</b>		
22	Iron fillings –magnet ,pebbles-hand picking , Ammonium chloride -sublimation, sand is left.	2
23	<p>[a]Correct reading cannot be taken due to presence of impurities.</p> <p>[b]Variation in boiling point will be observed.</p>	2
24	Take an onion peel .Mount it on a clean glass slab. Add glycerine .Add stain. Place cover slip carefully. We can remove excess stain from the slide by adding water with help of a brush on one side of the cover slip and simultaneously absorbing excess stain with help of filter paper with the other hand.	2
25	A nerve cell has a long body with branched cytoplasmic extensions at one end and a long projection at the other end.	2
26	<p><math>a = -6 \text{ m/s}^2</math>; <math>t = 2 \text{ s}</math>; <math>v = 0 \text{ m/s}</math></p> <p>by using <math>v = u + at</math> ; <math>u = 12 \text{ m/s}</math></p> <p>by using <math>s = ut + (1/2) at^2</math></p> <p><math>s = 12 \text{ m}</math></p>	2
27	<p><math>u = 0 \text{ m/s}</math>; <math>t = 20 \text{ s}</math>; <math>s = 400 \text{ m}</math></p> <p><math>s = ut + (1/2) at^2</math> ; <math>a = 2 \text{ m/s}^2</math>.</p>	2

