Q.1 A)   **Multiple Choice Questions**   (5)

1)   What is the weight of an object with 10 kg mass?

a. 10 N   b. 9.8 N   c. 98 N   d. 0.98 N

2)   An electric fuse works on the ....

a. chemical effect of current

b. magnetic effect of current

c. lighting effect of current

d. heating effect of current.

3)   Second Law of Refraction is also known as:

a. Dalton law

b. Snells law

c. Law of conservation of matter

d. None of the above

4)   …………… are the most ductile metals.

a. Gold and Silver

b. Silver and Sodium

c. Gold and Aluminum

d. Platinum and Aluminum

5)   Chemical equation can be made more informative by …………… .

a. By indicating the physical states of reactants and products.

b. By indicating the heat changes taking places in the equation.

c. By indicating the condition under which the reaction takes place.

d. All of the above.

(B)   **Solve the following question**   (5)

1)   **Find the odd one out.**

Methanamine, Butanol, Ethanal, Teflon

2)   **Find co-related terms**

$\sqrt{\dfrac{GM}{R+h}}$: critical velocity of a satellite at height h from surface of planet : : .... : escape velocity

on the surface of planet

3)   **Match the pair.**

I	II	III
i. -OH	a. Ketone	1. Butanoic acid
ii. -CO-	b. Alcohol	2. Butan - 2 - one
	c. Aldehyde group	3. Butanol

4) **State true or false.**

Density of water is minimum at 4°C.

5) **Name the following**

A metal which does not react with water but reacts with steam.

Q.2 A) **Give scientific reason. (Any two)** (4)

1) Simple microscope is used for watch repairs.

2) Lemon or tamarind is used for cleaning copper vessels turned greenish.

3) Carbon atom does not form C^{4+} cation.

(B) **Solve the following questions. (Any three)** (6)

1) Write short note on Mass and Weight

2) **Distinguish between**

Differentiate between Rarer medium and Denser medium

3) In Doberiner's triads Li, Na, K, the atomic masses of Lithium and Potassium are 6.9 and 39.1 respectively, then what will be the atomic mass of sodium.

4) Draw and Explain the neat label diagram of DC generator.

5) Complete the table

| IRNSS | .... | .... |

| INSAT | Weather study and predict | .... |

| IRS | .... | Earths observation |

Q.3 **Solve the following questions. (Any five)** (15)

1) Complete the table :

Common name	Structural formula	IUPAC Name
ethylene	....	....
....	$HC\equiv CH$	....
....	$CH_3\text{-}COOH$	....

2) Answer the following question with the help of given statement:

When water is heated up to a certain temperature, it expands and when cooled it contracts.

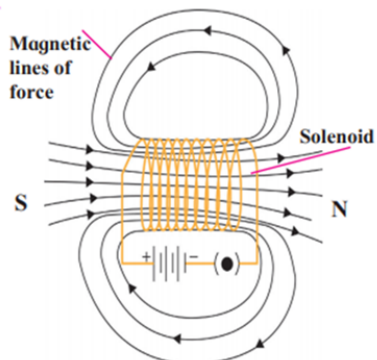1. What term is used to describe such behaviour of water?

2. What happens when water is cooled at room temperature?

3. What happens when water is heated?

3) What is corrosion ? Do gold ornaments corrode if not why ?

4) Define optical centre of lens and explain with the help of diagram.

5) Observe the diagram and answer the questions :

i.   What is the direction of the magnetic filed in the given diagram ?
ii. What does parallel magnetic lines of force inside the solenoid means ?
iii. Define : Solenoid.

6) Write down the electronic configuration of the following elements from the given atomic numbers. Answer the following question with explanation.

a. $_3Li$, $_{14}Si$, $_2He$, $_{11}Na$, $_{15}P$
    Which of these elements belong to be period 3?
b. $_1H$, $_7N$, $_{20}Ca$, $_{16}S$, $_4Be$, $_{18}Ar$
    Which of these elements belong to the second group?
c. $_7N$, $_6C$, $_8O$, $_5B$, $_{13}A1$
    Which is the most electronegative element among these?

7) Complete the diagram and fill in the blanks.
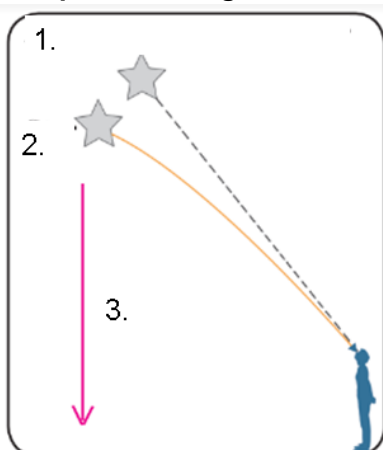
The .... of star keeps changing a bit because of the motion of ...., ..., temperature.
The .... of air keeps changing continuously. Because of the change the .... and .... of
the star keep changing and star appears to be ....

8) With the help of diagram define focus of concave mirror.

Q.4   **Solve the following questions. (Any one)**   **(5)**

1) What is centripetal force ? Complete the following expression for a planet revolving around sun in circular motion irrespective of its time of revolution?

For a planet revolving around sun; Let m be the mass of planet which takes time T for one revolution moving with velocity v and r be the radius of the circular path.

Centripetal force will be F = ⬚   ... (1)

Speed = ⬚
Thus, in one revolution,
Distance covered = ⬚ (Perimeter of the orbit)
Time required = T (⬚)

$\therefore$ ⬚ $= \dfrac{2\pi r}{T}$

Substituting v in equation ... (1)

$$F = \frac{m \left(\frac{2\pi r}{T}\right)^2}{r}$$

$\therefore$ F = ⬚

Multiplying and dividing by r^2

$$F = \frac{4m\pi^2 r}{T^2} \times \frac{r^2}{r^2}$$

$\therefore$ F = ⬚   ... (2)

From Kepler's third law; ⬚ = k (constant)

From (2) & (3); $\boxed{F = \dfrac{4m\pi^2}{kr^2}}$ ... (3)

Thus, this is expression of centripetal force independent of time taken but depends on radius of the path.

2) Explain the working of the given diagram.