

SATISH SCIENCE ACADEMY

DHANORI PUNE-411015

SCIENCE-1

Class 10 - Science & Technology - I

Time Allowed: 2 hours

General Instructions:

1.

(a)

Maximum Marks: 40

1. All questions are compulsory.

2. Use of a calculator is not allowed.

Write the correct alternative.

- 3. In case of MCQs., (Q. No. 1 (A)), only the first attempt will be evaluated and given credit.
- 4. 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)
- 5. Scientifically correct, labelled diagrams should be drawn wherever necessary.

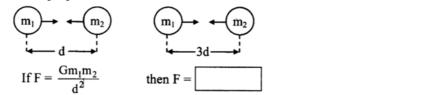
[10]

(u)		e the correct unternative.				
	i.	For a particular value of i , the value of r becomes equal to 90° . This value of i is called the .		[1]		
		a) critical angle	b) angle of emergence			
		c) angle of deviation	d) angle of refraction			
	ii.	To prevent rusting, a layer of metal is applied on iron sheets.		[1]		
		a) magnesium	b) zinc			
		c) potassium	d) sodium			
	iii.	According to Mendeleev's periodic law, properties of elements are periodic function of their		[1]		
		Y Y				
		a) atomic masses	b) boiling points			
		c) atomic numbers	d) densities			
	iv.	has the highest refractive index.		[1]		
		a) Diamond	b) Glass			
		c) Air	d) Water			
	v.	The crystals of ferrous sulphate are		[1]		
		a) Pale green in colour	b) Colourless			
		c) Blue in colour	d) Pink in colour			
(b)	Answer the following questions.					
	i.	A concave lens is a converging lens.		[1]		

ii. Rancidity is an oxidation process.

iii. The frequency of AC is 50 Hz.

- iv. Torch : Concave lens :: Camera : _____.
- v. Write proper answer in the box:



2.

(b)

[10]

[2]

[15]

[3]

[1]

[1]

[1]

[1]

(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. Tungsten metal is used to make a solenoid type coil in an electric bulb. [2] Answer the following questions. (Any 3) i. State any two uses of ethanol. [2] ii. [2] Observe the figure and answer the questions:
 - i. State Newton's universal law of gravitation.

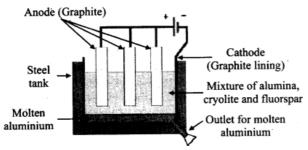
d

- 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. Give one function of each of the following satellites:
 - i. Communication satellite
 - ii. Earth observation satellite
- iv. Draw the image formed by convex lens, if object is placed at $2 F_1$. [2]
- v. If the speed of light in a medium is $1.5 \times 10^8 \ m/s$, what is the absolute refractive index of the [2] medium?

(Speed of light in vacuum = 3×10^8 m/s).

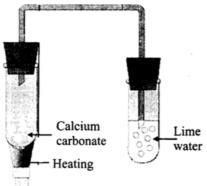
3. Answer the following questions. (Any 5)

(a) Observe the following diagram and answer the questions:



- 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:

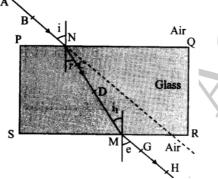


i. Give type of chemical reaction.

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 [3] connected in parallel, how much current will flow in the main conductor?
- (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 (Na₃ *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) To which group does the halogen family belong? Write any four halogens. [3]
- (g) Observe the figure and name the ray AB, ray CD, ray GH:



(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)

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

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

[3]

[3]

[5]

[5]

[5]

v.		$CH_3 - CO - CH_3$	Propan-2-one
	6		
	R		
5			