



# SATISH SCIENCE ACADEMY

DHANORI PUNE-411015

## SCIENCE-1

### Class 10 - Science & Technology - I

Time Allowed: 2 hours

Maximum Marks: 40

#### General Instructions:

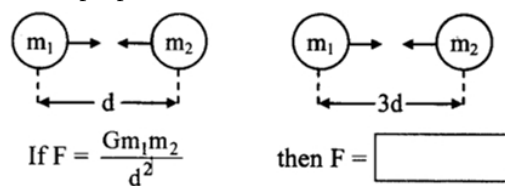
- All questions are compulsory.
- Use of a calculator is not allowed.
- In case of MCQs., (Q. No. 1 (A)), only the first attempt will be evaluated and given credit.
- For each MCQ, the correct alternative (a), (b), (c), and (d) with subsequent number is to be written as an answer.  
For e.g. (i) (a), (ii) (b), (iii) (c)
- Scientifically correct, labelled diagrams should be drawn wherever necessary.

1. [10]
- (a) **Write the correct alternative.**
- i. A laser beam enters from air to soap solution in water then \_\_\_\_\_. [1]
- a) it travels straight without bending      b) it goes away from the normal
- c) it bends towards the normal      d) it returns back into air
- ii. The conversion of ferrous sulphate into ferric sulphate is \_\_\_\_\_ reaction. [1]
- a) oxidation      b) displacement
- c) electrolysis      d) reduction
- iii. In \_\_\_\_\_ block of the modern periodic table non-metals are found. [1]
- a) f-block      b) d-block
- c) s-block      d) p-block
- iv. We can see the sun even when it is little below the horizon because of \_\_\_\_\_. [1]
- a) Absorption of light      b) Refraction of light
- c) Dispersion of light      d) Reflection of light
- v. To prevent rusting, a layer of \_\_\_\_\_ metal is applied on iron sheets. [1]
- a) magnesium      b) zinc
- c) potassium      d) sodium
- (b) **Answer the following questions.**
- i. When the incident ray is parallel to the principal axis, the refracted ray does not pass through the principal focus. [1]
- ii. Rancidity is an oxidation process. [1]

iii. An electric motor converts mechanical energy into electrical energy. [1]

iv. Torch : Concave lens :: Camera : \_\_\_\_\_ . [1]

v. Write proper answer in the box: [1]



2. [10]

(a) Give scientific reasons. (Any 2)

i. It is recommended to use airtight container for storing oil for long time. [2]

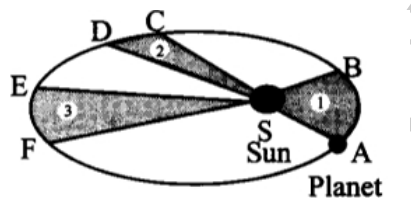
ii. Elements belonging to the same group have the same valency. [2]

iii. In the electric equipment producing heat e.g. iron, electric heater, boiler, toaster etc. an alloy such as nichrome is used, not pure metals. [2]

(b) Answer the following questions. (Any 3)

i. State any two uses of ethanol. [2]

ii. Observe the given figure showing the orbit of a planet moving around the Sun and write the three laws related to it: [2]



**The orbit of a planet moving around the Sun**

iii. What is meant by satellite launch vehicle? Name any one Indian satellite launch vehicle. [2]

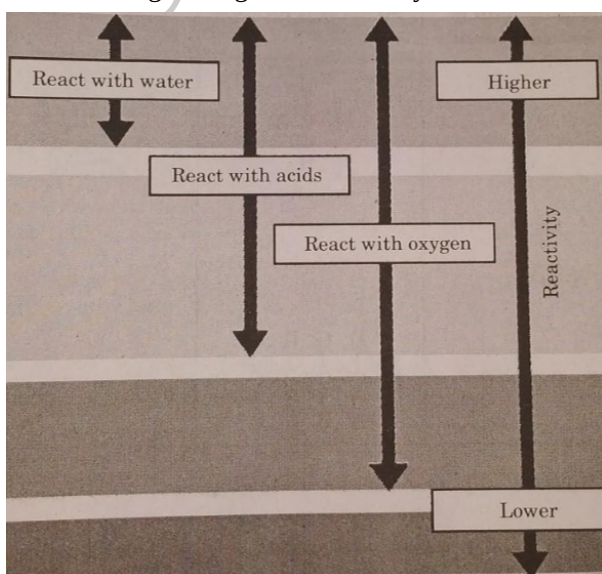
iv. Draw the image formed by convex lens, if object is placed at  $2F_1$ . [2]

v. If the speed of light in a medium is  $1.5 \times 10^8 \text{ m/s}$ , what is the absolute refractive index of the medium? [2]

(Speed of light in vacuum =  $3 \times 10^8 \text{ m/s}$ ).

3. Answer the following questions. (Any 5) [15]

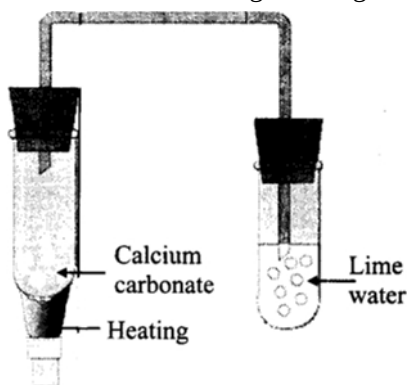
(a) Observe the given figure of reactivity series of metals and answer the following questions: [3]



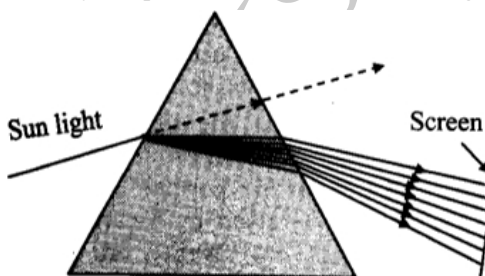
i. Name two metals which react with water.

- ii. Name two moderately reactive metals.  
 iii. Name the most highly reactive metal and the most less reactive metal.

(b) With reference to the given diagram answer the following questions: [3]



- i. Give type of chemical reaction.  
 ii. Give the names of reactants and products.  
 iii. Write down the balanced chemical equation.
- (c) Two tungsten bulbs of power 50 W and 60 W work on 220 V potential difference. If they are connected in parallel, how much current will flow in the main conductor? [3]
- (d) Identify the process given below and accordingly draw neat labelled diagram: [3]  
 A molten mixture of alumina (melting point  $> 2000^\circ C$ ) is done in a steel tank. The tank has a graphite lining on the inner side. The lining does the work of cathode. A set of graphite rods dipped in the molten electrolyte works as anode. Cryolite ( $Na_3 AlF_6$ ) and fluorspar ( $CaF_2$ ) are added in the mixture to lower its melting point up to  $1000^\circ C$ .
- (e) What is free fall? When is it possible? [3]  
 (f) To which group does the halogen family belong? Write any four halogens. [3]  
 (g) Identify the phenomenon shown in the figure below. State and explain it: [3]



- (h) What is an artificial satellite? Name any two types of artificial satellite and state their functions. [3]

4. Answer the following question. (Any 1) [5]

- (a) State the general properties of ionic compounds. [5]  
 (b) Complete the following table: [5]

Sr . No.	Common Name	Structural Formula	IUPAC Name
i.	Ethylene	$CH_2 = CH_2$	_____
ii.	Acetylene	_____	Ethyne
iii.	Acetic acid	$CH_3 - COOH$	_____
iv.	Methyl alcohol	_____	Methanol
v.	_____	$CH_3 - CO - CH_3$	Propan-2-one

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