Chumey Higher Secondary School

Bumthang, Bhutan

Annual Examination - 2022

Subject: Science **Total Marks: 100**

Class: VII **Time: 2 hours and 15 minutes**

INDEX CODE:									

Invigilator's initial: ……..

READ THE FOLLOWING DIRECTIONS CAREFULLY:

1. Do not write for the first **fifteen minutes.** This time is to be spent on reading the questions. After having read the questions, you will be given **two hours and fifteen minutes** to answer all the questions.
2. Make sure there are **fourteen** pages (1 – 14).
3. Write your **student code** and **class** correctly in your answer sheet.
4. There are two sections; **A** and **B**. All the questions in both the sections are compulsory.
5. The intended marks for each question are given in the **brackets []**.
6. Remember to write **quickly** but **neatly**.
7. **Do not** leave the examination hall before you have made sure that you have answered all the questions.

Section A [40 marks]

[Attempt ALL the questions]

Question 1

Direction: For each question, there are four alternatives A, B, C and D. Choose the correct alternative and circle it. Do not circle more than ONE alternative. If there are more than ONE circled, NO score will be awarded. [20 × 1 = 20]

1. A student peeled off a green leaf and observed it under a microscope. What shape would be seen?
   A. Oval.
   B. Conical.
   C. Cylindrical.
   D. Rectangular.
2. Daza is solving a mathematical problem. Which part of the brain is he using?
   A. Cranium.
   B. Cerebrum.
   C. Cerebellum.
   D. Medulla Oblongata.
3. Which of the following is a highly concentrated solution?
   A. 5 grams of salt per 100 mL of water.
   B. 17 grams of salt per 100 mL of water.
   C. 36 grams of salt per 100 mL of water.
   D. 37 grams of salt per 100 mL of water.
4. Distance and displacement are equal to each other if the body moves along
   A. a curved path.
   B. a circular path.
   C. an elliptical path.
   D. a straight line path.
5. A person suffers from anemia due to the lack of iron in diet. So the person is recommended to eat
   A. sea food, iodised salt.
   B. water, milk, tooth-paste.
   C. milk , dairy products, vegetables.
   D. liver, red meat, beans, green vegetables.

6. Table below shows three levers (A, B, and C).

A	B	C
Effort Arm = 5cm	Effort Arm = 10 cm	Effort Arm = 2 cm
Load Arm = 5 cm	Load Arm = 5 cm	Load Arm = 1 cm

Which statement about the mechanical advantage (M.A.) of these three levers is correct?

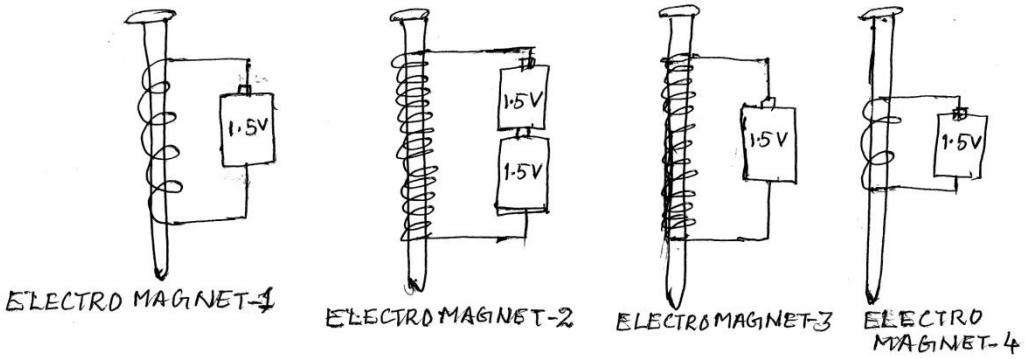
A. B has a greater M.A. than A.

B. B has a greater M.A. than C.

C. A and C have equal M.A.

D. B and C have equal M.A.

7. Which of the following electromagnet is powerful?



A. Electromagnet 1.

B. Electromagnet 2.

C. Electromagnet 3.

D. Electromagnet 4.

8. All the atoms contain neutron **EXCEPT** in

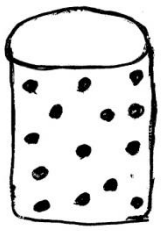
A. hydrogen.

B. oxygen.

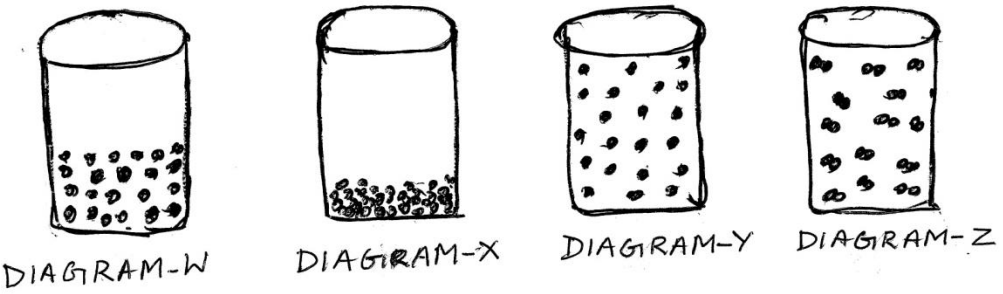
C. nitrogen.

D. chlorine.

9. The figure shows the sample of arrangement of gas particles at room temperature.



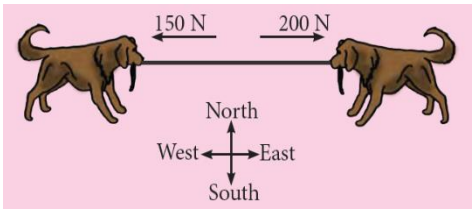
Which diagram among the following best shows the result of removing heat from the sample until it freezes?



A. Diagram W.
B. Diagram X.
C. Diagram Y.
D. Diagram Z.

10. The example of heterogeneous mixture is
    A. sugar solution.
    B. mixture of water and oil.
    C. mixture of water and alcohol.
    D. mixture of water and orange squash.
11. Elements in the modern periodic table are arranged in the
    A. increasing order of their atomic mass.
    B. decreasing order of their atomic mass.
    C. increasing order of their atomic number.
    D. decreasing order of their atomic number.

12. The figure below shows two dogs pulling on a rope with constant but unbalanced forces. In which compass direction will both the dogs most likely to move?



A. East.
B. West.
C. North.
D. South.

13. Scurvy is a disease that sailors often got on long voyages. It was discovered that scurvy could be prevented by eating oranges and lemons. This suggests that scurvy is a disease caused by

A. microorganism.
B. lack of exercise.
C. exposure to sea air.
D. a nutritional deficiency.

14. The examples of multicellular organisms are

A. bacteria, tiger and deer.
B. bacteria, tiger and sugarcane.
C. tiger, deer and sugarcane.
D. tiger, paramecium and sugarcane.

15. The table below shows the masses and volume of three objects (X, Y and Z).

X	**Y**	**Z**
Mass = 4 g	Mass = 6 g	Mass = 8 g
Volume = 2 cm^{-3}	Volume = 6 cm^{-3}	Volume = 4 cm^{-3}

Which statement about the densities of these three objects is correct?

A. Y is denser than X.
B. X is denser than Z.
C. Y and Z have equal densities.
D. X and Z have equal densities.

16. A taxi driver uses petrol in his vehicle. The pollution caused by emission from his vehicle is due to use of

A. biogas.
B. biomass.
C. geothermal.
D. fossil fuels.

17. Solution A has a pH of 10 and solution B has a pH of 6. When they are mixed together in equal proportion, their resultant pH would be _____.

A. 7.
B. 8.
C. 10.
D. 11.

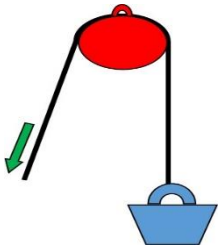
18. The organic acid contained in gooseberry (amla) is

A. critic acid.
C. maleic acid.
B. oxalic acid.
D. ascorbic acid.

19. Karpo heated ammonium chloride which changed directly from solid state to gas. It has undergone

A. condensation.
C. evaporation.
B. diffusion.
D. sublimation.

20. The picture shown below is an example of



A. pulley.
B. lever.
C. gear.
D. inclined plane.

Question 2

Direction: Fill in the blanks with the most appropriate words. **[5 × 1 = 5]**

1. Many people visit Gelephu hot spring every year. The type of energy derived from hot spring is an example of _____.
2. Nut-cracker is an example of _____ class lever.
3. An element X has an electronic configuration of 2, 8, 7. It belongs to _____ group.
4. Yellow color of sunflowers are due to presence of _____.
5. The smoke coming from the factory is filtered off the carbon particles through the facility fitted with its chimneys. It is based on the principle of _____.
6.

Question 3

Direction: Write TRUE or FALSE against each statement. **[5 × 1 = 5]**

1. The ovum is the biggest cell.
2. Particles are always in the state of rest.
3. Unbalanced force does not bring any change in its state of rest or of uniform motion in a straight line.
4. The single fixed pulley helps to multiply force.
5. The spinal nerve arises from the brain.

Question 4

Direction: Match each item under column I with the item in column II. Rewrite the correct pairs in the column III by writing the alphabet against the number. **[5 × 1 = 5]**

Column I	Column II	Column III
1. Electrical energy to mechanical energy	A. Power house	1 =
2. A boy completing a 200 m race in circular track	B. Coal	2 =
3. Chemical change	C. Germination of seed	3 =
4. Non-renewable source of energy	D. Graphite	4 =
5. Mitochondria	E. Cell membrane	5 =
	F. Electric Fan	
	G. Zero displacement	

Question 5

Direction: Give reasons for the following. **[5 × 1 = 5]**

1. A woman after menopause many not produce children.

   ……

   ……

2. Electric wires are coated with rubbers.

   ……

   ……

3. When your hand get stung by a bee, you wash your hand with soap.

   ……

   ……

4. Cutting of hair is an example of a physical change.

   ……

   ……

5. Hydropower is preferred to fossil fuels.

   ……

   ……

Section B [60 marks]

[Attempt ALL the questions]

Question 6 **[10]**

1. Differentiate plant cell from animal call by naming a cell organelle that is present in plant cell but absent in animal cell. [1]

……

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……

2. Diabetes, a non-communicable disease is increasing rapidly in Bhutan. As a science student, create a detailed sensitization plan where you will educate Bhutanese citizens in your locality on the disease including symptoms, treatment and prevention. [4]

Plan (When, how and where to sensitize people)	**Symptoms**	**Treatment**	**Prevention**

3. A girl is carrying a Barbie doll walking towards her friend and a giant man is pushing a big tree which is not moving. Who is doing the work, the girl or the giant man? Justify your answer. [2]

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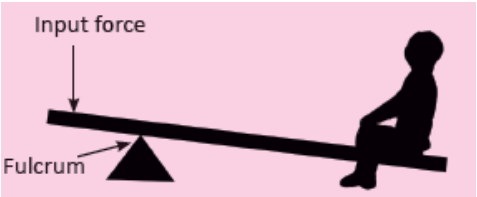
4. The figure below shows a lever that can be used to lift a person. The fulcrum is the point on which the lever pivots.



Describe one change that could be made to the lever to decrease the input force needed to lift the person. [2]

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……

……....

5. Define alkalis. [1]

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Question 7 **[10]**

1. During the Second World War, night pilots were fed with carrot juice. Why? [1]

……

……

2. Imagine that you are an ink molecule. Describe your experience when a drop of ink is added into a beaker of water. [2]

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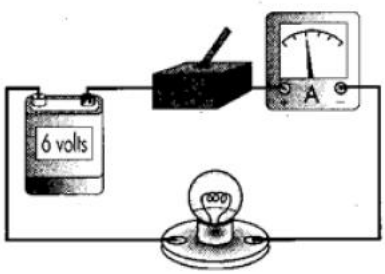
3. Study the figure below and answer the following questions.



i. Draw electric circuit using symbol. [2]

ii. If you add another bulb in parallel to the circuit, will the bulb be brighter, dimmer or stays the same? Explain. [2]

……

……

……

4. You must have often seen color fading from the curtain at your home after a few months.

i. What type of change is it? [1]

……

ii. Why has the occurred? [1]

……

iii. Give another example of the above change. [1]

……

Question 8 **[10]**

1. Answer the following questions with respect to Sodium-atom.

i. Write the symbol of Sodium along with its atomic number and mass number. [1]

……

ii. What type of ion will it form? Explain with the help of atomic structure and equation. [2]

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2. In biology laboratory, Norzin observed a cell under a microscope. While focusing on the cell, her attention was drawn to a tiny star like body close to a large dense spherical body at the centre. She also observed many rod shaped structures scattered inside the cell.
   i. Identify the cell organelles observed by Norzin. [2]
   ……
   ……
   ii. Is it a plant cell or an animal cell?
   ……
3. Imagine you are a particle of water. Describe your experiences while you are evaporating. [2]
   ……
   ……
   ……
   ……
4. Explain any two applications of pH. [2]
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   ……
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   ……

Question 9 **[10]**

1. The spread of smell of perfume is based on what principle? [1]
   ……
2. Suppose a bus travels 120 km in 3 hrs. What is the average speed in m/s? [2]
   ……
   ……
   ……...
3. The following four solutions were given to Rabjam.
   Solution I with pH 2. Solution III with pH 8.
   Solution II with pH 11. Solution IV with pH 6.
   i. Which of the two solutions should Rabjam mix so that the pH of the solution is highly acidic? [1]
   ……
   ii. Which of the two solutions should Rabjam mix so that the solution is neutral? [1]

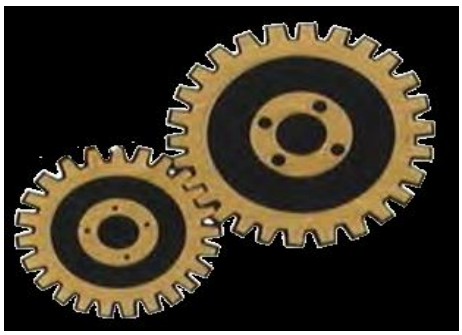
……

4. Classify the following into renewable and non-renewable energy. [2]

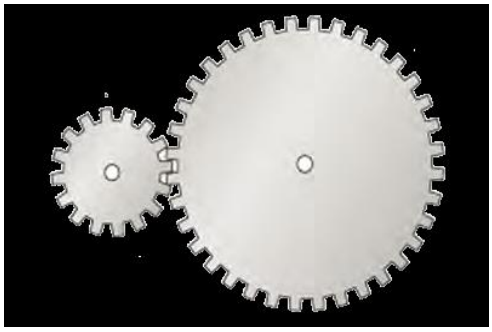
LPG, Biomass, Solar and Hot spring

Renewable Energy	Non-renewable Energy

5. The figure below shows two gear systems. Which system can be used to gain maximum speed and why? [2]



System 1



System

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……

6. What is the study of cell called? [1]

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Question 10 **[10]**

1. Gelay fell down from the staircase. He could neither walk properly nor remember what had happened to him after the fall. Which parts of the brain do you think were affected? [2]

……

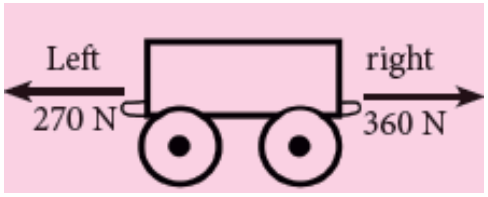
……....

2. Write the symbols for the following elements. Sort them as metals and non-metals. [2]

Sodium, Calcium, Oxygen and Chlorine

Metals	Non-metals

3. A chemistry laboratory assistant noticed labels missing from two reagent bottles A and B. To identify these two solutions, the laboratory assistant took a small amount of solution A in a test tube. To it a drop of phenolphthalein is added. The solution turns pink. On addition of a small amount of solution B, the pink colour disappears.
   i. What will happen if excess amount of solution A is added after the pink colour disappears? [1]
   ……
   ii. What is the nature of solution A and solution B? [2]
   ……
   ……
4. The figure shows a resting cart on a frictionless surface. Two unbalanced opposing forces are applied to the cart.



   i. If the unbalanced opposing forces of 270N and 360N are applied to the cart at the same time, what will happen? [1]
   ……
   ……
   ii. Identify two types of motion when the cart is in motion. [1]
   ……
   ……
5. Define magnetic induction. [1]
   ……
   ……

Question 11 **[10]**

1. Rabina is given with oil, water, sand sugar. She is being asked by her teacher to make a homogenous non-aqueous solution. Which two of the three materials should she choose? [1]
   ……

2. Identify the following into reversible physical change, irreversible physical change and chemical change. [1 × 3 = 3]

   i. Breaking of class.

   ……

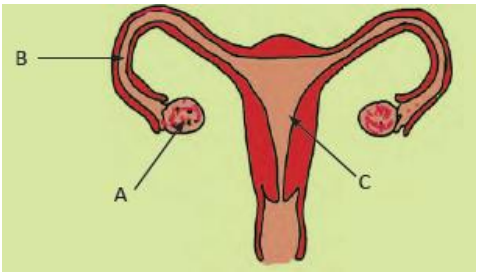
   ii. Making a sugar solution.

   ……

   iii. Rusting of iron.

   ……

3. The figure below shows a human reproductive system. Study it carefully and answer the following questions.



   i. Write the function of the part labelled A. [1]

   ……

   ii. What would happen if the part labelled B is cut off? [1]

   ……

4. A man pushes a table in a straight line with a force of 20 N. How much work is done in moving the table through a distance of 50 m? [2]

   ……
   ……
   ……
   ……
   ……
   ……

5. Renewable energy is an important alternate source of energy. Why? [2]

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   ……
   ……
   ……