ST FRANCIS HIGH SCHOOL NAMAGOMA

END OF TERM I ASSESSMENTS 2025
UGANDA ADVANCED CERTIFICATE OF EDUCATION
S.5 CHEMISTRY (THEORY)
TIME 2HR: 30MINS

INSTRUCTIONS TO SEMI-CANDIDATES

This paper consists of **five** examination items.
Attempt only **four** items.

ITEM ONE

In a lesson, Mr.Kyambadde, a chemistry teacher used Mutebi Edward whose level of perception of concepts was 12 and Nalweyiso Edith whose level of perception of concepts was 7 to represent a couple. He made one of the students who would like to know the nature of the daughter the couple would produce and how the daughter would behave to stand up.

Task 1

As a chemistry learner, how can you help the student perceive this concept?

Edward conducted an experiment in which he dissolved Aluminum Chloride and common salt in methyl benzene and his observation was that Aluminum Chloride could dissolve in methyl benzene unlike common salt.This left him disturbed and he approached you for assistance.

Task 2

As a chemistry learner, help him understand the observation.

ITEM TWO

A team of researchers at Luuka plastics limited has been tasked with developing a new process for producing a specialized polymer.The polymer code named polyX requires a precise mixture of monomers A and B in a specific ratio.The researchers have determined that the ideal ratio of monomer A to monomer B is 3:2.However, the current production process is yielding a mixture of ratio 11:7.To adjust the ratio, the researchers need to calculate the amount of each monomer required to produce a batch of polyX .The molecular weights of monomer A and B are 120gmol^{-1} and 90gmol^{-1} respectively.The researchers have 500kg of monomer A and 300kg of monomer B available.

Task

Using you knowledge of chemistry,help the researchers to know the number of moles of monomer A and B required to produce a batch of polyX with the ideal ratio.

ITEM THREE

Joram Luwedde is a chemistry student at St.Francis High School-Namagoma.In an assignment,their teacher told them to write the electronic configuration of an element called chromium whose atomic number was 24.In his response,he clearly noted that the electronic configuration of the said element was:

$$1S^2\ 2P^6\ 3P^6\ 2S^2\ 3S^2\ 4S^2\ 3d^4$$

His response was crossed by the teacher claiming that it was not right.The teacher directed him to you for assistance.

Task

As a chemistry learner,how best can you advise John Luwedde?

ITEM FOUR

The team of researchers working at a nuclear power station conducted research about the radioactive decomposition of element Z and obtained the data shown in the table below.

Time	0.0	5.0	10.0	15.0	20.0	25.0	30.0
Activity (counts per minute)	25.00	23.00	21.25	19.50	18.00	16.50	15.25

The researchers would wish to determine the time it takes for element Z to decay to a half its original mass and its decay constant.They have approached you for assistance.

Task

As a chemistry learner, how best would you help the researchers?

ITEM FIVE

Lutwaama,an industrial chemist carried out an experiment in which he was interested in knowing the actual appearance of a hydrocarbon which he had labeled Z.In this experiment, he exploded 20cm^3 of the hydrocarbon with 120cm ^{3} of oxygen. After the explosion,he found out that the volume of the remaining gases was 90cm^3 and this decreased to 50cm^3 on treatment with aqueous potassium hydroxide.He has approached you for assistance.

Task

As a chemistry learner, help him find out the solution to his challenge.

END