

# Newton's Academy

## Science Part 1

**Time: 2 Hours**

**Max. Marks: 40**

- Note:**
- i. All questions are compulsory.
  - ii. Use of a calculator is not allowed.
  - iii. The numbers to the right of the questions indicate full marks.
  - iv. In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
  - v. For every MCQ, the correct alternative (A), (B), (C) or (D) with subquestion number is to be written as an answer.  
For Eg.: (i) (A), (ii) (B), (iii) (C)
  - vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.

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

- i. The device used for producing current is called \_\_\_\_\_.  
(A) A voltmeter (B) An ammeter  
(C) A galvanometer (D) A generator
- ii. If a ray of light passes from a denser medium to a rarer medium in a straight line, the angle of incidence must be \_\_\_\_\_.  
(A) 0° (B) 30° (C) 60° (D) 90°
- iii. The power of convex lens of focal length 20 cm is \_\_\_\_\_.  
(A) +5.0 D (B) 0.20 D (C) -5.0 D (D) 0.5 D
- iv. Good conductor of electricity is \_\_\_\_\_.  
(A) Bromine (B) Iodine (C) Graphite (D) Sulphur
- v. The height of medium earth orbit above the surface of the earth is:  
(A) 1,500 km (B) 250 km (C) 45,000 km (D) 25,000 km

**(B) Answer the following questions:** [5]

- i. Find the odd man out:  
Loudspeaker, Microphone, Electric motor, Magnet.
- ii. Complete the co-relation:  
CuI<sub>2</sub> : Brown :: AgCl : \_\_\_\_\_
- iii. Match the pair:

Group 'A' Substance	Group 'B' Refractive index
Air	(a) 1.33
	(b) 1.46
	(c) 1.0003

- iv. State True or False:  
"Wavelength of red light is close to 700 nm."
- v. Write the name of small satellite made by a group of students from COEP (College of Engineering, Pune) sent to the space through ISRO in 2016.

**Q.2. (A) Give scientific reasons (any two):** [4]

- i. For electric power transmission, copper or aluminium wire is used.
- ii. Lemon or tamarind is used for cleaning copper vessels turned greenish.
- iii. Elements belonging to the same group have the same valency.

**(B) Answer the following questions (any three):**
**[6]**

- i. How do we feel about air in each of the following conditions?
  - (a) Relative humidity is more than 60%.
  - (b) Relative humidity is less than 60%.
- ii. Complete the following reaction:  

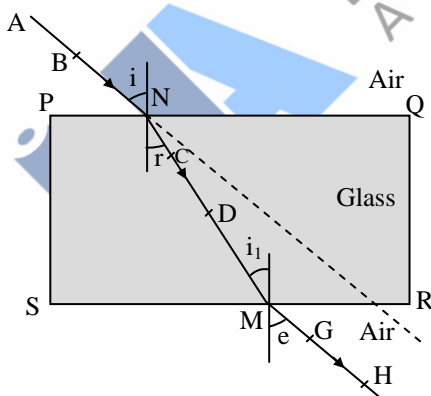
$$\text{C}_{12}\text{H}_{22}\text{O}_{11} \xrightarrow{\text{heat}} \text{_____} + \text{_____}$$
- iii. Distinguish between Mass and Weight.
- iv. Complete the following table:

Type of Satellite		The names of Indian Satellite and launcher
1.	Navigational	Satellite : _____
	Satellite	Launcher : _____
2.	Earth observation	Satellite : _____
	Satellite	Launcher : _____

- v. Define periods and groups of modern periodic table.

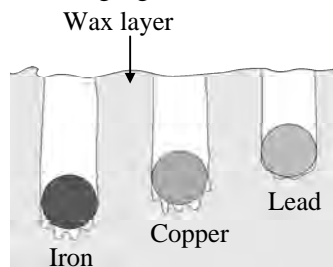
**Q.3. Answer the following questions (any five):**
**[15]**

- i. Calculate the escape velocity on the surface of the moon given the mass and radius of the moon to be  $7.34 \times 10^{22}$  kg and  $1.74 \times 10^6$  m respectively. (Given:  $G = 6.67 \times 10^{-11}$  Nm<sup>2</sup>/kg<sup>2</sup>).
- ii. An element has its electron configuration as 2, 8, 1. Now answer the following questions:
  - (a) What is the atomic number of this element?
  - (b) What is the group of this element?
  - (c) To which period does the element belong?
- iii. Observe the figure and name the ray AB, ray CD, ray GH:



- iv. Read the following sentence and answer the questions:  
 "NaCl is an ionic compound."  
  - (a) Why is NaCl an ionic compound?
  - (b) State any two properties of ionic compounds.
- v. Identify the physical and chemical changes from the following phenomena:
  - (a) Transformation of ice into water.
  - (b) Ripening of fruit.
  - (c) Milk turned into curd.
  - (d) Evaporation of water.
  - (e) Digestion of food in the stomach.
  - (f) Iron filings get attracted towards the magnet.

vi. Observe the following figure and answer the questions:



**Specific heat capacity of metals**

- (a) Which element has maximum specific heat capacity? Justify.
- (b) Which element has minimum specific heat capacity? Justify.
- (c) Define specific heat of object.

vii. Identify figures A, B, C and given their uses:

(A)



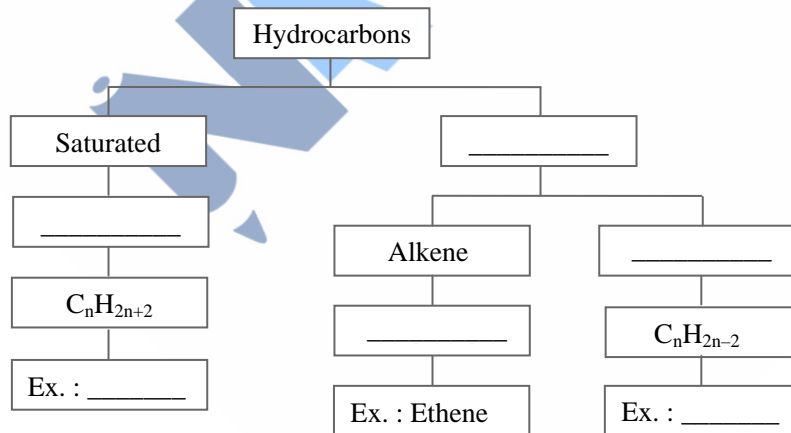
(B)



(C)



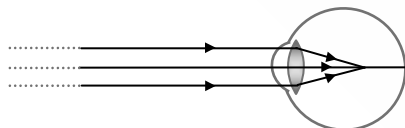
viii. Complete the following flow chart:



**Q.4. Answer any one of the following questions:**

[5]

i. Observe the figure and answer the following questions:



- (a) Name the defect of vision represented in above figure.
- (b) State the reasons for this defect.
- (c) How is it corrected?
- (d) Draw the diagram to show the correction of this defect.

ii. Complete the following table:

S.N.	Common Name	Structural Formula	IUPAC Name
1.	Ethylene	$\text{CH}_2 = \text{CH}_2$	_____
2.	Acetylene	_____	Ethyne
3.	Acetic acid	$\text{CH}_3 - \text{COOH}$	_____
4.	Methyl alcohol	_____	Methanol
5.	_____	$\text{CH}_3 - \text{CO} - \text{CH}_3$	Propane-2-one

