

BIOLOGY

ITEM 1. During the dry season, a farmer tethered his cow to a mango tree on his farm where he could feed it from. After some time, the tree bark and underlying tissues at the point of tethering became damaged. The upper part of the stem above the point of tethering became swollen and the shoot later dried. The mature mango fruits fell down near the mango tree.

When the rains resumed, the farmer removed the cow, a new layer of bark developed around the point of tethering, new leaves developed on the tree and new young plants were seen sprouting around the mango tree.

Task: a) Explain how;

- i) The contents in the swollen part of the tree are formed within the mango.
 - ii) The farmer's actions contribute to swelling and drying observed in the mango.
- b) How did the mango manage to behave the way they did after the rains?

Item2. Okurut has been newly deployed as a traffic officer along Mukono-jinja road. During his duty hours he is repeatedly seen raising and lowering the traffic flag as long as blowing the whistle in an attempt to signal incoming and out going vehicles. However, he is recently experiencing frequent urination, frequent hunger and blurry vision which greatly interferes with his working schedule. He visited the hospital and the doctors diagnosed him with a hormonal disorder resulting from a faulty pancreas.

Task: a) Describe how his body coordinates as he is at work managing traffic.

b) Advise Okurut on how he can manage his health status diagnosed by the doctor.

Item3. An Environment status report was published highlighting the state of affairs at a certain landing site on a fresh water lake. Below are some of the issues highlighted in the report:

- The many factories established along the shores of the lake release untreated effluents directly into the lake.
- There were no latrines at the busy landing site
- Fishermen use indiscriminate fishing nets to catch fish
- The surround swamp has been taken over by real estate dealers and have raised residential houses.

The above challenges are believed to cause serious harm to the environment and the human population.

Task: (a) Explain how the highlighted activities on the landing site will affect the environment and the human population.

(b) Suggest the possible solutions to the above challenges

ITEM 4. A farmer bought a busy fertile land in Kiboga for agriculture. He cleared the bush and burnt all the cut trees and grasses. He planted maize every season and the harvests were very good in the first two years. For better yields, the farmer used to spray the garden herbicides to kill the weeds and pests to the army worms, which were destroying the maize. In the third year,

the harvest was low compared to the previous harvest. The farmer was disappointed but he didn't know the cause of poor yields.

Task: (a) Explain to the farmer the causes of low yields.

(b) Suggest the possible solutions to the problems he faces.

Item 5. A smoker and a non-smoker participated in a 100-meter race. During the race, the smoker developed muscle pain and collapsed before finishing, while the nonsmoker completed the race without any serious issues but was rapidly and heavily breathing, profusely sweating with a faster heart rate after the race. Their oxygen absorption rates from their lungs were **SMOKER-20%** and **NON-SMOKER-70%**, respectively.

Task: a) i) Explain how the smoker's experiences came about making him fail to finish the race.

ii) Why did the non-smoker's body experience the mentioned changes?

b) Advise the smoker on how to manage and prevent the challenges experienced during the race.

Item 6. Musemeza an electrician was installing electricity for a client from the electric pole and accidentally slipped falling to the ground where he got serious injuries and was rushed to the hospital. The doctors found that he lost a lot of blood, damaged the kidney, his thigh bone was fractured, distorted his lumbar vertebra and broke 2 ribs due to the big fall. His family was worried that he was going to lose his job due to his health condition.

Task: (a) Describe how the accident affected the functioning of Musemeza's body.

(b) How can the health condition of Musemeza be managed to cause recovery?

END

CHEMISTRY

ITEM 1.

On his day at work in an oxygen manufacturing company. Kazoba complained of muscle pain and headache. He decided to take paracetamol tablets which were in his bag. After a few hours he got relieved from pain.

Task: As a chemistry student;

a) i) Explain the category of the product Kazoba used.

ii) Explain to him how the product managed to relieve him from the pain.

b) Advise him on the challenges associated with long term use of the product.

c) Make an evaluation of the products

Item 2.

A farmer left a metallic panga outside for a month, and it got rusted. He needs a cleaning solution that removes rust and returns the panga to its original shiny appearance. He has been advised to buy a liquid product from the nearby shop that can easily remove the rust. The label on the bottle containing the liquid indicates that the liquid has a PH value of 2.3. The farmer needs more information about the product, and has contacted you for help

Task: As a chemistry learner, assist the workers to:

- a) State the category of the product that he intends to buy and give a reason for your answer.
- b) Write down three properties of the product other than the one mentioned above.
- c) Explain another use of the product
- d) Explain the impact of the excess product on the environment and suggest a common mitigation measure.

Item 3.

Bugiri sugar factory, which has just been set up, is disposing off cassava, which would be used to make ethanol. Ethanol is in high demand, and it is used to make essential substances like sanitizer. The locals around are making ethanol on a small scale, and it cannot meet the demands. However, the government is planning to set up an industry to produce ethanol with minimum environmental impact. To facilitate quick sensitization and prepare future leaders, schools have been asked to educate the community through debates.

Task:

As a chemistry student, write up your presentation for the community members.

ITEM 4.

Chlorine is one of the disinfectants commonly used to kill harmful microorganisms in water and swimming pools. An entrepreneur has set up a chlorine processing plant in a semi urban and swimming pools. However, the residents in the surrounding community have requested to be informed about the process involved in the production of chlorine, benefits of the plant and how any side effects are controlled. A community dialogue has been organised to address their concerns and your class has selected you as their representative.

Task:

As a chemistry, make a write up you will present during the dialogue.

Item 5.

Coal is major energy source for industries, boosting productivity and meeting community needs. However, overreliance on coal has harmful environmental effects. Your school has nominated you to join a sensitization team to educate the community on the mitigation measures.

Task.

Write a sensitization piece highlighting the impact of coal use and possible solutions.

Item 6.

In many parts of the country, people are continuously cutting down trees for various reasons. Many people who cut down trees do not know the type of natural resource they are tampering with, its composition, importance, and what will happen after tampering with its composition, importance and what will happen after cutting down the trees. However, the government is against this practice.

This year, as the country celebrates the International Environment Day, it has decided to organise a country-wide sensitization using media houses under the theme: “PLANT MORE TREES FOR A HEALTHIER FUTURE”.

Task

As a chemistry student, write a message you will deliver upon being invited.

END

ENGLISH LANGUAGE

1. Read the following passage carefully and answer the task that follows.

Today streets, roads and highways are not only filled with the sounds of the steady stream traffic, but also the occasional hooting of horns or the mounting sound of accelerating vehicles. There might be the additional but not unusual sound of the sudden, screeching brakes and the screaming of the unfortunate pedestrian who is innocent victim of an accident.

With the ever-increasing traffic of cars, cycles and pedestrians, an increase in the number of accidents is only to be expected but it is nevertheless within human control to restrict the number of accidents to a negligible minimum. Statistics issued periodically by the police authorities reveal clearly that up to seventy five percent of all road accidents can be avoided if motorists, cyclists and pedestrians exercise care and patience.

It is shocking to note how some motorists show an utter disregard for human life in their anxiety to reach their destination in the shortest time possible. In the process, they overtake needlessly; disobey traffic signals and signs and change lanes sharply and suddenly; such motorists scarcely realize that they might reach their ultimate destination much before the immediate one.

A driver who drives under the influence of alcohol, is perhaps the greatest single cause of road accidents. Alcohol affects the sight, alertness and reflexes. As a result, he has little control over himself, let alone the car he is driving.

Apart from the direct human element which gives rise to accidents, there are two other

causes, un-roadworthy vehicles and bad roads. Faulty brakes, bald tyres and mechanical defects cause accidents, often many serious ones. Cars must therefore be kept in a constant state of fitness. Roads too need regular attention. Lanes must be clearly cut for marked, potholes filled and narrow streets broadened.

It would be unjust to place a full responsibility of all accidents solely on motorists. Two other categories of road users must also take the blame for accidents-cyclists and pedestrians.

Most cyclists are undoubtedly skilled in the art of controlling their machines, but overloading a bicycle might result in loss of balance and therefore very likely to lead to accidents particularly during rush hours.

Pedestrians are often too careless or too busy to look on both sides of the road before crossing it. They are often too lazy to walk up to a pedestrian crossing to cross a busy road. Almost all roads have foot paths which must be used by all pedestrians so that the road itself is left to the use of motorists and cyclists

Accidents may also be caused by sheer bad luck. No human or mechanical care can prevent such accidents but if motorists, cyclists and pedestrians exercise care and patience.

Monitor Newspaper - Road Accidents.

You have been asked to write an article for the school magazine on the topic. 'The causes of road accidents' Use all the causes of road accidents that are mentioned in the passage to write your article. Use about 80 words.

Rough Copy

Fair Copy

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Item 1

Read the text below and respond to the questions that follow it.

Okonkwo was well known throughout the nine villages and even beyond. His fame rested on solid personal achievements. As a young man of eighteen, he had brought honor to his village by throwing Amalinze the cat.

Amalinze was the great wrestler who for seven years was unbeaten from Umuofia to Mbaino. He was called the cat because his back would never touch the earth. It was this man that Okonkwo threw in a fight which the old man agreed was one of the fiercest since the founder of their town engaged a spirit of the wild for seven days and seven nights. The drums beat and the flutes sang and the spectators held their breath. Amalinze was a wily craftsman but Okonkwo was a slippery as a fish in water. Every nerve and every muscle stood out on their arms, on their backs and their thighs and one almost heard them stretching to breaking point. In the end Okonkwo threw the cat.

That was many years ago, twenty years or more, during this time, Okonkwo's fame had grown like a bush-fire in the harmattan. He was tall and huge and his bushy eyebrows and wide nose gave him a very severe look. He breathed heavily and it was said that when he slept, his wives and children in their houses could hear him breathe. When he walked, his heels hardly touched the ground and he seemed to walk on springs as if he was going to pounce on somebody. And he did pounce on people quite often. He had a slight stammer and he was angry and could not get his words out quickly enough, he would use his fists. He had no patience with unsuccessful men. He had no patience with his father.

Unoka, for that was his father's name, had died ten years ago. In his day, he was lazy and improvident and was quite incapable of thinking about tomorrow. If any money came his way, and it seldom did, he immediately bought guards of palm wine, called round his neighbours and made merry. He always said that whenever he saw a dead man's mouth, he saw the folly of not eating what one had in one's lifetime. Unoka was of course a debtor, and he owed every neighbour some moneys from a few cowries to quite substantial amounts.

[Excerpt from Things Fall Apart]

Respond to each of the following tasks about the text.

1. Many people do a number of things that make them outstanding from others in society. Some are sports men, musicians, business men, politicians among others. In reference to the passage, what makes Okwonkwo famous in his village?
2. Explain the meaning meaning of the following words or phrases as used in the passage
 grown like a bush-fire.....
 ... improvident.....
 b) If any money came his way, he immediately bought gourds of palm wine.(Change the statement to if 3.)
3. You were once bored and decided to pick a piece of paper to read since reading since reading is one of your hobbies. You randomly pick the passage above and as you were reading, you realized that James, one of your friends conducts himself and behaves exactly like Okwonkwo. Discuss James' character.[at least 2 traits]
4. Children always get misunderstandings with their parents which creates hatred and dislike among themselves. For some reasons, Okwonkwo detests his father (Unoka) to an extent that he hated even a mere look at him. If Unoka had been alive and you had the power, how would you have advised him to restore his relationship with his son? [at least 2 responses]
5. What do you learn from Okwonkwo's life according to the passage?
6. What feelings are aroused in you from Unoka's life style?

Item 2

Since you reported for senior three, you've been very eager to tell your best friend of a certain experience during the two months holiday. Due the busy schedule at school, you decide to write to your friend.

Write to your friend.

GEOGRAPHY

Item: 1 - MAP SKILLS

Lukaya is an area located in the central Uganda latitude 0°05' south of the equator and between longitudes 31°50' and 31°55' East of Greenwich meridian. The climate of the area is characterized humid conditions, varying vegetation types ranging from forests, wood lands thickets etc., wide range of drainage and Relief features.

An investor has acquired land in Sabawali and Mutubaba II counties and would like to start a mixed farm in the area. However, he has limited information about the climate of the area and is looking for help before he starts his project, you have been approached to give the necessary information.

use the map East Africa 1:50,000 (UGANDA) LUKAYA map extract Sheet **79/2, Series Y732, Edition 3-U.S. D** to provide the require information to the investor: (Search for it from the website)

Task:

- a) Draw a sketch map of lukaya to show the investor the major resources in the area and describe the characteristics of the climate of the area
- b) Explain how the climate of Lukaya is likely to influence the intended agricultural practices

Item 2: Photograph skills

Fishing in East Africa is carried out in lakes, rivers, swamps and ponds. It is one of the activities that contributes to people's incomes, diet and employs a big section of the population. Over years, the sector has promoted industrialization by providing fish and fish products as inputs.

But on the other hand, fishing has faced several challenges that threaten the sustainability and profitability of the sector. The unplanned settlements near the water bodies, irresponsible disposal of industrial wastes is affecting aquatic life. The plastic wastes reduce air circulation in the water leading to death of young fish.

This has greatly reduced the fish stock in the water which is worrying the fishing community as well as the fisheries department. The fisheries department has also heard the concerns of those who are engaged in fishing and has decided to end all forms of misuse that are affecting the fishing sector. They have therefore organized a workshop for the stake holders to get a lasting solution to those problems.

Support material



Task

- (a) Draw a Land scape sketch of the area shown in the photograph provided.
- (b) Advise the fishing community and the fisheries department on how they can address the problems identified in the scenario.

SECTION B

Item 3

Nuhu and Alex's families live at the coastal of east Africa at Dar es salaam. They practice small scale fishing and animal rearing, both families would wish to go commercial in both activities and other economic activities and others so as to boost and diversify their incomes.

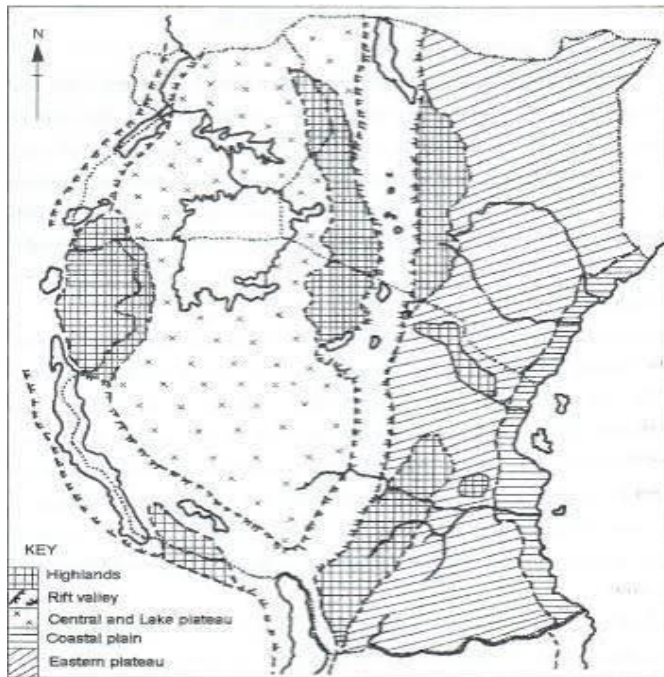
However, despite their efforts like growing of artificial pastures and setting of fish ponds, their yields remain low due to the region's unstable weather patterns like strong winds and seasonal flooding.

Recently, a friend informed them about two promising regions elsewhere in Africa which were the rift valley areas and the highland areas where people are successfully engaged in commercial livestock farming, fish farming among others.

After the narration the two families appreciated a friend for the information but were confused about the best region to move to, the families are determined to migrate but lack knowledge about the two relief regions such that they make the right choice.

You have been approached by the two families to give guidance basing on the relief regions and their economic potentials.

Support material.



Task

- (a) Advise the two families on the best choice to make and why?
- (b) Help the families understand the likely challenges they will face in their new destination.

Item 4

Lakes and rivers are some of the important drainage landform features, which occupy a large part of the earth surface in East Africa.

They provide major resources, which contribute to the development of communities in the surrounding areas. However, the increasing competition for land among different human activities, parts of the major lakes and rivers have been encroached on

In most cases lakes and rivers have been used to dump dangerous industrial and domestic waste which has led to pollution of water bodies. Despite government efforts to protect water bodies, communities around them are resisting and continue to misuse them.

You have been asked by the local council leaders in your area to help them to sensitize people about the need to have safe water bodies. Using your knowledge about drainage features of East Africa;

Task.

- a) Draw a sketch map of east Africa and on it mark and name the major drainage features talked about in the scenario
- b) Guide the people in your community on proper ways of using the drainage features.

Item

5

Uganda's population is estimated to be growing at a faster rate of **3%** per year which is one of the highest noted in recent years worldwide. This trend is attributed to increased teenage pregnancies, early marriages and unmet needs for family planning methods.

This trend is worrying the demographers but the local people seem not be bothered by the problems that have come as a result of rapid population growth rate like overstrained

infrastructure.

The government is working hand in hand with other stake holders to see to it that this rate is controlled before it is too late. Campaigns to sensitize the masses have been launched in different districts of Uganda though the results are not yet seen.

You have been selected to lead the campaign in your district. The Uganda's population has been increasing as seen indicate in the table below.

Support material

The Uganda's Total population (1980 to 2024)

YEAR	TOTAL POPULATION(MILLIONS)
1980	12.6
1991	16.7
2002	24.2
2014	34.6
2024	45.9

Task:

- (a) Draw a suitable statistical diagram to represent the trend of Uganda's population.
- (b) Explain to the community members in your district on ways that will reverse the above trend.

Item 6.

The common modes of transport used in east Africa cut across all countries. These modes are used to transport goods and services from one place to another. trade among the three countries is booming.

However, the traders have on several occasions lost their merchandise because of the poor transport networks. Through their umbrella bodies, the have petitioned their governments. The concerned governments have therefore decided to organize a conference involving different stake holders to address the problems in the transport sector to minimize the losses.

You have been invited for that conference as on of the presenters, representing the youth to talk about the challenges in transport sector and how to combat these set backs

Support material

TRANSPORT MODE	PERCENTAGE
Water	18.4
Air	16.4
Road	57.7
Pipeline	2.1
Others	5.4

Task:

- a) Draw a suitable statistical diagram to represent the information in the table above.
- b) Write your presentation that you will deliver in the conference.

END

HISTORY AND POLITICAL EDUCATION

ITEM 1

In one of the busy towns in Uganda, frequent cases of theft and violence have been disturbing the peace especially in the market areas and near schools. Traders complained about losing their goods at night and parents worry about the safety of their children walking to and from school. This situation has concerned most local residents who have organized protests and demonstrations against government authorities instead of reporting to responsible bodies like Uganda police. The Uganda police responded to this accusation by arguing that the local residents lack awareness of their roles. In the wake of these debates and accusations, local leaders have called for sensitization meeting and chosen you to prepare a write-up for the participants.

TASK

- a) Prepare a written speech local leaders can use to explain to the local residents the constitutional role of the organs in the scenario so that they can minimize protests and demonstrations.
- b) Explain to the local residents the challenges the organ in the scenario faces while executing its duties.

ITEM 2

All Independent states in Africa have written down Constitutions. The Constitution serves as a back bone of the country's stability. Without it the law and power to make legal decision of judgements will not hold up and will fall apart in no time. To celebrate constitutional achievements, a nation-wide sensitization campaign has been launched by the Minister of Justice and Constitutional Affairs under the theme "Constitutionalism and the Rule of law, my Pride." Some participants have been identified to prepare papers in line with the theme to be presented during the Campaign.

TASK

- a) Explain the importance of having this useful written document in the development of the country.
- b) Explain the constitutional responsibilities of Ugandan citizens in peace maintenance.

ITEM 3

After several migrations and settlements that took place in East Africa, the migrants such as the Bantu and Luo formed states such centralized states such as Buganda and decentralized states such as Acholi respectively. This centralized state was organized politically, economically and socially. However, by the 20th century, the state started declining due to various political, social and economic reasons that made it lose its mighty.

The secondary schools in your area have organized a history seminar where various schools will talk about a number of both centralized and decentralized states and your school has been tasked to make a presentation about the organization of Buganda state and the factors for its collapse.

Task. Write an essay that you will use to.

- A) Explain the organisation of the above state
- B) The factors for the decline of the state

ITEM 4

In the 19th century, several missionary groups such as the Church missionary society, White fathers, Mill Hill Fathers, London missionary society, German missionary society among others arrived in Uganda from various countries such England and France. The missionaries left their home countries for several reasons and these included spreading the gospel, civilizing the people of east Africa, check on the spread of Islam among others. The missionary activities such as the teaching the gospel caught the attention various people who converted to Christianity. Their conversion however was not accepted by local leaders such as Kabaka Mwanga of Buganda and he took it as a form of betrayal and therefore ordered his chief executor Mukajanga to kill them and these came to known as the Uganda martyrs who included personalities such as Joseph Mukasa Balikuddembe, Dennis Sebugwawo, Athanasius Bazzekuketta and many others that were killed at various places such as the Namugongo Martyrs Shrine which has in the modern Uganda become so important.

Task. You have been consulted to highlight on.

- A) Reasons why Kabaka Mwanga ordered the killing of the converts.
- B) Importances of the place in the scenario.

ITEM 5

After the colonialists had partitioned East Africa among themselves, Uganda and Kenya were taken over by Britain and Tanzania was taken over by Germany. The Germans used a system of administration in Tanzania different from the one used by the British in Uganda and Kenya. The Germany system of administration however faced resistance from the people of Tanzania because of the various effects that it had on the people of Tanzania. As senior four students prepare for their mock examinations, a number of them have come to you to help them with a clear understanding of why the Germans used that system of administration in Tanzania and the effects that the system had on the people of Tanzania.

Task.

- A) As a student of history and political education, write an essay explaining why the Germans chose the above system
- B) Use your knowledge to explain the effects of the above system on the people of Tanzania.

ITEM 6

The term "ASIAN TIGERS" refers to the highly developed economies of South Korea, Singapore and Japan. These economies have developed from war zone, gang streets, drug dens into first world economies through a combination of factors that are political, social and economic. The cabinet ministers from the government of Uganda are currently looking for an educator to teach them about the various strategies that these Asian Tigers used to develop their economies and what they can do put their country Uganda to the same status. With all the trust, your teacher of history has chosen you to make a presentation to the cabinet ministers in relation to their enquiry.

Task. Prepare a document that you will use to.

- A) Explain to the ministers the strategies used by Asian tigers to develop their economies.
- B) Advise the ministers on what they can do to put Uganda to the same economic status.

ISLAMIC RELIGIOUS EDUCATION

ITEM ONE

It is not righteous that you turn your faces towards the East or the West. Still, the righteous believes in Allah, the last day, the angels, the books, the prophets and gives his wealth, despite love for it to relatives, orphans, the needy, travelers, those who ask (for help) and for freeing slaves (it includes) those who establish prayers, give zakat, those who fulfill their promise, those who are patient in poverty and hardships and during the battle. Those are the ones who have to be true, and it is those who are righteous. (Suratul Baqara 2:177)

Tasks

- (a) Explain the guidance in the above Quranic text regarding worship.
- (b) Relate the Quranic teachings in the above text to Christianity.

ITEM TWO

Juma Mawaggali married Fatuma Kassim, whom she met at a wedding party. They have been married for a period of 8 years. Their marriage is characterized by domestic violence, neglect, disrespect, and Juma's denial of Fatuma the right to sex. Despite the love and care Fatuma has for her husband, Juma still considers Fatuma not to have been the right partner. Therefore, he is not willing to change his attitude towards her.

Tasks

Based on the scenario, explain:

- (a) The intentions of marriage in Islam, Juma should consider in his marriage with Fatuma.
- (b) Lessons that married people today learn from Fatuma's marriage.

ITEM THREE

Habib is a resident of Kyanja. He works as a school bus driver. Recently, he acquired a loan and bought a car. As a result, he started being bossy and rude to his workmates. He reports late to work, claiming that he was held up by traffic. He also has several girlfriends because of the car and sleeps with them, when given allowances for workers, and he doesn't give them out in full so as to service his interest loan. His boss is concerned and thinks of firing him.

Task

- a) Explain the teachings of Islam that will enable Habib to retain his job and live a stable life
- b) Why do the teenagers today not want to work

ITEM FOUR

To obtain wealth, one must work hard. Idleness and usury cannot earn one righteous wealth. Quran says: "And that man (a human being) can have nothing (to his account) but what he strives for (does)." [Quran 4:32]

Tasks

In light of the above verse:

- (a) Examine ways through which a Muslim can earn a living.
- (b) Explains the traditional approaches to how wealth was acquired

MATHEMATICS

Item 1

Prossy is supposed to pay UGX 5.4 million per year at the University. The amount is divided in the ratio 4:3:3 for her fees, accommodation and meals respectively. She is supposed to pay 60% of the fees in the first installment, pay a third of the remainder of the fees in the second installment and the rest of the fees in the third installments. Prossy is supposed to get the money for her fees from a mobile money agent using a 4-digit code. For safety reasons, her father gave her the code written as 432 in base ten and Prossy has to convert this code to base six to get the actual code.

Task;

- How much will Prossy pay for fees in the last installment.
- Determine how much money will Prossy pay for accommodation.
- Help Prossy to determine the actual code for withdrawing the money from the mobile money agent.

Item 2

At an exhibition that is going to last for two days, Tom has a target of making total sales of **UGX 1,750,000** on day one by selling 100 vests and 50 shirts. And on day two, his target is to make total sales of **UGX 3,000,000** by selling 150 vests and 100 shirts. He needs to know how much price he should sell each vest and shirt to achieve targets.

Task:

- How much will he need to sell each vest and t-shirt to achieve his sales targets?
- Determine if **UGX 600,000** would be enough to purchase 30 vests and 25 shirts at the exhibition. If not, how much more is needed for such a purchase?

Item 3

A certain district has a temporary bridge that is used over a certain section of a small river however the engineers want to build a stronger bridge that can carry more weight. The leaders decided to carry out research where they measured the mass of 30 people who passed on that bridge that day and below were their masses recorded in Kgs.

60	50	45	51	41
80	77	48	49	58
53	46	36	61	32
74	93	78	42	75
38	55	58	83	66

Task:

- Organize the above data in a frequency distribution table for easy interpretation starting with a class of 30-39.
- Determine the average mass for the data collected.
- Estimate the mass of the majority of the users of the bridge.

Item 4

Three ladies; Peace, queen and Ritah went to the supermarket. Peace bought 2 kilograms of sugar, 1 kilogram of tea leaves and 2 loaves of bread. Queen bought 10 kilograms of sugar and 2 loaves of bread while Ritah bought 5 kilograms of sugar, 2 kilograms of tea leaves and 1 loaf of bread. The cost of a kilogram of sugar was UGX 3,800, a kilogram of tea leaves was UGX 2,000 and a loaf of bread was UGX 5,500.

Task:

- a) Organize the quantity and prices of the items bought in matrix form.
- b) By matrix multiplication, determine their total expenditure.

Item 5

Mr. Sweme saved UGX 500,000 in a saving group with the aim of acquiring a refrigerator for 3 years that offered him a simple interest rate of 20%. After the three years, he went to the shop where he found the advertisement below before picking his money saved from the group.

REFRIGERATOR FOR SALE!

TERMS: CASH UGX 800,000

OR

MONTHLY HIRE PURCHASE: DEPOSIT 37.5% OF THE CASH PRICE FOLLOWED BY 4 EQUAL MONTHLY INSTALLMENTS OF UGX. 150,000 EACH MONTH.

He wanted to know whether his savings is enough to acquire the refrigerator by cash and also know the savings one can make by acquiring it by cash rather than hire purchase and has approached you for help.

Task:

- a) Help Mr. Sweme to know whether his savings is enough to acquire the refrigerator by cash.
- b) Also help him to determine the savings if one acquires the refrigerator by cash rather than hire purchase.

Item 6

A teacher of a certain school left Kampala at 10:00am and she normally drives her diesel car at an average speed of 80 km/h. She travelled by road from Kampala to Mbulamuti in Kamuli district. The teacher moved from Kampala on a bearing of 0600 to Kayunga which is 80km away. She altered her course and travelled to Busaana 40km away on a bearing of 1100 from Kayunga. From Busaana she used a ferry and later on a car in the direction of North-East, 20km away to Mbulamuti.

On reaching Mbulamuti, the teacher remembered that there is a direct route from Kampala to Mbulamuti that she could have used but does not know how long it is.

Task:

- a) Describe the direction of Kampala from Mbulamuti
- b) How far is Mbulamuti from Kampala using the direct route?
- c) What time would it take the speaker to reach Mbulamuti if she had used the direct route?

- d) Determine if **UGX 45,000** would be enough to fuel the car from Kampala to Mbulamuti using the direct route if the cost of diesel is shs5500 per litre and the car covers 9km per litre of fuel.

END

PHYSICS [Theory]

Item 1

On a certain afternoon, Mr. John and his wife Pretty were moving towards a tarmac road. They heard an ice-cream advertising song coming from a megaphone a velocity of 100m/s attached to an ice-cream seller's motorcycle. By the time they reached the road, the seller had moved a considerable distance away. They waved their hands to attract his attention, and he was able to see them and returned.

The wave length of the song from the megaphone was estimated to be 70.6cm. Pretty wanted to know whether her ear will be safe when she stands very close to this megaphone.

Later, Pretty accompanied her friend, Jane who was going for antenatal checkup at the nearby hospital because she had felt unwell the previous days.

Pretty used this opportunity at the hospital to inquire from the dentist why her tooth gum was swelling. Upon checking, the dentist used a given transparent device that could make pretty's tooth appear bigger than its actual size. Pretty wanted to understand the device and she has approached you for help.

Hint.

- Normal audible range for the human ear is 20Hz – 20,000Hz.

Task;

As a student of physics;

- (a) Help Mr. John and his wife Pretty to understand how the ice-cream seller was able to notice them as he rode away.
- (b) Determine whether Pretty's ear will be safe.
- (c) With the aid of an illustration, help Pretty understand the device used the dentist and how it works.
- (d) Help Jane understand the device mentioned by the doctor and how it works.

Item 2

One of the most misunderstood branches of physics for years by physics students is astronomy [space physics]. Some of the examples of such misunderstandings include;

- While watching the world cup that took place in Qatar in 2022 at 9:00 pm Ugandan time, the football fans watching the match in Qatar realized that it was still day in Qatar yet it was night in Uganda.

- It was raining in Uganda with floods yet it was very dry in Qatar.
- NASA tells us that it only one planet supports life with no clear reasons and that the solar system consists of big, small and much smaller objects which are not known by most people worldwide.

You have been approached by Joan one of the physics students with the above concerns and she wishes to clearly understand each of them.

Task

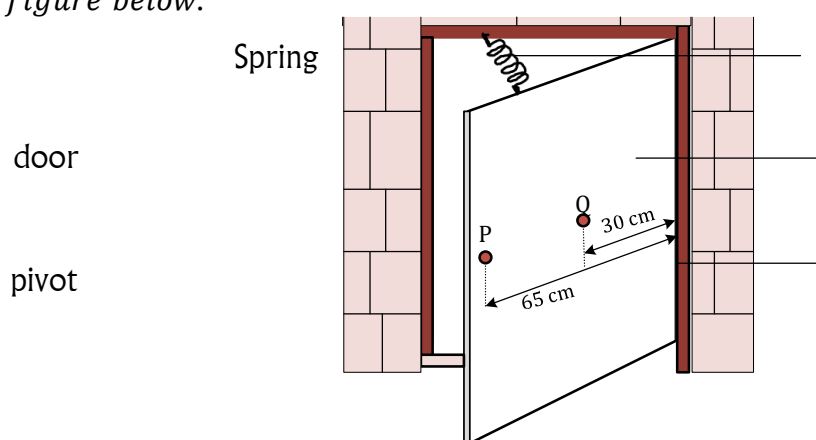
As a student of physics, address Joan's misunderstandings in astronomy.

Item 3

A family has resorted to construct a house in a very hot and remote region in the country. It intends to live comfortably in the house despite the hot conditions of the region. The region has no electric power supply which would be used to run electric fans or air conditioning systems to cool the house. The house must be carefully designed to ensure its suitability in this region. The door stay design mechanism of the house doors must have a spring of force constant between

3400 N to 3600 N to function appropriately by automatically shutting the door as shown in the

figure below.



A doorknob must also be installed but the family does not know the right position on the door. Any given family member can apply a force of 25 N to push or open the door.

An investigation was carried out to select the suitable spring by applying a force of 420 N on a certain spring to stretch it by 12 cm . The planned house floor area is 57.375 m^2 but each tile available measure 50 cm by 25 cm at a cost of a cost of Shs. 3400 per tile.

Task:

Assist the family to;

- Determine the amount of money required to buy the required number of tiles.
- Establish if the spring tested can be used on the door stay mechanism.
- understand the best position for the installation of the doorknob [justify].

- (d) Understand the necessary house design considerations to have a house suitable for the region

Item 4

A saloon car driver set off from rest from his workplace and travelled at a uniform speed of 20 km/h for 1 hour. As he approached a junction, he decelerated uniformly to 15 km/h over a period of 30 minutes. He then accelerated uniformly to 30 km/h in 1 hour. To his surprise, the car later decelerated uniformly and came to rest in 30 minutes due to a lack of fuel. The driver suspected that the petrol station attendant might have cheated him by not filling the tank to its full capacity despite charging him for a full tank.

While inspecting the car to determine whether there was any other fault, he noticed that both the tyres and the wheel rims were very hot. However, after a few minutes, the rims had cooled down while the tyres remained hot.

After refueling, the saloon car resumed its journey. While moving at a speed of 10 km/h, it collided with another stationary car of mass 1500 kg.

The two vehicles stuck together and continued moving as one body. When a police officer and a mechanic arrived to inspect the accident scene, they found that the treads on the saloon car's tyres had worn out. They also suspected that the combined velocity of the two cars after the collision was greater than 5 km/h.

Hint:

- *Mass of the saloon car = 2000 kg*
- *Full tank capacity = 20 litres*
- *Fuel consumption = 1 litre for every 4 km travelled*

Task:

As a physics student, help the driver to:

- Determine whether he was cheated by the fuel station attendant.
- Explain why the tyre treads had worn out.
- Verify whether the common velocity of the two cars after the collision was greater than 5 km/h.
- Explain why the wheel rims cooled faster than the tyres.
- State any two applications of materials that possess the same thermal property as the wheel rims

Item 5

During a senior three physics lesson, the teacher played a video for the learners about the Earth's behavior as a magnet and the importance of its magnetic field. During the lesson, a light rain shower characterized by bright flashes of light and loud sounds started to shower. After the rain shower, the nearby building was found to have developed cracks, and part of it appeared burnt. The students were surprised and wondered what could have

caused the damage and the students wanted to understand what could have been done to protect the building from such damage. The students have approached you for help.

Task:

- (a) Help the students to understand the Earth's behavior and the importance of field.
- (b) Explain to the students what the bright flashes were and how they might have caused damage to the building.
- (c) Using an illustration, explain how the house could have been protected from such damage.

END

C.R.E

ITEM 1

"All you that righteous, shout for joy for what the Lord has done, praise him, all you that obey him. Give thanks to the Lord with harps, Sing to him with stringed instruments. Sing a new song to him, play the harp with skill, and shout for joy! The words of the Lord are true and all his works are dependable. The lord loves what is righteous and just, his constant love fills the earth". **Psalms 33:1-5 (GNB)**.

Task.

- a) How are the worship practices among Christians today reflected in the Bible text above?
- b) Explain the Africa traditional worship practices that are related to those in Bible text above.

ITEM 2

In some areas of Uganda lives Mr Kuku who beats his wife every day after drinking alcohol, He disciplines his children when they make mistakes using metallic objects. He does not want to provide basic needs to his family and all his children are not at school because of lack of school fees. He quarrels with his wife every day and abuses her using vulgar language before the children. And now the wife has decided to divorce.

Support: The word vulgar means indecent.

Task

- a) Explain the Biblical teachings that can help the people in the scenario to have a stable family.
- b) How can the Modern Approaches of family help to solve the challenges presented in the above scenario?

ITEM 3

Samaya finished his university education and searched for a job for fifteen years but he couldn't get any. His friend advised Him to participate in agriculture as he waits for his professional job and he refused. A Good Samaritan called Madu gave him a job in a certain company that makes plastic. However one year after getting a job, samaya's conduct changed. He started disobeying his boss and abusing his fellow workers, becoming lazy and sometimes he could steal some company's property. Whenever he received his salary, he spends the money in bars by buying and drinking alcohol.

Task

- a) How can the Christian teaching help Samaya in the scenario to become a good worker?
- b) Explain the African traditional understanding of work that can be used to solve the challenges presented in the scenario above.

ITEM 4

"I was hungry and you fed me, thirsty and you gave me a drink, I was a stranger and you received me in your homes, naked and you clothed me, I was sick and you took care of me, in prison and you visited me. The righteous will then answer him, when, Lord, did we ever see you hungry and feed you, or thirsty and give you a drink?" Mathew 25:35-37. **GNB**

Task

- a) How should rich people use their wealth appropriately in light of the bible text above?
- b) Examine the dangers that may arise if Ugandans go against the teachings in the above biblical text?

END

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