

## Model Set 6

### Group b

Write very short answers to the following questions.

**1. What is metric prefix?**

A **metric prefix** is a symbol added before a unit to show multiples or submultiples of the unit.

**2. Present 23600000 into scientific notation.**

$2.36 \times 10^7$

**3. Write one difference between yeast and mucor.**

**Yeast is unicellular, whereas Mucor is multicellular.**

**4. Draw a figure of basidium and label sterigma and basidiospore.**

**(Make it from book from chapter mushroom)**

**5. Write one utility of plasticity.**

**Plasticity helps materials to be moulded into desired shapes.**

**6. Nitrogen gas is kept with fuel in the fuel tank of an aeroplane. Why?**

**Nitrogen gas prevents explosion by reducing oxygen in the tank.**

**7. Why do organic compounds not undergo electrolysis?**

**Organic compounds do not form ions, so they do not conduct electricity.**

**8. What is a balanced chemical equation?**

**A balanced chemical equation has equal number of atoms of each element on both sides.**

**9. Write one difference between compost manure and green manure.**

**Compost manure is made from decomposed waste materials, whereas green manure is made from fresh green plants.**

### Group c

Mention any two points that describe the importance of digital footprint awareness.

- It helps protect personal privacy and sensitive information.
- It prevents misuse of personal data and cybercrime.

Classify the given organisms.

**A. Eubacteria:**

**Kingdom: Monera**

**B. Paramecium:**

**Kingdom: Protista**

How do evidences obtained from the study of bridge animals support theory of organic evolution? Write.

Bridge animals possess **characteristics of two different groups of organisms**, showing a link between them. This **proves that organisms have evolved from common ancestors**, supporting the theory of organic evolution.

Draw a neat figure showing the reflex action while touching a hot heater.

**Define ecosystem. Name any two consumers found in grassland ecosystem.**

**Ecosystem:**

An **ecosystem** is a community of living organisms interacting with each other and with their physical environment.

**Two consumers found in grassland ecosystem:**

**Grasshopper and Deer.**

In the pulley system given in the diagram, a load of 200N is lifted by applying an effort of 120N. Calculate the efficiency of the pulley.

**If you are kept blind folded in a room, how can you find out whether the room is occupied or blank by producing sound?**

By producing a sound such as clapping, listen for the echo.

- If a clear echo is heard, the room is blank.
- If no clear echo is heard, the room is occupied, because objects or people absorb sound.

**How much ampere current flows through the circuit given in the figure? Calculate.**

**Write any two differences between Nova and Super Nova.**

**Nova**

**Supernova**

A **nova** is a sudden increase in brightness of a star for a short time.

A **supernova** is a very powerful explosion of a star that makes it extremely bright.

In a **nova**, the star does not get destroyed after the explosion.

In a **supernova**, the star is completely destroyed after the explosion.

**Draw a figure showing molecular structure of methane.**

Complete the given chemical equations and balance them.

a)  $\text{Fe} + \dots \rightarrow \text{Fe}_2\text{O}_3$

Answer:  $4\text{Fe} + 3\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$

b)  $\text{H}_2\text{SO}_4 + \dots \rightarrow \text{Na}_2\text{SO}_4 + \dots$

Answer:  $\text{H}_2\text{SO}_4 + 2\text{NaOH} \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$

Why is the melting point of potassium very less than that of iron although both are metals? Give reason.

The melting point of **potassium** is much lower than that of **iron** because **potassium has weaker metallic bonds**, while **iron has stronger metallic bonds**.

Iron atoms are held together more strongly than potassium atoms, so **more heat is required to melt iron than potassium**.

What is catenation? Name any two allotropes of Carbon.

**Catenation:**

**Catenation** is the property of an element to **form chains or rings by bonding with its own atoms.**

**Any two allotropes of Carbon:**

**Diamond and Graphite.**

The use of bio fertilizers is environment friendly. Justify this statement.

Biofertilizers are environment friendly because they **increase soil fertility naturally without polluting the soil and water.** They also **reduce the use of chemical fertilizers**, which helps protect the environment and living organisms.

Group D

Write long answers to the following questions.

Write short notes on.

- a) Online Privacy checking
- b) Cyber bullying awareness

#### **a) Online Privacy Checking**

**Online privacy checking** is the process of reviewing and managing personal information shared on the internet to keep it safe. It includes checking privacy settings on social media accounts, using strong passwords, and avoiding sharing sensitive information such as phone numbers, addresses, and passwords. Regular privacy checking helps protect personal data from misuse and cybercrime.

#### **b) Cyber Bullying Awareness**

**Cyber bullying awareness** means understanding the harmful effects of bullying through digital devices such as social media, messages, or online games. It includes knowing how to recognize cyber bullying, avoiding responding to bullies, blocking or reporting offenders, and informing trusted adults or authorities. Awareness helps create a safe and respectful online environment.

Write any two differences between Sensory nerve and motor nerve. Salivary gland is called exocrine gland and thyroid gland is called endocrine gland. Why?

#### **Sensory Nerve**

Sensory nerves **carry impulses from sense organs to the brain or spinal cord.**

Sensory nerves **help in receiving sensations** like touch, pain, and heat.

#### **Motor Nerve**

Motor nerves **carry impulses from the brain or spinal cord to muscles or glands.**

Motor nerves **help in producing actions** like movement of muscles.

The **salivary gland** is called an **exocrine gland** because it **releases its secretion (saliva) through ducts**.

The **thyroid gland** is called an **endocrine gland** because it **releases hormones directly into the blood without ducts**.

In the context of Nepal, both bio-fuel and solar energy are useful. Out of these two sources of energy, Which one will be more useful? Justify your answer with two reasons.

**Solar energy** will be more useful in the context of Nepal.

**Reasons:**

1. Nepal receives **abundant sunlight for most of the year**, so solar energy can be produced easily.
2. Solar energy is **clean and non-polluting**, so it helps protect the environment.

What is meant by the velocity ratio of a machine is 3? The efficiency of a machine is always less than 100%, Why?

It means that **the distance moved by the effort is three times the distance moved by the load**.

The efficiency of a machine is always less than 100% because **some energy is lost due to friction during its operation**.

Answer the following questions on the basis of given table:

Elements	Electronic configuration
P	2,8,8,2
Q	2,8,2
R	2,8,7
S	2,6

What is the valency of the elements Q and R? Why?

**Answer:**

The **valency of Q is 2** because it has **2 electrons in its outermost shell**, so it loses 2 electrons to become stable.

The **valency of R is 1** because it has **7 electrons in its outermost shell**, so it gains 1 electron to complete its octet.

Name the compound and type of bond formed by the combination of elements P and S. Write any two characteristics of the compound formed.

The compound formed by elements **P and S** is **Calcium oxide (CaO)**.

The **type of bond formed is an ionic bond**.

**Two characteristics of the compound:**

1. The compound has a **high melting and boiling point**.
2. The compound **conducts electricity in molten or aqueous state**.