



SCIENCE-1

Class 10 - Science & Technology - I

Time Allowed: 2 hours

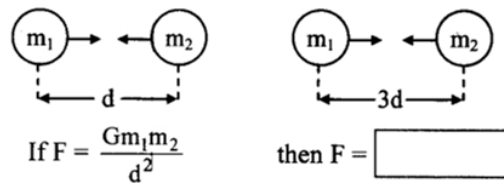
Maximum Marks: 40

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. Lithium (Li), _____ and potassium (K) is Dobereiner's triad. [1]
- a) aluminium (Al) b) sodium (Na)
- c) calcium (Ca) d) magnesium (Mg)
- iv. If a ray of light passes from a denser medium to a rarer medium in a straight line, the angle of incidence must be _____. [1]
- a) 30° b) 90°
- c) 0° d) 60°
- 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]



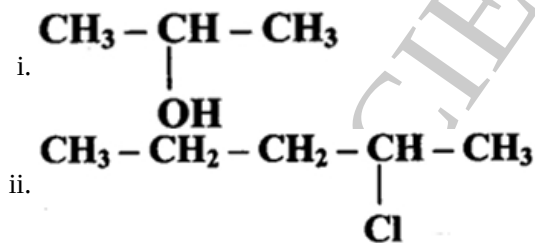
2. [10]

(a) Give scientific reasons. (Any 2)

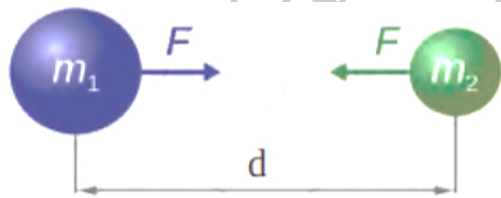
- i. It is recommended to use airtight container for storing oil for long time. [2]
- ii. Atomic radius goes on increasing down a group. [2]
- iii. In the electric equipment producing heat e.g. iron, electric heater, boiler, toaster etc. an alloy such as nichrome is used, not pure metals. [2]

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

- i. Write the IUPAC names of the following structural formulae: [2]



- ii. Observe the figure and answer the questions: [2]

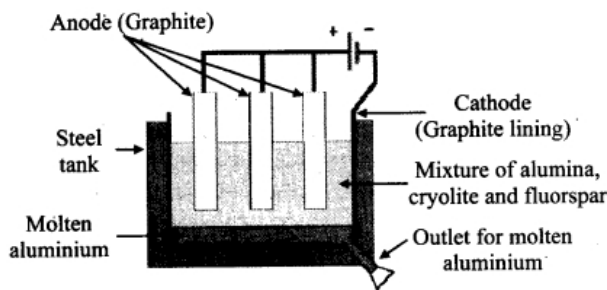


- i. State Newton's universal law of gravitation.
- ii. If the distance between the two bodies is tripled, how will the gravitational force between them change?
- iii. What will happen to gravitational force, if mass of one of the objects is doubled?
- iii. What is meant by satellite launch vehicle? Name any one Indian satellite launch vehicle. [2]
- iv. Write down any two rules used for drawing ray diagrams for the formation of image by convex lens. [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]

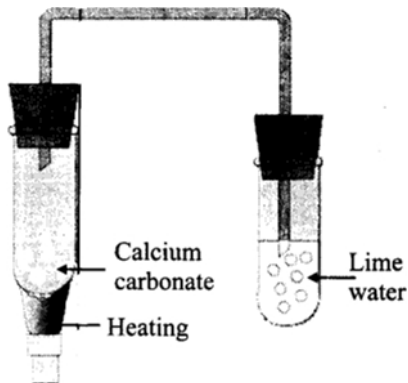
(Speed of light in vacuum = $3 \times 10^8 \text{ m/s}$).

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

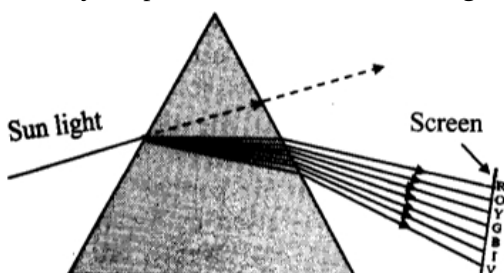
- (a) Observe the following diagram and answer the questions: [3]



- i. Write the **anode reaction**.
 - ii. Write the **cathode reaction**.
 - iii. What is the purpose of mixing **cryolite** and **fluorspar** with **alumina** in the electrolytic reduction of alumina?
- (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) Will the value of g be the same everywhere on the surface of the earth? Justify your answer. [3]
- (f) An element has its electron configuration as 2, 8, 1. Now answer the following questions: [3]
- i. What is the atomic number of this element?
 - ii. What is the group of this element?
 - iii. To which period does the element belong?
- (g) Identify the phenomenon shown in the figure below. State and explain it: [3]



- (h) What is meant by space debris? Why there is need to manage debris? [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

SATISH SCIENCE
ACADEMY