



## HERITAGE GLOBAL ACADEMY

2, Ola Iya Close, Off Okiki Street, Isawo Road, Owutu, Agric-Ikorodu Lagos.

### Third Term (2023/2024 Session) Examination

### Subject: CHECKPOINT CHEMISRTY

Class: JS 3

Time: 60MINS

**INSTRUCTION:** Answer **ALL** the questions.

1.
  - (a) State Boyle's law (2 marks)
  - (b) Derive the equation for the Boyle's law. (2 marks)
  - (c) Draw the graphical representation of Boyle's law. (2 marks)
  - (d) A gas has a volume of 500 cm<sup>3</sup> when a pressure of 76 mm of mercury is exerted on it. What will its volume be if the pressure on it changed to 73 mm of mercury, assuming the temperature remains constant? (4 marks)
  
2.
  - (a) Define the following terms:
    - (i) Isotopes (2 marks)
    - (ii) Isotopy (2 marks)
  - (b) Mention **FOUR** elements that exhibit isotopy. (2 marks)
  - (c) Naturally occurring Boron is made up of 19.9%  $^{10}_5B$  and 80.1%  $^{11}_5B$ . Calculate the relative atomic mass of Boron. (4 marks)
  
3.
  - (a) Given the following elements:
    - I.  $^{37}_{17}Y$
    - II.  $^{40}_{20}Z$Copy and complete the table below.

	Protons	Electrons	Neutrons
$^{37}_{17}Y$			
$^{40}_{20}Z$			

(3 marks)
  - (b) Define the following:
    - (i) Mass number
    - (ii) Atomic number
  - (c) State Dalton's Law of Partial Pressures. (1 mark)
  - (d) 272 cm<sup>3</sup> of carbon (iv) oxide were collected over water at 15°C and 782 mmHg pressure. Calculate the volume of the dry gas at s.t.p. (S.V.P of water at 15°C is 12 mmHg) (5 mark)
  
4.
  - (a) State Charles' law. (2 marks)
  - (b) Draw the graphical representation of Charles' law. (2 marks)
  - (c) Derive the General Gas Equation. (3 marks)
  - (d) At s.t.p, a certain mass of a gas occupies a volume of 790 cm<sup>3</sup>. Find the temperature at which the gas occupies 1000 cm<sup>3</sup> at a pressure of 726 mmHg. (3 marks)