

- (x) A group of animals that maintain the body temperature at more or less constant is-
- A. Regulators. C. Cold blood animals.
 B. Warm blood animals. D. Poikilotherms. E. Homoeotherms.

2. Match the phrases in **List A** with the responses in **List B** by writing the letter of the correct response from **List B** beside the item number of **List A** in your answer sheet provided.

List A	List B
(i) A hard outer cover of animals such as crustaceans and arachnids.	A. Flagella movement. B. Ciliary movement. C. Tendon.
(ii) Found at the elbow and knee and work like a hinge if door to allow movement in one plane.	D. Ligament. E. Hinge joint.
(iii) Found in the heart and are special in that they contract and relax without getting fatigue.	F. Exoskeleton. G. Cardiac muscle.
(iv) Movement of plant towards or away from an environment stimulus.	H. Skeletal muscle. I. Tropical movement.
(v) Type of movement exhibited by the organisms such as euglena.	J. Nastic movement. K. Bones.
(vi) Rigid structure made of calcium deposits and living cells.	L. Joints. M. Endoskeleton.
(vii) Is a location where bones meet.	N. Ball and socket. O. Joint.
(viii) A strong bundle of fibres which attaches muscle to bone.	P. Hydrotropism. Q. Skeletal movement.
(ix) Bundle of fibres around a joint in the skeleton which hold the bone in place and help to prevent dislocation.	R. Muscle.
(x) Bundles of fibrous tissue in animals which has the ability to contract thereby producing movement.	

3. (a) State four (4) Precautions for proper use of a Microscope.

(b) Differentiate a test experiment from a control experiment.

4. (a) (i) What is gaseous exchange?

(ii) Arrange the following in the correct order:

Bronchi, pharynx, bronchioles, nasal passages, alveoli, trachea.

(b) Name the structure concerned with gaseous exchange in

i. A mammal

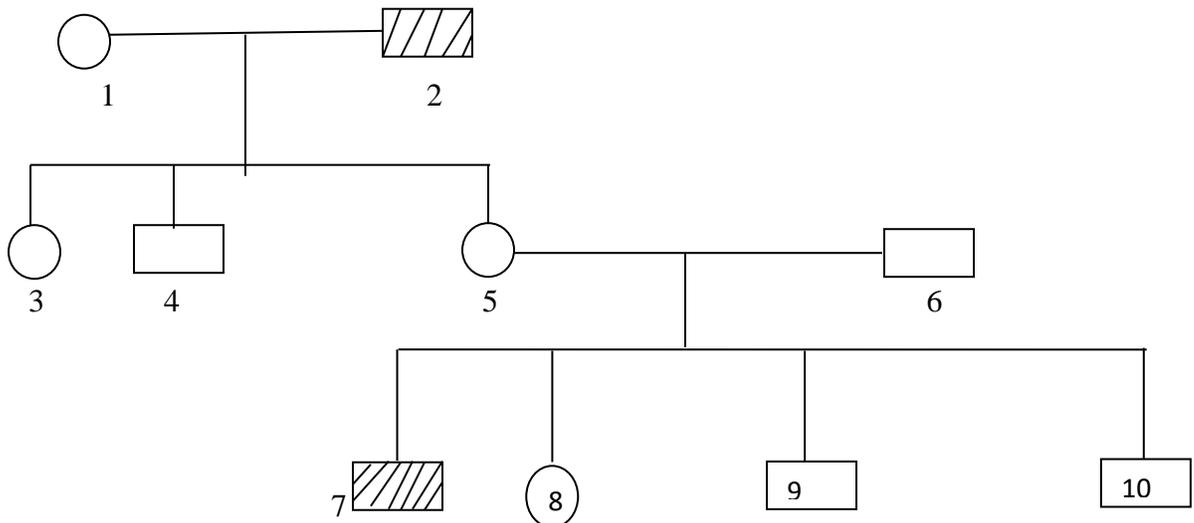
ii. A young tadpole.

iii. An insects.

iv. An earth worm

v. Spider.

5. (a) (i) What is a reflex action?
(ii) Give four (4) examples of reflex actions.
(iii) Explain the importance of reflex action to animals.
(b) (i) State two (2) differences between Nervous control and hormonal control.
(ii) Why a person manages to climb a big tree when suddenly see a big lion.
6. (a) Explain the two (2) types of mutation in living organisms.
(b) Give four (4) examples of genetic disorders caused by gene mutation.
7. (a) Explain the meaning of the following terms.
i. Transportation of Materials. ii. Mass flow.
(b) Explain what would happen when a plant cell is placed in hypertonic solution.
8. Define the following terms as used in reproduction.
i. Fertilization. ii. Ovulation.
(b) Name and explain how the two (2) types of twins occurs.
9. Study the following list of substances:
Water, Urea, Glucose, Calcium, Potassium and Sodium.
(a) Which of the substance will be excreted by a Mammal in a greater amount under each of the following?
i. Low temperature of the environment.
ii. Insufficient secretion of insulin.
iii. Consumption of large amount of proteins.
(b). Explain why one does not urinate frequently on a hot day.
10. (a) Define the following.
i. Genotype. ii. Variation. iii. Phenotype.
(b) Study the pedigree below and then answer the questions that follow.



KEY

○ = Females

□ = Males

- (iv) Chemical change means;
 A The change is reversible. B Can easily be separated.
 C The change is complete. D New substance is produced.
 E Produces no change of mass.
- (v) 10 cm³ of 0.4 M sodium hydroxide are added to 40 cm³ of 0.2 M hydrochloric acid. The resulting mixture will be
 A Neutral B Alkaline C Dilute
 D Acidic E Amphoteric
- (vi) Consider the system at equilibrium: $\text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{H}_2\text{O}(\text{g})$ for which $\Delta H > 0$. Which change(s) will increase the yield of $\text{H}_2\text{O}(\text{g})$.
 A Increase in temperature
 B Increase in the volume of the container
 C Increase in temperature and volume of the container
 D Increasing surface area of oxygen
 E Increasing surface area of reactants.
- (vii) Which of the following compounds contains only two elements?
 A Magnesium hydroxide B Magnesium nitride
 C Magnesium phosphate D Magnesium sulphite
 E Magnesium sulphate.
- (viii) Which one of the following sets of laboratory apparatus are used for measure volume?
 A Crucible, U-tube and volumetric flask
 B Test tubes, beakers and glass jar
 C Thistle funnel, separating funnel and beaker
 D Burette, pipette and measuring cylinder
 E Conical flask, test tube and measuring cylinder.
- (ix) _____ is the general term used to explain a mixture of different metals
 A Alloy B Allotrope C Amphoteric
 D Amorphous E Isotope.
- (x) A solvent can be obtained from a solution by
 A evaporation followed by decantation B filtration and condensation
 C evaporation and filtration D evaporation and condensation
 E crystallization followed by sublimation

2. Match the items in **List A** which the responses in **List B** by writing the letter of the correct response beside the item number.

LIST A	LIST B
(i) Its carbonate is used to remove hardness of water.	A. Oxygen
(ii) Used in the manufacture of ammonia.	B. Carbon dioxide
(iii) It is the strongest oxidizing agent among the	C. Chlorine
(iv) halogens.	D. Carbon
(v) Its chloride is added to food in order to give taste.	E. Fluorine
(vi) It exists in three main forms.	F. Hydrogen

(vii) A group of atoms with unpaired electrons	G. Nitrogen
(viii) Vital for all living things	H. Calcium
(ix) Acid rain	I. Potassium
(x) Inorganic chemical compounds which are added to the soil to supply more nutrient.	J. Radical
	K. Electron
	L. Sulphur Dioxide
(xi) Incredibly stable and rarely reacts.	M. Fertilizer
	N. Noble Gases
	O. Sodium

3. (a) Study the following portion of the periodic table with some elements represented by letters and answer the questions that follow

I							VIII
	II	III	IV	V	VI	VII	
						B	
	A				C	D	

- (i) State how electro negativity varies from A to C and from B to D
- (ii) Write the electronic configurations of A, C²⁺, D and B.
- (b) Consider elements with atomic number 1, 11, 12 and 17
- What are the types of oxides formed by elements with atomic number 11 and 12?
 - Write an equation which represents a reaction between the element with atomic number 1 and 17.
 - Write a balanced chemical equation between the oxide of the element with atomic number 11 and aqueous solution of the compound formed in 3(a)(ii).
4. (a) Giving four reasons, explain why people who use hard water can expect higher costs than people who use soft water
- (b) Suggest one method for the separation of each of the following
- Iodine and sand.
 - Green solution from leaves.
 - Alcohol and water.
 - Iron filings and powdered calcium carbonate
5. The following are the general structural formulae of certain organic compounds: R-OH, R-COOH, and RCOOR'.
 (a) Name the:
 - Homologous series represented by R-OH, R-COOH and RCOOR'.
 - Functional groups represented by R-OH and R-COOH.
 (b) When a burning splint is introduced into a gas jar containing carbon dioxide, the flame goes out.
 - What two properties of carbon dioxide does this experiment illustrate?
 - What type of equipment used widely in everyday life makes use of these two properties?
6. (a) Give three examples in each of the following:
 - Solid fuel
 - Gaseous fuel

- (b) The reaction which produces methanol from carbon monoxide and hydrogen is represented by the equation $\text{CO (g)} + 2\text{H}_2\text{(g)} \rightleftharpoons \text{CH}_3\text{OH (g)}$ $\Delta\text{H} = -94\text{kJmol}$. The reaction is carried out at high pressure to give a good yield of methanol.
- Explain why increase in pressure gives a better yield of methanol.
 - The value of ΔH is negative. What does this tell about the reaction?
 - With a reason, state whether a high temperature or low temperature will give better yield of methanol.
7. (a) Give the names or formula of the two chemicals that would be used in the laboratory to make each of the following gases. State a simple test that could be used to identify each gas.
- Oxygen.
 - Hydrogen.
 - Carbon dioxide
- (b) Suggest a suitable indicator for the following titrations:
- Hydrochloric acid against ammonia solution.
 - Sulphuric acid against sodium hydroxide solution.
 - Ethanoic acid against potassium hydroxide solution
8. (a) 25 cm^3 of 0.1 M HCl were neutralized by 23 cm^3 of sodium hydroxide solution. Calculate the concentration of the alkali in grams per litre.
- (b) Give the meaning of the following terms:
- Soil structure.
 - Acidic soil.
 - Liming.
9. (a) Current of 0.5 A were made to flow through silver voltammeter for 30 minutes. Calculate the mass of silver deposited and the equivalent weight of silver.
- (b) Explain the following reactions giving one example in each:
- Addition reaction.
 - Elimination reaction
10. (a) (i) Name three gases which should not be produced in order to prevent the destruction of ozone layer
- (ii) List and explain three effects of ozone layer depletion.
- (b) Lack of safe water for domestic and industrial uses is a serious problem in most of Tanzanian towns. The major cause of this problem is pollution in the water sources. State three methods that could make water from a pond or a well be safe for drinking.
11. In the blast furnace, iron ore can be reduced using coke at a temperature of about 1300°C .
- Write an equation for the exothermic reaction that causes this high temperature.
 - State how carbon monoxide is formed.
 - Write a word equation for the formation of slag.

12. Consider a four carbon hydrocarbon (C_4H_n), where n is an integer. Give the name of homologous series, molecular formula and structural formula for different isomers of the compound formed by each homologous. In each case indicate the causes of isomerism.
13. Addition of inorganic fertilizers in the farm is not as important as addition of organic manure. Discuss the correctness of this statement in four points.

CIVICS

1. For each of the items (i) – (x), choose the correct answer among the given alternatives and write its letter beside the item number in the answer booklet(s) provided.
 - (i) Tanganyika became a republic on

A 9th December 1961	B 9th December 1962	C 26th April 1964
D 12th January 1964	E 14th October 1963	
 - (ii) Which one of the following is a characteristics of formal sector in Tanzania
 - A Employees wages are often low
 - B Lack of permanent business places
 - C Employees lack social security protection
 - D Low capital investment
 - E Business activities are regulated by taxation law
 - (iii) The current constitution of the United Republic of Tanzania was enacted in

A 1977	B 1961	C 1964	D 1964	E 1965
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 - (iv) Which of the following is the second step in problem solving process?

A Initiating mediation	B. Agree in solution
C Gathering information	D. Defining the problem
E Generating alternatives	
 - (v) The ability of a person to think and come up with new idea is known as

A Creative thinking	B. Critical thinking	C. Decision making
D Problem solving	E. Deep thinking	
 - (vi) The major driving force of globalization is
 - A. Rapid population growth
 - B Revolution in communication and information technology
 - C Improvement of transport and communication
 - D Development of multi-lateral co-operation
 - E Colonialism
 - (vii) The way male and female are portrayed in the society is referred to as

A Gender Blind	B Gender discrimination	C Gender role
D Gender stereotyping	E Gender balance	

- (viii) The parliament of the United Republic of Tanzania is divided into ;
 A The prime minister and the National Assembly
 B The president and the National Assembly
 C The speaker and the National Assembly
 D The National Assembly and the Parliament
 E The Clerk and the National Assembly
- (ix) The following are indicators of poverty except
 A low per capita income
 B Low level of science and technology
 C Low rate of infant mortality rate
 D Low life expectance
 E High illiteracy rate
- (x) Aspect of culture which involves the tangible things
 A Non-material culture B Traditions C Customs
 D Language E Material culture

2. Match the items in List A with the correct response in List B by wring the letter of the corresponding response beside the item number in the answer booklet(s) provided.

List A	List B
(i) The exercise of fairness and justice to all sexes without discrimination.	Gender analysis
(ii) The situation where one sex is treated either better or worse than the other.	B. Gender blindness
(iii)The way men and women are shown in the society.	C. Sexuality
(iv)Inability to know that there are different gender roles	D. Female Genital Mutilation
(v) The systematic effort to identify and understand the roles of women and men within a given society.	E. Gender equity
(vi)A globally accepted strategy for promoting gender equality.	F. Gender discrimination
(vii) Social relationship between male and female.	G. Gender balance
(viii) Biological different between male and female.	H. Gender equality
(ix)Situation where by women are treated badly compared to men.	I. Widow inheritance
(x) The removal of the outer part of the sexual organ of a women	J. Gender stereotyping
	K. Bride price
	L. Sexual intercourse
	M. Women discrimination
	N. Gender oppression
	O. Women empowerment
	P. Sex
	Q. Gender
	R. Gender mainstreaming
	S. Polygamism

3. Read the following passage and answer the questions that follow.

Many people participate in wealth production in our country. Tanzania is endowed with many resources. It has fertile land and favorable climate. However, labour is needed in order to benefit from these favorable factors. In our country labour sources include; peasants, small scale farmers, livestock keepers, traders, workers in crafts, and industrial workers in general. Most of working force is employed in agriculture about 75-80 percent of Tanzania working force is employed in agriculture. This is because our agriculture is not mechanized. The majority of agricultural producers in our country are peasants. They still use simple tools such as hoes.

In addition to farming, our country is rich in livestock consist of cattle, goats, sheep, poultry and pigs. Livestock keepers provide Tanzania with meat, milk and eggs which are very important a source of protein. They are also source of government revenue, for example hides and skins are exported to earn foreign currency. They are also used locally in making shoes for people.

Another important activity and source of employment and income is fishing. Much labour is used in fishing especially for those living near lakes and oceans. Unfortunately, the fish industry is seriously affected by lack of experts and efficient modern fishing technology. Some fishermen use dangerous and destructive methods such as explosive in fishing.

Questions

- (a) Identify the suitable title of this passage.
 - (b) According to the passage, what are four main sources of labour in Tanzania?
 - (c) With reference to the passage, how can Tanzania benefit from livestock keeping sector?
 - (d) List down two problems that hinder fishing industry in Tanzania.
 - (e) In your own words, what can be done in order to improve the agriculture sector in Tanzania? (Give four points).
4. (a) (i) What is local government?
(ii) List down four sources of local government revenue.
(b) Outline five importance of national constitution.
5. Examine six cause root of improper behavior in a society.
 6. "Globalization is blessing to Tanzania." Defend this statement by using six points.
 7. Examine six advantages of the private sector to the economy of Tanzania.
 8. "Failure to apply life skills can lead to problems." Identify six consequences of not applying life skills.
 9. Tanzania is credited for promoting and broadening the scope of democracy. Give six points to show the validity of this statement.
 10. "To a great extent, the road accidents in Tanzania are manmade." Justify this statement by giving six points.

ENGLISH LANGUAGE

COMPREHENSION AND SUMMARY

1. Read the passage below carefully and answer the questions that follow

There are three kinds of education in Africa. There is the old traditional education; there are the remains of the colonial schooling, which varied according to how the European power saw African requirements; and there is the post-independence attempt to find an education suitable for the needs of modern Africa.

The old education grew naturally out of the village and tribal ways of life, and there was much to commend it. A child had to learn how to deal with the dangers of his surroundings and how to treat his fellows. He knew about weather, love and the skills of a spear, axe and hoe from old men. His mother taught him correct speech, behaviour and respect for his elders. Throughout his childhood, it was impressed on him that he could not live alone - he must 'conform', and accept the ways of the tribe. He lived in a world of kinship: his kin gave him security in sickness and old age. Law and ownership of land, too, were based on kinship. So the child learned the rites which kinship would demand throughout his life from birth to maturity, marriage and death.

Much of this education was informal. The home was the child's school, where he learned traditional legends and proverbs. (For example, the reader might like to work out the meaning of these two Baluyia proverbs from Kenya: 'A person running alone thinks he is the fastest runner' and 'a small bird cannot advise a bigger one'). This social education had a great emphasis on correct conduct and confidence. A traveller in Africa in 1930s wrote: 'I have seen three children between four years and six quite competently preparing a meal with no supervision'. But severe tests of endurance were a more formal part of this education. Chagga boys in the old days had to sleep in holes in the ground at night for nine months, often in the cold mountain air. A boy was required to go on a lonely expedition into the forest to kill a leopard with a bow and arrow. Bena girls aged nine to thirteen, were ducked repeatedly in streams, or terrified by women pretending to fall dead at their feet, and by the appearance of monsters.

This traditional form of education had the advantage of preparing a child for life in the community; it did not in general encourage him to be ambitious or independent, or teach him to meet the needs of the modern world. So in the colonial years missions and 'European' schools taught the kinds of things children in Europe were taught. This produced small westernised elite in some colonies, but it was severely criticised for having little to do with African needs. Reading books had European birds and snow scenes in them; arithmetic problems dealt with taps, and wall-paper rolls. Few of these things had anything to do with many African children's environment.

Colonial education too has been criticised because it was, to quote President Nyerere of Tanzania, 'motivated by a desire to inculcate the values of the colonial society and to train individual for the service of the colonial states'. The state interest in education was based on the need for local clerks and junior officials, and there was thus a heavy emphasis on subservient attitudes and white-collar skills.

In the post-independence era, African needs are being rethought. Questions are being asked such as, how many universities should a country have, whilst half of an age group gets no schooling at all? Some highly trained electrical engineers are needed for the power stations; but Africa also needs men skilled in the relatively simple skills of wooden bridge construction, laying late rite roads and building single-story houses. Civil servants especially need a good secondary education if they are to deal with matters ranging from money for a new agricultural scheme to collecting information for government approval of a harbour extension. For this, says one writer, 'a developing continent must clearly learn to be practical'. In Africa parents have become convinced that education is the key to a good job and family prestige too. But it has its drawbacks. In many countries secondary and college education means that children have to leave the rural areas for the towns and later as mean they are not returning to work on the farms and produce the food. The opportunities and leisure attractions of the towns are too tempting.

Questions

- i. From this passage we can tell that colonial education was to
 - A. help Africans acquire their independence
 - B. help Europeans swiftly rule the Africans
 - C. meet the needs of modern African
 - D. replace African tradition and culture
 - E. Civilise the African children.
- ii. The word 'conform' in the second paragraph means
 - A. comply with rules or general custom
 - B. discuss with other members of the society
 - C. respect the elders of the society
 - D. mix with the rest of members of the society
 - E. disagree with the community values.
- iii. 'Elite' in the fourth paragraph means
 - A. a group of 'selected people
 - B. a group of colonialists
 - C. a group of westernised Africans
 - D. a group of rich people
 - E. a disadvantaged group.
- iv. The traveler in East Africa was surprised (in paragraph three) because
 - A. he could not expect such young children to prepare such a delicious meal
 - B. he thought only European children could prepare a meal like that
 - C. the children could prepare a meal without assistance from an older person
 - D. the children were not competently supervised when preparing the meal
 - E. the children were too few to prepare a meal.
- v. We can deduce from paragraphs four and five that colonial education was
 - A. too difficult for the Africans
 - B. irrelevant to the African situation
 - C. showing European birds and snow that did not exist in Africa
 - D. preparing Africans for highly paid jobs
 - E. preparing Africans for leadership in missions

- vi. According to the writer, education in Africa today
 - A. should train electrical engineers
 - B. does not require universities
 - C. should not prepare a western elite.
 - D. should be practical oriented
 - E. should base on secondary school level only

- vii. The writer says that in traditional education “severe tests of endurance were a more formal part of this education’. The aim of the tests was to train
 - A. boys and girls not to fear the sight of monsters
 - B. boys and girls to survive in the cold
 - C. a Chagga boy not to fear a leopard
 - D. Bena girls not to run away from the prêt endingly dead women falling at their feet
 - E. boys and girls to tolerate in extremely difficult conditions.

- viii. Nyerere criticised colonial education because
 - A. it perpetuated the interests of the colonial society
 - B. it prepared local clerks and junior officials
 - C. it encouraged university level only
 - D. it inculcated the values of the colonized society
 - E. he just hated colonialists.

- ix. In the seventh paragraph, the question ‘... how many universities should a country have, when half of an age group gets no schooling at all?’ implies that the writer
 - A. does not support university education
 - B. supports university education for children who got no schooling at all
 - C. encourages more emphasis be put on lower levels of education than the university education
 - D. discourages lower levels of education for children who got no schooling at all
 - E. insists that civil servants should just receive good secondary education.

- x. From the last paragraph the writer observes that education in many African countries is
 - A. preparing young people for rural life
 - B. preparing young people for urban life
 - C. attracting young people to areas which they are reluctant to leave
 - D. trying to prepare young people for rural life, but the urban areas are too tempting
 - E. preparing young people for rural life but they do not like farming.

2. Read and summarize the following passage in two sentences

How can we depend upon gift, loans and investments from foreign countries and foreign companies without endangering our independence? The English people have a saying which says “He who pays the piper calls the tune”

How can we depend upon foreign governments and companies for the major part of our development without giving those governments and countries a great part our freedom and expect them to do as we please? The truth is that we will end up in disappointment.

PATTERNS AND VOCABULARY

3. Fill in the blanks by writing the correct form of the word from the brackets against the item number.

Tanzania (i)_____ (take) a significant step to (ii)_____ (nation) her means of wealth after Arusha declaration of 1967 and therefore (iii)_____ (embrace) socialism. Tanzania (iv)_____ (create) village communities through the (v)_____ (village) policy. People (vi)_____ (settle) in such village communities to provide (vii)_____ (collect) and joint efforts needed to (viii)_____ (maximum) production of wealth.

4. Choose the correct word from the given list below to fill in the blanks in the following sentences: **beg, pursue, managed, ancestors, display, pangaea, mate, similar, pepper, Gondwanaland**

- _____ is a type of friend one is forced to be with in life
- _____ has the same meaning as the word portray
- _____ is the first super continent named by scientists
- _____ are our forefathers and mothers
- _____ means achieved, controlled and or succeeded
- _____ is the same as the English word request
- _____ is to undertake
- _____ is close in meaning with the word resemble

5. In each of these sentences one of the words is wrong. Identify and correct them by writing the correct spelling for each word.

- The furniture's are sold at cheaper price.
- The equipment is needed at workplace today
- We are water the garden now.
- I took a loaf of advice from Juma last week
- Girls has to liberate on their own from boys' traps
- Ali meet me for a discussion last evening.
- Muchin formations about a town is gathered through narrations.
- Both house girls and house boys knows sufferings.

6. Using the words below, complete the following expressions.

Purpose, vision, delegates, sex, gender, congregation, choir, legend, ballad, fans, comrades, audience.

- A final target that drives your undertaking is known as a _____.
- A motive or reason for doing a job or business is named a _____.
- A group of people worshipping at church session is collectively called a _____.
- A story which may not be true is said to be a _____.
- Sent representatives with special mission and interests to negotiate on behalf of a state are called the _____.
- A biological trait which distinguishes man from a woman is a _____.

- g) A poem prepared for dramatization on stage is classified as a _____
- h) People belonging to the same political parties or military grade call themselves _____

7. Rewrite the following sentences according to the instructions given after each:
- Halima is as tall as Asha. (Split the sentence to make two distinctive sentences)
 - Juma likes Ugali. Ali likes Ugali too (Join the two sentences by using neither---nor)
 - “ I will come Tomorrow” Musa promised (Report this statement)
 - The Democratic Republic of Congo invites our country to state celebration (Passivise the sentence)

LANGUAGE USE

8. Rearrange the following five sentences into a logical sequence to make a meaningful paragraph by writing the corresponding letter in the answer booklet provided. Use the following format for your answers.

Sentence number	1	2	3	4	5
Letter					

- They were shouting to the bus driver who caused a serious accident.
- On my way to the market, I met a crowd of people shouting.
- Finally, the bus driver was taken to the nearby police station.
- One day, I was asked to go to the market by my mother.
- Two people who were on the motor bicycle died on the spot.

9. Match each expression in **List A** with the correct word from **List B** by writing its letter beside the item number in the answer booklet(s) provided. Use the following format for your answers.

LIST A	LIST B
(i) Plants (ii) Pupil (iii) A place in boarding school where students/pupils sleep at night. (iv) A place where people buy and sell goods (v) Laboratory	Community A shop A dormitory A place where experiments are conducted A hospital Part of an eye or type of factory Is part of an eye or means learner A factory or a macro organism

Numbers	i	ii	iii	iv	v
Letters					

10. Answer **all** questions from alternatives given A, B, C and D.
- A. Write a story titled A DAY SHE WILL NEVER FORGET (At least 250 words)
 - B. Imagine you are the new appointed Regional Commissioner of Kigoma region. In not less than 200 words write a first speech you would deliver in an official welcoming ceremony at aqua lodge beaches. Focus on your plans as a new president Magufuli' appointee.
 - C. Write an invitation card to request your sisters' friends to attend on your niece's birthday dinner party. Also write telephone messages from those who will call for excuses. Use fictitious names.
 - D. Write a letter to the Editor of Guardian Newspaper on the challenges of democracy in Tanzania. Use fictitious name and address

RESPONSE TO READING

Answer **ALL** questions from this section.

LIST OF READINGS

NOVELS AND SHORT STORIES

A Wreath for Fr. Mayer	- S.N. Ndunguru (1977), Mkuki na Nyota
Unanswered Cries	- Osman Conteh, Macmillan
Passed Like a Shadow	- RM Mapalala (2006), DUP
Spared	- S.N. Ndunguru (2004), Mkuki na Nyota
Weep Not Child	- Ngugi wa Thiong'o (1987); Heinemann
The Interview	- P. Ngugi (2002), Macmillan

PLAYS

Three Suitors: One. Husband	- O.Mbia (1994), Eyre Methuen
The Lion and the Jewel	- W. Soyinka (1963),
This Time Tomorrow	- Ngugi wa Thiong'o (1972), Heinemann
The Black Hermit	- Ngugi wa Thiong'o (1968), Heinemann

POETRY

Songs of Lawino and Ocol	- O.P'Bitek (1979), EAPH
Growing up with Poetry	- D. Rubadiri (ed) (1989), Heinemann
Summons	- R Mahala (1960), TPH

11. How does this poem describe the position and roles of women in our societies? (Give eight points).

Echoes

Me,
 I plead guilty
 That my woman is a tool
 To fulfil my sexual desires,
 That she's the source of sexual pleasure.
 A garden
 Where I plant my deeds
 So as to get children
 Which are mine.
 And not hers,

Who have the right
To inherit my property,
And not her.
I plead guilty
That I have regarded my woman
As my property,
Because I paid the bride price
To her parents.
What did her parents think
When they demanded
The cows
The tank of beer,
The goats,
The money
They knew
That they were making wealth out of me
Because their girl will work for me
Just like a slave.

I plead guilty
That I have inherited the stupidity
Of my slavery age parents,
That I have prolonged inequality.
That I have continued oppression.
Though unknowingly,
I am guilty
For dominating
My woman.
My nation plead guilty
That it has shut an eye
To the rights of women,
That it has kept women
In the kitchen,
In the church,
And at home
To look after children.
My nation pleads guilty
That it has given little room
To the she sex,
That the number of girls at school
Has always been smaller
Than that of boys.

My nation pleads guilty
That it has always given a narrow chance
For women to become
Teachers,
Physicians,
Scientists,
Leaders of the state
And public organizations,

That their percentage
Has always been small.

I agree that
If a woman is to be oppressed
By a man
Who is in turn exploited,
Who is in turn disregarded
By the bourgeoisie,
By the petty bourgeoisie,
Then she's ruined:
She has nothing to live for!

I agree that
To deny them freedom
Means to refuse human equality,
Means to accept capitalism
Deep in our hearts
And also means refusing
The development of the majority

12. Poets compose poems not just for pleasure and entertainment but for addressing human social, political and economic issues. Using Song of Lawino and Ocol present eight points to verify the statement
13. 'Rural life in Africa is itself a separate world, a world with its own life styles and manner'. Using two plays of your choice provide four pieces of evidence from each play to substantiate the said analogy.
14. 'In human society misunderstanding is inevitable and this emanates from the roots of the problem which are evident in many societies'. With reference to two novels discuss the eight major roots of misunderstanding, four roots from each novel.

GEOGRAPHY

PHYSICAL AND MATHEMATICAL GEOGRAPHY

1. For each of the following items i-x choose the correct answer from the given alternative and write its letter beside the item number.
 - (i) The East Africa TV channel is conducting an interview at Alaska $75^{\circ}W$ at 7.30 pm Tuesday. At what time and day will the people in Katavi $45^{\circ}E$ be watching the TV?
A 9.30 p.m Tuesday B 3.30 p.m Wednesday C 11.30 p.m Wednesday
D 12.30 p.m Tuesday E 9.30 am Wednesday
 - (ii) It occur when the earth passes between the moon and the sun;-
A Solar eclipse B Earth eclipse C Lunar eclipse
D Eclipse of the Earth E Umbra eclipse

- (iii) Is the raised part of the ocean floor?
 A Mountain B Isenberg C Oceanic ridge
 D Oceanic trenches E Deep see plain
- (iv) The temperature at Dodoma from mean sea level is 31⁰c what will be the temperature of Karatu 2500 meter above sea level.
 A 16⁰C B 15⁰C C 46⁰C
 D 36⁰C E 30.4⁰C
- (v) An earthquake begins
 A Along the Fault or fissure B At the inner core of the earth
 C At the epicenter D At the focus
 E At the Mantle layer
- (vi) The rock formed from the remain of once living organism
 A Coral B Marble C Gneiss
 D Granite E Humus
- (vii) Among of the following are the characteristics of the Tropical climate EXCEPT
 A It is found at altitude of 3⁰-8⁰ N and S
 B It compose of two season, dry season and Rain season
 C It compose of Tropical forest
 D It is found along the western Morgan of the continental
 E It compose of season swamps
- (viii) The lithosphere of the earth is made up of;-
 A Molten materials called magma B Silica and Magnesium
 C Iron and nickel (nife) D Iron and zinc
 E Silica and Alumina
- (ix) It involve chemical reaction when water react with mineral content on rock
 A Weathering chemical B Biological weathering
 C Chemical weathering D Physical biological weathering
 E Physical chemical reaction
- (x) Which of the following is correct about the concept of folding
 A Formed when two block act against each other on the old sedimentary rock
 B Formed when two block act apart from each on the old sedimentary rock
 C Formed when two crust act against each other on the young sedimentary rock
 D Formed when two crust act against each other on the young igneous rock
 E It compose of block that are exposed on the earth surface

2. Match a phrase in list A with the responses in list B by writing the letter of the correct responses beside the item number

LIST A	LIST B
i. The soil	A. The thin layer of the earth know as regolith
ii. Soil PH	B. The top most part of the earth made up with consolidated materials
iii. Soil Texture	C. Soil catena
iv. Soil organic	D. Is the vertical arrangement of individual particles of soil
v. Soil profile	E. is the amount of Alkaline and acidic in the soil measured by PH value scale
	F. When the acidic is high than Alkaline
	G. Derived from the decomposition of plant and animal dead materials
	H. Compose of Inorganic and Organic matter only
	I. It depend on the size of the individual particles of soil
	J. The vertical and Horizontal arrangement of soil

3. (a) With the aid of well labeled diagram explain the formation of the features

- i. Barchans
- ii. Cliff
- iii. Cave
- iv. Bay land

- (b) Explain three necessary conditions for the formation of Barchans

APPLICATION OF STATISTICS, INTRODUCTION TO RESEARCH AND ELEMENTARY SURVEY

4. Study careful the hypothetical data which show the export of goods in Tanzania from 2010 to 2013 in “000”tones

CROPS	2010	2011	2012	2013
COTTON	65	45	70	80
SISAL	35	40	30	35
COFEE	50	70	55	55

- a) Name statistical way used to present the data above
- b) Present the data above by using a compound bar graph
- c) Comment on the export values.

5. (a) (i) What is hypothesis in research
(ii) Explain two types of hypothesis in research
- (b) Define the following terms
 - (i) Sample
 - (ii) Sampling error
- (c) Explain three ways to avoid sampling error.
6. (a) Define the following terms as used in survey
 - i. Ranging
 - ii. Chaining
 - iii. Booking
- (b) Why the follower direct the leader left, right and center during survey process (3 points)

MAP READING AND PHOTOGRAPH INTERPRETAION

7. Study careful the printed Map extract of Songwe River (Sheet 244/3) then answer the following questions;-
 - a) Calculate the area covered by Ruanda Town in km² by using grid square method.
 - b) Measure the bearing and direction of Muyovinzi to Myavisi station
 - c) Name three ways' used to show relief on the map
 - d) Explain three factors for population distribution on the Map
 - e) Describe the nature of the vegetation shown on the map.
 - f) Name two (02) natural and two (02) artificial content shown on the map.
8. (a). How a person can determine the desert climatic area on the picture.(four points)
- (b) Differentiate aerial oblique from ground oblique photos.
- (c) Identify then name type of photograph which:
 - i. Does not show horizon
 - ii. Taken at slant angle
 - iii. Taken at angle less than 90 degree
 - iv. Only show front view
 - v. Has less scale distortion
 - vi. Taken from the air and show top and sides view

PART I: REGIONAL FOCAL STUDIES

9. Explain six (6) strategies which empowered by Tanzania government in solving problem of Transport and communication sector.
10. "Although Tanzania has many water bodies resources but does not develop in fishing industry" Justify this statement by using six (6) points.

PART II: ENVIRONMENTAL ISSUES, POPULATION AND SETTLEMENTS

11. (a) What is biodiversity ?
(b) Explain four (4) causes for the loss of biodiversity and propose four (4) measure to solve the problem.
12. Examine six (6) factors which leads to the decreasing of mortality rate in Tanzania.

HISTORY

1. For each of the items (i) (x), choose the correct answer from among the given alternatives and write its letter beside the item number in the answer booklet provided.
- i. There are two levels of looking at history. At the first level history studies man's struggles to obtain fundamental material needs. At the second level history _____
A. studies past records and human achievements
B. investigates human failures and success in course of production
C. searches for information about past societies in order to discover past cultures
D. studies relationships that develops between man and man, and between man and the environment in course of material production
E. describes the past so that one knows how the present came into being and this gives opportunity to forecast the future.
- ii. The large state in Central Africa from 1885 to 1908 in personal union with the Kingdom of Belgium under Leopold II was known as _____
A. Katayamvo C. Congo Free State
B. Tsonga D. AmaZulu
- iii. Christopher Columba and his crew discovered the present day North America in ____
A. 1652 B. 1498 C. 1492 D. 1698 E. 1693
- iv. What was the achievement of man during the late Stone Age?
A. Discovered fire and ate cooked food.
B. Started walking upright using forelimbs.
C. Made and used pebble and chopping tools.
D. Started walking on all four limbs
E. Domesticated animals and wild fruits.
- v. Which one among the following places did people extract gold from in West Africa?
A. Bure and Wangara C. Taghaza and Bilma. D. Axum and Meroe.
B. Meroe and Egypt E. Uvinza and Bure.
- vi. Which one among the following factors contributed to the rise of states in North Africa?
A. Low level of productive forces. D. Presence of chartered companies.
B. Hunting and gathering activities. E. Absence of classes among the people.
C. Trade across Sahara and Islam.

- vii. _____ is a unifying name for two groups of peoples of Southern Africa who share physical and putative linguistic characteristics distinct from the Bantu majority of the region. Culturally, they are divided into the foraging San, or Bushmen, and the pastoral Khoi, or more specifically Khoikhoi, previously known as Hottentots.
- A. Khoisan peoples B. Herero C. Namaqua D. Ovambo E. Damara.
- viii. The people of African origin in Diaspora supports the development of African development through _____
- A. The East African community D. Organization of African Unity
 B. East African Community E. United Nations Organization
 C. Pan Africanism.
- ix. Which one of the following best explains the reason which made Tanganyika to use constitution means during her struggle for independence?
- A. It was a mandated territory. D. It was a trusteeship territory.
 B. It adopted the Open Door Policy. E. It was a settler colony.
 C. It was under indirect rule policy.
- x. The smallest unit of French political administration in French Colonial Africa was headed by a European officer and consisted of several cantons, each of which in turn consisted of several villages, and was instituted in France's African colonies from 1895 to 1946. This subdivision was named as _____
- A. Circle system C. Assimilation D. Association E. Direct rule
 B. Indirect rule
2. Match the stems in **List A** with the correct responses in **List B** by writing the letter of the correct response beside the item number in the answer booklet provided.

List A		List B
i.	The Kanem Empire	<p>A. The name of the kings (or mai, as they called themselves) of the Kanem-Bornu Empire, centered first in Kanem in western Chad, and then, after 1380, in Borno (today's northeastern Nigeria).</p> <p>B. A Mandé people who descend from the Bafour and are closely related to the Imraguen of Mauritania, founders of the ancient empire of Ghana c. 750–1240 CE. Subgroups include the Maraka and Wangara.</p> <p>C. At its height extended across most of present-day Eritrea, northern Ethiopia, western Yemen, southern Saudi Arabia, and Sudan.</p> <p>D. An ethnic group indigenous to North Africa distributed in an area stretching from the</p>
ii.	The Soninke people	
iii.	Aksumite Empire	
iv.	Berbers	
v.	Herero Wars	
vi.	Sakalava	
vii.	In 1877	
viii.	From 11, October, 1899, to May 31, 1902	
ix.	1602	
x.	1879	

	<p>Atlantic Ocean to the Siwa Oasis in Egypt, and from the Mediterranean Sea to the Niger River.</p> <p>E. A series of colonial wars between the German Empire and the Herero people of German South-West Africa (present-day Namibia, c. 1903–1908).</p> <p>F. An ethnic group of Madagascar that occupies the western edge of the island from Toliara in the south to Sambirano in the north</p> <p>G. The Transvaal Boer republic was forcefully annexed by Britain as part of the attempt to consolidate the states of southern Africa under British rule.</p> <p>H. At its height encompassed an area covering Chad, parts of southern Libya (Fezzan) and eastern Niger, north-eastern Nigeria, and northern Cameroon.</p> <p>I. The Second Boer War started broke out and Great Britain defeated two Boer nations in South Africa: the South African Republic (Republic of Transvaal) and the Orange Free State</p> <p>J. The Dutch East India Company founded</p> <p>K. British settlement at the cape</p> <p>L. The Almoravids invaded Ghana empire</p> <p>M. Mineral revolution in South Africa</p> <p>N. The Boer trek</p> <p>O. Difagine wars</p> <p>P. Ngoni migration</p> <p>Q. Cecil Rhodes arrived in Southern Rhodesia</p> <p>R. The Sahel region</p> <p>S. Nama Herero wars</p>
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3. (a) Draw a sketch map of Africa and locate
- i. The Trans-Atlantic caravan routes
 - ii. The cape colony
 - iii. The land of Northern Rhodesia
 - iv. The city state and country where Fort Jesus was built by the Portuguese
 - v. The two African countries which were not colonized.
- (b) Mention five coastal towns in East Africa which became famous because of the commercial contacts between the people of East Africa, Middle and Far East

4. (a) Arrange the following statements in chronological order by writing number 1 to 5 beside the item number.
- i. Afterwards colonialists established colonial economy and colonial relations of production in a colony
 - ii. By the beginning of 1900's most colonial powers had successfully suppressed all initial African resistances.
 - iii. The Berlin conference of November 1884 to February 1885 paralyzed the scramble for African continent among the imperialist powers
 - iv. Then the colonialists established the colonial state to help impose colonial rule among Africans
 - v. The rise of monopoly stage of capitalism and imperialism in the mid ninetieth century in Europe made Europe unable to meet economic motives within Europe hence began to fight to secure areas of influence outside Europe particularly in Africa.
- (b) The items (i- iv) consist of four sentences which form a complete historical meaning. One of the sentences (A- E) is missing. Identify the missing sentence and write its letter beside the item number.
- (i) 1. In 1652, a century and a half after the discovery of the Cape sea route, Jan van Riebeeck established a refreshment station at the Cape of Good Hope at what would become Cape Town, on behalf of the Dutch East India Company.
2. The Dutch transported slaves from Indonesia, Madagascar, and India as labour for the colonists in Cape Town.
3. _____
4. The Conflicts arose among the Xhosa, Zulu, Sotho, and Boer groups who competed to expand their territories.
- A. The Mali Empire was an empire in West Africa that lasted from 1230 to 1600 and profoundly influenced the culture of the region through the spread of its language, laws, and customs along lands adjacent to the Niger River, as well as other areas consisting of numerous vassal kingdoms and provinces.
- B. The Ghana Empire, called the Wagadou (or Wagadu) Empire by its rulers, was located in what is now southeastern Mauritania, western Mali, and eastern Senegal
- C. The British annexed the Cape Colony in 1806 and continued the frontier wars.
- D. The British took control of Egypt, which at first took the form of indirect and informal rule and later as an official protectorate, began in the 1880s.
- E. Yoruba land was the cultural region of the Yoruba people in West Africa spanning the modern-day countries of Nigeria, Togo, and Benin.

- (ii) 1. The forerunners of colonialism came before the establishment of colonial rule in Africa.
2. These colonial compradors were the travellers, explorers, missionaries and traders.
3. The explorers supplied important information to their mother countries
4. _____
- Missionaries spread Islam throughout the interior of East Africa
 - Missionaries like William Mackinnon and Karl Peters led their Companies to exploit protectorates
 - Trading companies financed the activities of missionaries in scramble for colonies
 - Missionaries learnt native languages hence became useful interpreters when trading companies were signing bogus treaties with indigenous.
 - William Mackinnon was an explorer who headed Imperial British East African Company.
- (iii) 1. West Africans came into contact with European merchants during mercantilism.
2. The early stage of capitalism was the phase of primitive accumulation of capital.
3. _____
4. During this phase commerce was the most important activity.
- The motives of European merchants were to stop slave trade.
 - West African societies benefited much from these early contacts.
 - In Europe it was known as the age of discovery and overseas expansion.
 - The red Indians for the first time came to trade in West Africa.
 - In this trade the European slaves were exchanged for African goods.
- (iv) 1. Assimilation was introduced in Africa by French
2. _____
3. The system was similar to German direct rule
3. The system intensified resistance from the natives.
- Africans used Jumbes and Akidas to represent their problems.
 - Portuguese applied this system in her colonies in Africa.
 - The system improved the living standard of the Africans.
 - The policy banned traditional institutions.
 - The system helped the French to consolidate tribalism.
- (v) 1. Colonial transport network ran perpendicular to the coast.
2. Railroad was the chief means of transport to the coast in many colonies
3. Colonialists used the means of transport to facilitate colonial production
4. _____

- A. Colonial transportation concentrated in rural areas.
 - B. Colonial administrators, labourers and soldiers were transported to different parts of colony calling for their need and use.
 - C. There was equal distribution of transport services during colonialism.
 - D. Transport services led to the higher population growth in colonies.
 - E. Transportation led to the emergence of civil wars in Africa.
5. Discuss the cause of the Boer trek and its consequences to the people of South Africa. Give three points each side.
 6. Account for the rise and fall of Mali Empire in Western Sudan. Give three points each side
 7. Why did it take too long to end slave trade in East Africa? Give six reasons.
 8. With examples elaborate the six weaknesses of colonial education.
 9. Decolonization in Portuguese colonies in Africa was tough and complicated. The colonies under Portuguese opted armed struggle instead of peaceful means. Why such colonies waged armed struggle? Give six points
 10. Explain six problems facing post-colonial African societies whose rootstrace back to colonial era.

BASIC MATHEMATICS

1. (a) Estimate the value of 4.1×0.083
 (b) Find the fractions of the following
 - i. $0.8\dot{3}$
 - ii. 0.125%
2. (a) Solve (i) $(\frac{1}{3})x = 243 - 1$
 (ii) $288 = 8x2$
 (b) If $\log y + 2 \log x = 3$, express y in term of x.
3. (a) If $a * b = a^2 + b$, find y given that
 $4 * (2 * y) = 25$
 (b) List all subset of $A = \{1, 2, 3\}$.
4. (a) Show that A (-3, 2), B (5, 6) and C (7, 2) are vertices of a right angled triangle.
 (b) Find the unit vector in the direction of vector $U = (12, 5)$
5. Find the radius of a circle which inscribes a regular hexagon with perimeter 50 m.
6. (a) Given that P is inversely proportional
 Q2 When $P = 4$ and $Q = 8$, Find the value of Q if $P = 16$.

(b) A BOOD BUS consumes a diesel at a rate of litre for every 6 km. If the price of diesel is sh 2500 per litre. Find the cost of diesel used to travel 960km.

7. (a) X, Y and Z are to share 300,000/= in ratio of 6:4:5 respectively. How much will each get.

(b) After reduction of 30% the price of the car become Tsh 490,000. Find its price before reduction.

8. (a) Find the sum of the series

$$-8 - 2 + 4 + 10 + \dots + 82.$$

(b) In a G.P the 5th and 7th terms are - 2 and - 18 respectively. Find

i. Common ratio

ii. If the common ratio is positive find the sum of the first 10 terms of the series.

9. (a) Without using tables, simplify

$$\frac{\cos 135^\circ + \tan 60^\circ \sin 45^\circ}{\sin 135^\circ \cos 60^\circ}$$

(b) Q and R are two pegs on level ground, and both lie due West of a Flagstaff. The angle of elevation of the top of the flagstaff from P is 45° and from R is 60° . If P is 24 m from the foot of the flagstaff, Find QR.

10. (a) Solve the equation $49x^2 - 25 = 0$

(b) Find the value of x that satisfies the equation $\frac{1350}{x} - \frac{1350}{(x+3)} = 5$

11. At Hijra seminary technical section makes tables and chairs which are processed through the assembly and finish departments. For a particular order from a customer only 48 hours of work available in the assembly and 36 hours in the finishing department. To manufacture one table, it requires 34 hours in assembly and 3 hours in finishing, while a chair requires 4 hours in assembly 2 in finishing. If a chair fetches 40 shillings as profit and table 50 shillings, determine the best combination of tables and chairs to produce so as to get maximum profit.

12. The score of 45 pupils in a physics test were recorded as follows

30 65 50 62 40 35 64 32 28 59 60 82 24 35 63 68 46 48 73 92

28 61 71 36 64 80 61 64 35 76 73 70 64 61 30.

a) Construct a frequency distribution table of the given data, taking equal class intervals 21 – 30, 31 – 40, - - -

b) Calculate the mean by assumed mean use class boundary 41 – 50 as a assumed mean.

c) Draw the cumulative frequency polygon and use it to estimate the median.

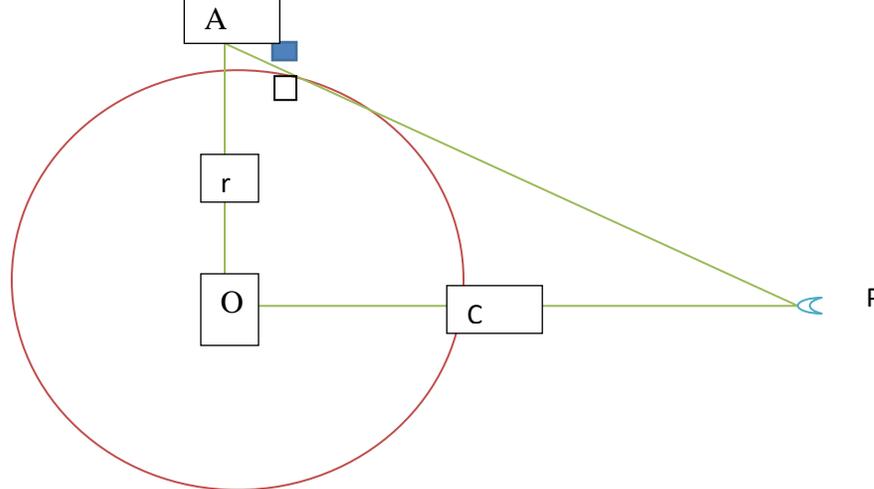
13. (a) Find the central angled subtended by an arc between the given pair of places below.

i. P (18°N , 52°E) and (78°N , 52°E)

ii. X (44°N , 60°E) and(64°N , 60°E)

(b) Find the length of the tangent AP in the figure below; given that O is the centre

Of the circle $r = 5\text{ cm}$ and $PC = 8\text{ cm}$



14. Record the following transactions below in a cash book, post to ledger and then construct a trial balance to check mathematical accuracy of entries.
- On 1st February , Ahmed started business with capital in cash of sh 60,000
 - February 2 purchased goods for cash sh 50,000
 - February 3 paid cash for transport sh 10,000
 - February 10 sold goods for cash sh 90,000
 - February 20 Bought furniture for cash sh 30,000
 - February 28 paid cash for carriage sh 5000
15. (a) By using inverse method solve the following simultaneous equation
- $$\begin{aligned} 3x + 2y &= 12 \\ 4x + 5y &= 23 \end{aligned}$$
- (b) Find the equation of a line $2y = 4x + 10$ after reflection in the line $y = x$
- (c) Find the image of the point $(-1, 6)$ under a rotation of 90° followed by another rotation of 180° anticlock wise.
16. (a) A fraction is written by selecting the numerator from the digits 1, 2, 4, 6 and denominator from 8, 10.
- i. Draw a tree diagram to find possibility set of this experiment.
 - ii. Find the probability that the fraction written is less than $\frac{1}{2}$.
- (b) $f(x)$ is defined by:

$$f(x) = \begin{cases} x^2 - 5x + 6 & \text{if } 0 \leq x < 4 \\ 6 & \text{if } x \geq 4 \\ -2 & \text{if } x \geq 4 \end{cases}$$

- i. Sketch the graph of $f(x)$
- ii. State the domain and range $f(x)$.
- iii. Use the graph to find $f(5)$, $f(0)$, $f(-1)$

PHYSICS 1

The following constants may be used.

- Density of fresh water = 1g/cm^3
- Relative density of sea water = 1.03
- Acceleration due to gravity = 10m/s^2

1. Choose the most correct answer for (i-x) and write your answer in the booklet provided
 - i. A rough measure of the size of a molecule can be obtained by
 - A. Measuring the height to which water rises in a narrow capillary tube
 - B. Finding the speed with which bromine vapor spreads in air
 - C. Observing Brownian motion of smoke particles
 - D. Measuring the area of the circle into which a small oil drop spreads on water.
 - E. Measuring the friction force between the molecules of a solid
 - ii. Colors are produced when white light passes through a glass prism because
 - A. The light waves interfere
 - B. The glass colors the light
 - C. Different colors travel at different speeds in glass
 - D. The different colors are filtered
 - E. Diffraction of light occurs
 - iii. A rectangular solid box has dimensions 2m by 1m by 0.5m and weighs 100N. When the box is displaced on flat ground the maximum pressure exerted is
 - A. 100.54N/m^2
 - B. 200N/m^2
 - C. 100N/m^2
 - D. 50N/m^2
 - E. 1000N/m^2
 - iv. When a gas is compressed at constant temperature, the gas molecules
 - A. Move faster so that the pressure is increased
 - B. Move at the same speed so that the pressure is unchanged
 - C. Gain kinetic energy
 - D. Increase slightly
 - E. Move faster so that the pressure is lowered
 - v. When total internal reflection is just about to occur at an air – water boundary as the incident angle is increased from zero, the refracted ray then
 - A. Travels in the water at 90° to the normal
 - B. Travels in air along the normal
 - C. Makes the critical angle with the normal in
 - D. Travels in the air at 90° to the normal
 - E. Makes an angle of 90° with the incident ray

- vi. A horizontal electron beam passes between two parallel horizontal plates X and Y with X above Y. when a high tension battery is connected with its negative pole to x and its positive pole Y the beam is deflected
- Upwards
 - Side ways
 - Down wards
 - Up wards at 45° to the horizontal
 - Down wards at 45 horizontal
- vii. An airship is floating stationary high above the grounds. In this case
- The air up thrust is to the airship weight
 - The air temperature inside the airship is equal to the air temperature of outside
 - The air density outside the airship is greater than the air density inside
 - The air density outside the airship is less than the air density outside
 - The air up thrust is greater than the airship weight
- viii. A vibrating string has a tension of 40N and produces a note of 200Hz when plucked in the middle. When the length of string is unaltered and the tension is increased to 160N the frequency
- | | | |
|-----------|----------|----------|
| A. 1600HZ | B. 800HZ | C. 400HZ |
| D. 200HZ | E. 25HZ | |
- ix. A wire X is half the diameter and half the length of wire Y of similar material. The resistance od X to that of Y is
- | | | | | |
|--------|--------|--------|--------|--------|
| A. 8:1 | B. 4:1 | C. 2:1 | D. 1:1 | E. 1;4 |
|--------|--------|--------|--------|--------|
- x. When a beam of alpha particles was fired at a thin gold film, some of the particles were considerably deflected. This experiment shows that
- Alpha – particles are very light
 - A gold nucleus contains alpha – particles
 - Electrons in a gold nucleus attract alpha particles
 - A gold nucleus is concentrated in a small it
 - A gold nucleus emits alpha – particles

2. Match the items from **LIST A** that correspond with item from **LIST B** and write the answer in the booklet provided.

LIST A	LIST B
i. Simple microscope	A. Mechanism of viewing long and short distance objects
ii. Optical instrument	B. Mechanical device that acts as a gate
iii. Angular magnification	C. Referred to as a magnifying glass
iv. Short sightednedd	D. Ration of image distance to object distance
v. Accommodation	E. $M = \beta/\alpha$
vi. Hyper myopia	

<p>vii. Diaphragm</p> <p>viii. Shutter</p> <p>ix. Lens</p> <p>x. Projection lantern</p>	<p>F. Is a light sensitive surface of the camera</p> <p>G. Occurs when the eyeball is longer than normal along the horizontal axis from the lens of the retina</p> <p>H. This deface arises from a shortening of the eyeball</p> <p>I. Used to display a large image on a screen</p> <p>J. Determines the amount of light that passes through the lens by changing the size of the of entire</p> <p>K. Image – forming device on a camera</p> <p>L. Computers and television</p> <p>M. Devices which are used to view small or distant objects more clearly</p>
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3. For each the items (i-x) fill in the back spaces by writing the correct answer on the booklet provided
- i. _____ is an instrument used for measuring the relative humidity of the air
 - ii. Sound waves in air produce _____ and rarefactions
 - iii. Connecting wire is made of pure copper which has a _____ resistance
 - iv. _____ is produced at right angles to the plane of a current – carrying conductor
 - v. The velocity ration is equal to number of _____
 - vi. _____ is a measure of inertia and _____ produces acceleration
 - vii. The quantity of heat required to raise that temperature of unit mass of a substance is called _____
 - viii. The ratio of $\frac{\sin i}{\sin r}$ is termed as _____
 - ix. _____ is the splitting of a heavy atom such as uranium, into two heavy parts
 - x. Device which is used in battery chargers to provide direct current (d.c) from the (a.c) mains supply is _____
4. (a)(i) What is meant by the term “moment of a force” give its SI Unit.
- (ii) How can the moment of force be increased considerably in practical life? Give two examples.
- (b)(i) List two conditions for a body to be in equilibrium.
- (ii) Briefly explain why the handle of a door is near its outside edge?

- (c)(i) What is meant by centre of gravity?
- (ii) It is found that a uniform wooden lath 100cm long mass of 95g can be balanced on a knife edge when a 5g mass is hung 10cm from one end. How far is the knife – edge from the centre of the lath
5. (a) (i) Define principal focus and focal length
- (ii) Explain how mirage occurs
- (iii) Why does the swimming pool appear much shallower than its actual depth?
- (b) (i) Explain the meaning of the term dispersion of white light”
- (ii) Explain the terms “Primary color” and complementary color as applied to colors of light
- (c) (i) Show that to obtain an image with a magnification of M using a concave mirror with a focal length f , the object distance ‘ u ’ is given by
- $$u = \left(\frac{M + 1}{M} \right) f$$
- (ii) The image in a converging lens is upright and magnified four times. Calculate the object distance if the focal length is 20cm
6. (a) (i) Explain the terms interference and diffraction of waves
- (ii) Explain why strings of different thickness are used on a stringed instrument such as violin?
- (b)(i) Differentiate between echo and amplitude
- (ii) What is meant by sonometer?
- (c) (i) Explain why notes of the same pitch played on a violin and a flute sound different.
- (ii) A pipe closed at one end has a length of 100mm. if the velocity of sound in the air of the pipe is 340m/s, calculate (a) the fundamental and (b) The first overtone
- (d) Give one reason why the frequency of the fundamental may alter during the day
7. (a) (i) Define the term momentum
- (ii) Briefly explain why seat – belts are designed to stretch in a collision
- (b) (i) What is meant by accretion
- (ii) Sand falls gently at a constant rate of 50g/s on to a horizontal belt moving steadily 40cm find the force in Newton’s on the belt and sand.
- (c) A stationary bomb of mass 5000g explodes into one part A of mass 2kg flying off with a velocity of 60m/s and another part B of mass 3kg fling off with a velocity ‘ v ’ in the opposite direction calculate
- (i) V (ii) The total kinetic energy produced by the explosion

8. (a) (i) Define the term nuclear fusion and give one example
- (ii) In 168 seconds the activity of thoron falls to one – eighth of its original value. What its half-life explain this term
- (b) (i) Using a sketch, explain the effects of electric field on alpha particle, beta particle and gamma rays
- (ii) A radioactive nucleus is denoted by the symbol ${}_{92}^{288}M$. Write down how you would expect the nucleus to be composed and state the composition of the nucleus at the end of each of the following stages of disintegration
1. The emission of alpha particle
 2. The further emission of Beta particle
 3. The further emission of gamma radiation
- (c) Explain how nuclear radiation affects the following
- i. Gastrointestinal tract
 - ii. Reproductive organs
 - iii. Eyes
9. (a) Explain briefly how the following are produced
- i. A p- type semiconductor
 - ii. An n- type semiconductor
 - iii. Transistors
- (b) Discuss the mode of action of the following
- i. A p-n junction
 - ii. Diodes in half – wave rectification of a.c current
- (c) Define the following terms
- i. Conductor
 - ii. Semiconductor
 - iii. Insulator
- (d) Describe the effects of temperature on conductors, semiconductors and insulation the energy band concept.
10. (a) Define the following terms
- (i) Star
 - (ii) Planet
 - (iii) Constellation
- (b) (i) What is the importance of installation?
- (ii) Explain how ocean tides occur
- (c) (i) What is an earth quake?
- (ii) Give three precautions that can be taken against earth quake hazards
- (iii) Describe two effects of volcanoes
- (d) Explain the meaning of the following terms as used on earthquakes
- (i) Hypocentre
 - (ii) Epicentre

11. (a) (i) State law of floatation
(ii) Explain why ship float but a piece of iron sink
- (b) (i) State two conditions for a body to float
(ii) An ordinary hydrometer of mass 20g floats with 3cm of its stem out of water. The area of cross – section of the stem is 0.75cm^2 . Find the total volume of the hydrometer and length of the stem above the surface when it floats in a liquid of relative density 1.4.
- (c)(i) Define up thrust
(ii) A ship of mass 1200tones floats in sea – water. What volume of sea- water does it displace? If the ship enters fresh water what mass of cargo must be unconded so that the some volume of water is displaced as before?