# मंगलाताई भागवत फाऊंडेशन

**Time :2 hours** **Science and Technology – Part I** **Marks:40**

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**Note :**

1) All questions must be attempted.
2) Wherever necessary scientifically correct diagrams and correct labelling should be drawn.
3) Start every main question on a new page.
4) Numbers to the right indicate marks.
5) For Q.No.1(A) MCQ marks will be given only for the first attempt.
6) The answer to every MCQ should be written as shown - Example - i-a
7) There is no need to write the entire sentence or the words from the option chosen.

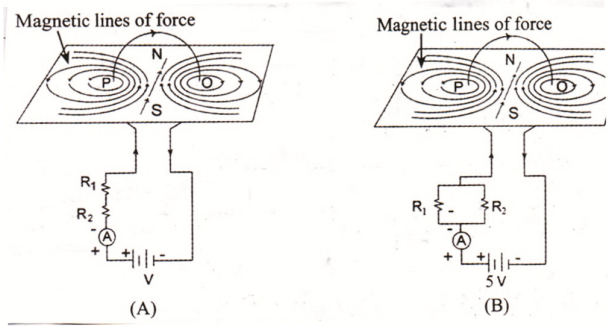
**Q.1. (A) Choose the correct alternative.** **(5)**

i. The reaction of iron nail with copper sulphate solution is a _____ reaction.

a) combination b) decomposition

c) displacement d) double displacement

ii. Observe the following diagram and choose the correct alternative.




a. The intensify of magnetic field in A is larger than in B.

b. The intensity of magnetic field in B is less than in A.

c. The intensity of magnetic field in A and B is same.

d. This intensity of magnetic field in A is less than in B.

iii. If the number of carbon atoms in the molecular formula of alkenes is denoted by 'n' what will be the number of hydrogen atoms ?

a) 2n b) 2n+1 c)2n+2 d) 2n + 3

iv. Water expands on reducing its tempera true below ..... $^{O}C$.

a) 0 b) 4 c) 8 d) 12

v. The carbon compound used in daily life is .....

a. edible oil b. salt c. carbon dioxide d. baking soda

**(B) Answer the following questions.**

i. Write the name and symbol of the element from the description. The noble gas with the smallest atomic radius.

ii. State whether the given statement is true or false and state why it is so. A concave lens is a converging lens.

iii. Find the correlation and write in one sentence.

Hubble telescope : 569 km high from Earth's

Surface : Revolving orbit of Hubble

Telescope : ☐

iv. **Find the odd man out.**

Tinning, Anodization, Alloying, Forth floatation.

v. **Make pairs.**

| **"A"** | **"B"** |
|---|---|
| a) Electric generator | 1. Fleming's left hand |
| b) Electric motor | 2. Fleming's right hand rule |
| | 3. Right hand thumb rule |
| | 4. Faraday's law of induction |

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

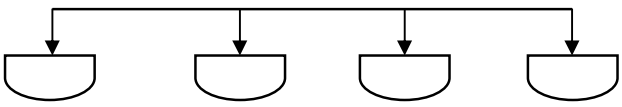
1. In the electric equipment producing heat e.g. iron, electric heater, boiler and toaster, an lloy such as nichrome is used, not pure metal.
2. Absolute refractive index can never be less than one.
3. Metallic character goes on decreasing while going from left to right in a period.

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

i. A metal ball of mass 5 kg. falls from a height 490m. How much time will it take to reach the ground ? (g=9.8 km/s)

ii. Complete the flowchart. Write the names of first four homologues series of alcohols.

**Homologous series of alcohols**



iii. Write the difference.

Concave lens and convex lens

(Note write any four points)

iv. Out of sodium and sulphur which is a metal ? Explain its reaction with oxygen.

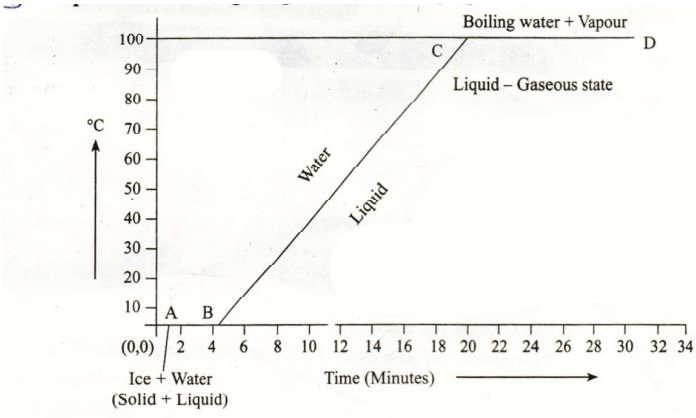
v. Write a short note on regelation.

**Q.3. Answer the following questions. (Any five)** **(5)**

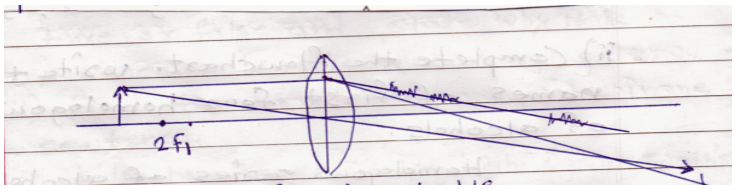
1. What would be the value of 'g' on the surface of earth if its mass was twice and its radius half of what it is now ?

2. Write the merits if Mendeleev's periodic table giving examples.

3. Explain the following temperature vs time graph



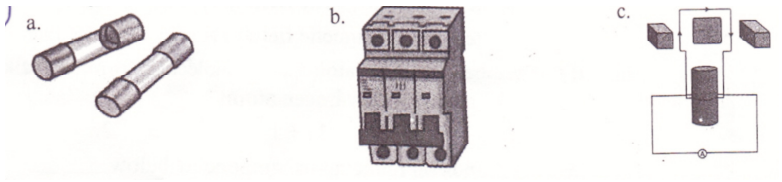

4. Label the diagram and explain.




5. Complete the following table.

| No. | Common Name | Structural Formula | IUPAC Name |
|---|---|---|---|
| a. | Ethylene | $CH_2 - CH_2$ | ..... |
| b. | ..... | $CH_3 - CooH$ | Ethanoic acid |
| c. | Methyl Alcohol | ..... | Methanol |

6. What is meant by space debries ? Why is there need to manage the debris ?




viii) Complete the paragraph with the words given in the brackets.

(Regular arrangement shapes, cation, crystailine, directly, electricity neutral, anion)

An ionic compound is ..... the ..... of ions in solid ionic compound is responsible for their ..... nature. The arrangement of these ions in different compounds is different, and therefore their ..... are also different. The main factor that determines the structure of the crystal is the attractive force between the ..... (negative ion) and ..... (positive ion).

**Q.4. Answer the following questions. (Any 1)** **(5)**

i) Classify giving explanation.

Classify the elements in the 3rd periodic table into metals and non metals, giving explanation. On which side of the period are the metals and on which side are the non-metals ?

ii) The observations made by swarali while doing an experiment are given below. Based on these, write answer to the questions.

Swarali found that the light ray travelling from the denser medium to the rarer medium goes away from the normal. If the angle of incidence

(i) Is raised by swarali, the angle of refraction. (r) went on increasing. However after certain value of the angle of incidence, the light ray is seence to return back into the denser medium.

**Questions :**

i) What is the specific value of ∠i called ?

ii) What is the process of reflection of incident ray into denser medium called ?

iii) Draw the diagrams of three observations made by Swarali ?

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