BOARD QUESTION PAPER: MARCH 2022

Science and Technology 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 each 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. Gold plated ornaments is the example of _____.
(A) Electroplating (B) Alloying
(C) Anodizing (D) Galvanizing

ii. The functioning of the satellite launch vehicle is based on _____.
(A) Newton's first law of motion (B) Newton's second law of motion
(C) Newton's third law of motion (D) Newton's universal law of gravitation

iii. _____ is one of the combustible components of L.P.G.
(A) Ethane (B) Propane
(C) Methane (D) Ethene

iv. The power of a convex lens of focal length 25 cm is _____.
(A) 4.0 D (B) 0.25 D (C) –4.0 D (D) –0.4 D

v. _____ colour is deviated the least, in the spectrum of white light obtained with a glass prism.
(A) Red (B) Yellow (C) Violet (D) Blue

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

i. Find the odd one out:
INSAT, GSAT, IRS, PSLV

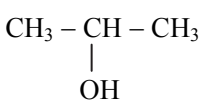
ii. Complete the correlation:
Group 1 : Alkali metals : : _____ : Halogens.

iii. Match the correct pair:

Column 'A'	Column 'B'
Refractive index of water	(a) 1.31
	(b) 1.36
	(c) 1.33

iv. State True or False:
An electric motor converts mechanical energy into electrical energy.

v. Write the IUPAC name for the following structural formula:



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

i. Atomic radius goes an increasing down a group.

ii. Simple microscope is used for watch repairs.

iii. It is recommended to use airtight container for storing oil for long time.

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

i. An object takes 5 s to reach the ground from a height of 5 m on a planet. What is the value of 'g' on the planet?

ii. Draw a neat labelled diagram of Hope's Apparatus.

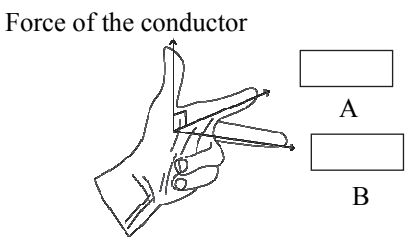
iii. State the Laws of Refraction.

iv. Answer the following:

(a) Name the main ore of aluminium.

(b) What impurities are present in aluminium ore?

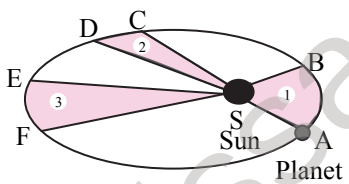
v. Observe the given figure of Fleming's Left Hand Rule and write the labels of 'A' and 'B':



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

i. Write the demerits of Mendeleev's periodic table.

ii. State the laws related to the given diagram:



iii. Identify the type of chemical reaction given below:

(a) $CuSO_4 + Fe \longrightarrow FeSO_4 + Cu$

(b) $2Mg + O_2 \longrightarrow 2MgO$

(c) $2KClO_3 \longrightarrow 2KCl + 3O_2 \uparrow$

iv. If the speed of light in a medium is 1.5×10^8 m/s, what is the absolute refractive index of the medium? (Speed of light in vacuum = 3×10^8 m/s).

v. Read the following paragraph and answer the questions based on it:

If heat is exchanged between a hot and cold object, the temperature of the cold object goes on increasing due to gain of energy and the temperature of the hot object goes on decreasing due to loss of energy.

The change in temperature continues till the temperatures of both the objects attain the same value. In this process, the cold object gains heat energy and the hot object loses heat energy. If the system of both the objects is isolated from the environment by keeping it inside a heat resistant box, then no energy can flow from inside the box or come into the box.

(a) Heat is transferred from where to where?

(b) Which principle do we learn about from this process?

(c) How will you state the principle briefly?

vi. Complete the following table for convex lens:

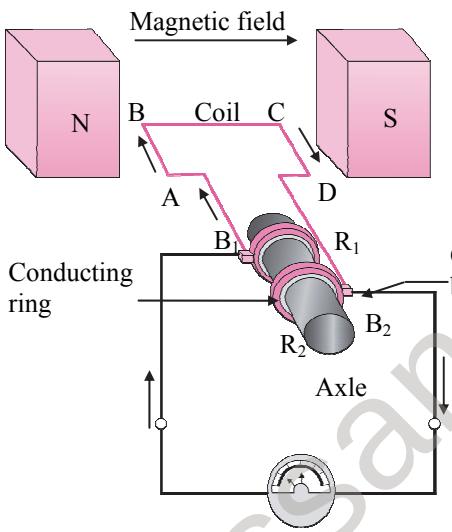
Sr. No.	Position of the object	Position of the image	Nature of the image
1.	Beyond $2F_1$	_____	_____
2.	_____	At infinity	
3.	_____	_____	Real, inverted and enlarged

vii. Explain the following terms:
(a) Metallurgy
(b) Ores
(c) Gangue.

viii. State the importance of Space Mission.

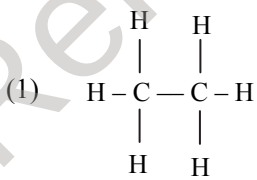
Q.4. Answer any *one* of the following questions: **[5]**

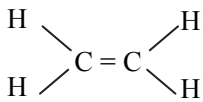
i. Observe the following diagram and answer the questions given below:



a. Identify the above diagram. **1**
b. Write the principle on which the above appliance works. **1**
c. Write the working of the above appliance. **2**
d. Write the use of the above appliance. **1**

ii. a. Identify saturated and unsaturated hydrocarbon from the given structural formula: **2**

(1) 

(2) 

b. Draw electron dot structure for (1) and (2). **2**
c. Define Homologous series. **1**