

2016 AGRICULTURE

PAPER 1

No. 1. List four factors that would determine the stage at which a crop is harvested. (2 marks)

- ❖ Intended use of the crop
- ❖ Chemical concentration of the produce/stage of maturity/change in color
- ❖ Prevailing weather conditions
- ❖ Market demand for the produce/market price

No. 2. State two ways in which crop rotation controls weeds. (1 mark)

- ❖ Crops associated with specific weeds are alternated with crops of different families to remove the appropriate host and break the life cycle of weeds.
- ❖ Alternating with cover crops smoothers the weeds

No. 3. Give two factors which characterize small scale farming. (1 mark)

- ❖ Small size of land.
- ❖ Limited capital.
- ❖ Simple/limited tools/or implement.
- ❖ Less labor required.
- ❖ Maximizes labor available.

No. 4. Give two examples for each of the following categories of water pipes.

(a) Metal pipes (1 mark)

- ❖ Galvanized iron pipes/ steel pipes
- ❖ Aluminum pipes

(b) Hose pipes (1 mark)

- ❖ Rubber pipes
- ❖ Plastic Hose pipes/ Pvc pipes (Poly vinyl chloride pipes)

No. 5. State the information included in a sales receipt when a farmer is selling eggs. (1 1/2 marks)

- ❖ Date;
- ❖ Quantity of eggs;
- ❖ Price;
- ❖ Amount/total;
- ❖ Buyer's name;
- ❖ Name of the farm/farmer;
- ❖ Signature;
- ❖ Serial number;
- ❖ Mode of payment (cheque/cash/in kind)

No. 6. State four characteristics of a good vegetable seedling. (2 marks)

- ❖ Free from disease/pest/healthy;
- ❖ Vigorous growing;
- ❖ Free from physical deformities;
- ❖ High yielding;
- ❖ Correct stage of growth/height 10 - 15 tall/ 4 - 6 true leaves.



No. 7. Name three forms of horticulture practiced in Kenya. (1½ marks)

- ❖ loriculture
- ❖ pomoculture/pomology
- ❖ Olericulture

No. 8. State two mechanical methods of separating soil particles according to size, during soil analysis. 1 mark)

- ❖ Using a sieve / sieve analysis.
- ❖ Sedimentation method

No. 9. List four disadvantages of mono cropping in crop production. (2 marks)

- ❖ High risk of total loss in case of crop failure.
- ❖ Under utilization of some soil nutrients
- ❖ Build up of crop pests and diseases/weeds.
- ❖ Only specific mineral nutrients are absorbed / exhaustion of certain nutrients from the soil results in soil erosion in crops with poor ground coverage.
- ❖ Faster spread of pests and diseases.

No. 10. State two reasons for practicing agro forestry on a

(a) river-bank (1 mark)

- ❖ Stabilize river bank/control river bank erosion;
- ❖ Slow down speed of surface runoff;
- ❖ Trap soil/debris in surface runoff;
- ❖ Reduces risk of flooding;

(b) steep slope (1 mark)

- ❖ Reduce speed of runoff;
- ❖ Trap soil in erosive water;
- ❖ Tree roots bind and stabilize the soil/maintains soil structure;

No. 11. Give three reasons for growing crops under optimum temperature conditions. (1 ½ marks)

- ❖ Enhance seed germination/emergence;
- ❖ Promote soil microbial activities;
- ❖ Improve quality of crop products;
- ❖ Enhance vigorous growth and development; or
- ❖ Enhance high yields.

No. 12 .State four reasons for treating water for use on a farm. (2 marks)

- ❖ Remove chemical impurities/softening of water
- ❖ Kill disease causing organisms/kill germs/pathogens
- ❖ Remove bad smells and taste
- ❖ Remove impurities of solid particles

No. 13. Outline two ways of controlling damping off disease on vegetable seedlings in a nursery.(1 mark)

- ❖ Reduce/remove shade
- ❖ Thinning to reduce overcrowding
- ❖ Reducing amount and frequency of watering
- ❖ Spaying with copper fungicides / appropriate fungicides



No. 14. State four factors that affect the quality of farm-yard manure. (2 marks)

- ❖ Types of animal used
- ❖ Type of feed eaten
- ❖ Types of litter used
- ❖ Age of farmyard manure
- ❖ Method of storage
- ❖ Species of animals from which the manure is obtained

No. 15. Distinguish between grading and standardization in agricultural marketing. (2 marks)

Grading - is the sorting of the produce into different lots each with the same characteristics market quality while **Standardization** is the establishment of uniformity in the quality and quantity of the product.

No. 16 'Give four disadvantages of broadcasting as a method of planting. (2 marks)

- ❖ More seeds are used / seed wastage;
- ❖ Lack of uniformity in land coverage / uneven land coverage;
- ❖ Uneven planting depth / uneven germination / uneven growth;
- ❖ Difficult to carry out subsequent operations such as weeding, spraying, harvesting;
- ❖ Competition for nutrients, water, light leading to poor performance of the crop;
- ❖ Difficult to establish correct plant population;
- ❖ Difficult to Mechanise.

No. 17. State three practices which encourage soil erosion. (1½ marks)

- ❖ Over-cultivation, overstocking/overgrazing.
- ❖ Deforestation/planting annual crops on steep slopes.
- ❖ Burning of the vegetation.
- ❖ Ploughing up and down the slope.

No. 18. Name two types of non-competitive markets. (1 mark)

- ❖ Monopoly/monopolistic markets
- ❖ Oligopoly/Oligopolistic markets
- ❖ Monopsony/monopsonistic markets.

No. 19 .The diagram below shows crop establishment using a certain method of planting

The diagram below shows crop establishment using a certain method of planting. Study it carefully and then answer the questions that follow.



(a) Name the method of planting used for the crop. (1 mark)

- ❖ Row planting

(b) State two advantages of the planting method used for the crop.

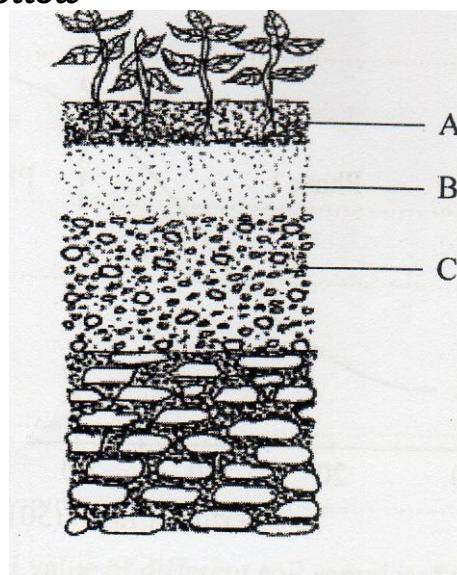
(2 marks)

- ❖ Operations can be mechanized
- ❖ Easy to establish plant population
- ❖ Use less planting materials compared to broadcasting
- ❖ Easy to carry out cultural practices

(c) Explain two factors that determine the depth of planting. (2 marks)

- ❖ Soil type: light soil requires deeper /greater depth
- ❖ Soil moisture content: wet soils requires shallow depth;
- ❖ Size of the seed: large seeds require greater depth
- ❖ Types of germination: epigeal germination requires shallow depth

No.20. The diagram below illustrates a feature observed after digging the soil several meters deep. Study the diagram carefully and answer the questions that follow



(a) Identify the feature that the diagram above represents in the study of soil. (1 mark)

- ❖ soil profile

(b) Name the parts of the diagram labeled A, B and C. (1¹/₂ marks)

A.

- ❖ Top soil

B.

- ❖ Sub soil

C.

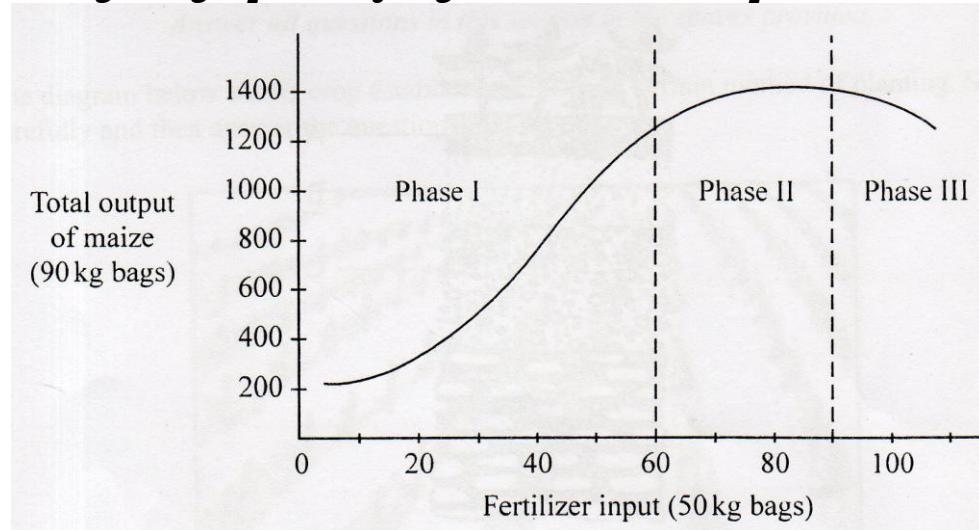
- ❖ Substratum/weathered rocks



(c) State two ways in which the knowledge of the above feature would be of benefit to a farmer. (2 marks)

- ❖ Helps the farmer to choose appropriate crop to grow
- ❖ Helps to determine depth of ploughing
- ❖ Helps the farmer to determine the kind of foundations for farm structure

No.21. Below is a graphical representation of a law in agricultural economics. Study the graph carefully and answer the questions that follow:



(a) Identify the law illustrated by the graph.(1/2 mark)

- ❖ Phase II
- ❖ Each additional unit of fertilizer input leads to a lower increase in total output of maize than the previous unit of fertilizer O.W.T.T.F.

(b) Explain how each additional unit of fertilizer input relates to the total output of maize in phases II and III.

Phase III (1 mark)

- ❖ Each additional unit of fertilizer input leads to a decrease in total output of maize.

(c) State the importance of the law identified in (i) above to the maize farmer. (1 mark).

- ❖ Helps the farmer to identify the level of optimum fertilizer application in the production of maize. / To determine the highest level of maize and put O.W.T.T.E

No.22. The following is a list of plant nutrients; copper, calcium, nitrogen, molybdenum, zinc, phosphorous, carbon, sulphur, iron and magnesium. Which of the above plant nutrients are:

(a) Macro-nutrients (1 mark)

- ❖ Calcium;
- ❖ Nitrogen;
- ❖ Phosphorous;
- ❖ Carbon;
- ❖ Sulphur;
- ❖ Magnesium.



(b) Micro-nutrients(1 mark)

- ❖ Copper;
- ❖ Molybdenum;
- ❖ Zinc;
- ❖ Iron.

(c) Fertilizer elements(1 mark)

- ❖ Nitrogen, Phosphorous & Potassium

(d) Liming elements(1 mark)

- ❖ Calcium; Magnesium and Sulphur

No.23. The table below shows pH value of different soil samples. Study it and answer the questions that follow.

<u>Soil Sample</u>	<u>pH value</u>
S ₁	3
S ₂	4
S ₃	5
S ₄	6
S ₅	7
S ₆	8
S ₇	9
S ₈	10

(a) Which soil sample has the highest acidity?

- ❖ Sample S₁

**(b) State two ways in which the pH value of samples S₈ can be lowered.
(1 mark)**

- ❖ Application of acidic fertilizers: Accept S/A; ASN; DAP; MA

(c) Which of the above soil samples is suitable for growing tea? (1/2 mark)

- ❖ S₂
- ❖ S₃
- ❖ S₄

PP1 No.24a. Outline the information contained in a purchase order.

(5 marks)

- ❖ Qualities of goods
- ❖ Type of goods required
- ❖ Date of order
- ❖ Date within which the ordered goods should be delivered
- ❖ Person who orders the goods
- ❖ Person who authorized the order
- ❖ Purchase order serial
- ❖ Total cost amount/cost involved
- ❖ Cost of the good cost of each good



No.24.(b) Describe the harvesting of tea. (6 marks)

- ❖ Leaves are picked selectively for the highest quality
- ❖ Pluck top two leaves and the bud
- ❖ Use a plucking stick to maintain the plucking table
- ❖ Pluck at 5 – 7 days intervals in rains and 10 – 14 day in dry periods/ cold period.
- ❖ Put plucked tea in woven baskets to facilitate air circulation/ prevent fermentation
- ❖ Do not compress the leaves in these baskets to prevent heating up/browning.
- ❖ Put plucked tea in cool and shaded place
- ❖ Deliver to the factory on the same day

No.24c Explain the importance of irrigation in crop production.(5 marks)

- ❖ Irrigation increases crop yields and ensure a steady supply of food throughout the year
- ❖ Maximizes the utilization of resources e.g. in places where the soil is fertile but the water / rain is inadequate
- ❖ Important for the reclamation of arid and semi-arid land.
- ❖ Provides a regular reliable and adequate supply of water in areas with little rainfall.
- ❖ Source of employment in areas where it is used extensively.
- ❖ Promotes crop production for the export market and therefore contributes to a country's revenue
- ❖ Allows production of paddy rice
- ❖ Allows growing of crops in green houses
- ❖ Facilitates irrigation in crop production
- ❖ Controls pests

No.24d. Describe the role of magnesium in crop production. (4 marks)

- ❖ Important in chlorophyll formation
- ❖ Promotes the formation of fats and oils in crops eg soya beans, sunflower, ground nuts.
- ❖ Aids in the absorption and translocation of phosphorous
- ❖ Enhances the nitrogen fixing power of the legumes
- ❖ Activates the synthesis and translocation of carbohydrates and proteins in plants.
- ❖ Activates enzymes in crops.

No.25a.Describe the effects of pests on maize in the field. (6 marks)

- ❖ Some pests transmit crop diseases e.g. leaf hoppers.
- ❖ Some pests eat the growing points causing retarded growth e.g. livestock, stalk, borers, wild animals.
- ❖ Some pests attack the fruits/lowering their quality / quantity e.g. birds, bollworms.
- ❖ Some pests eat the foliage/leaves reducing the surface area for photosynthesis.
- ❖ Some pests damage crop roots/ causing wilting and death to the plants e.g. termites, rodents, wild pigs, stalk borer,
- ❖ Some pests pierce and suck sap from the plant depriving the plant of food e.g. aphids.
- ❖ Some pests injure and cause wounds on the plant exposing it to secondary infections.



No.25.(b) (i)Describe the procedure of harvesting pyrethrum. (4 marks)

- ❖ Pick flowers selectively
- ❖ Pick flowers that have horizontal petals (ray florets) with 2-3 rows of disc florets open.
- ❖ Use fingers and the thumb
- ❖ Pick by twisting the heads so that no stem is left attached.
- ❖ Put the picked flowers in woven basket.

(b) (ii)Explain the precautions that should be observed during the harvesting of pyrethrum. (3 marks)

- ❖ Precautions observed during harvesting of pyrethrum
- ❖ Pricking starts 3-4 months to maintain quality
- ❖ Picked flowers are put in woven baskets to allow ventilation and avoid fermentation of flowers.
- ❖ Wet flowers should not be picked because they heat up and ferment
- ❖ Picked flowers should not be compacted to avoid heating up and fermenting.
- ❖ A suitable picking intervals/ 14-21 days is maintained to avoid harvesting overblown flowers.
- ❖ Break the flower stalk to maintain quality

No.25c.Describe the cultural methods of controlling soil erosion. (7 marks)

- ❖ Contour farming: Cultivation and planting done across the slope helps in holding water thereby increasing infiltration and reducing runoff.
- ❖ Mulching: covers the soil thereby reducing splash erosion/reduces speed of runoff.
- ❖ Strip cropping alternating strips of crops that give good soil cover with those that give little soil cover controls movement of soil particles thereby helping in control of erosion.
- ❖ Vegetated waterways: vegetation in waterways slows down run off/traps eroded soil particles thereby preventing further erosion.
- ❖ Afforestation/reafforestation trees, protect soil from splash erosion by atomising - raindrops/encourage water infiltration/protect soil from winds, which could detach and remove soil particles,
- ❖ Inter-cropping crops which do not cover soil with crops that have good ground cover.
- ❖ Minimum tillage so as to maintain good soil structure/have a seed bed with rough surface such that soil particles are not easily detached encourage water percolation
- ❖ Cover cropping: establishing a crop that spreads over the surface of soil thereby protecting soil from effects of raindrops.
- ❖ Grass strips filter strips are left between cultivated/cropped strips of land to reduced

No.26a.(a)Explain eight cultural methods of soil and water conservation (8 marks)

- ❖ Grass/Filter strips:- reduce speed of flowing water/filter soil;
- ❖ Cover cropping: prevents surface flow/reduces impact of rain drops/prevents evaporation/volatilization;
- ❖ Contour farming:- creates ridges of soil which hold up water/reduce speed of run-off;
- ❖ Mulching:- reduces impact of rain drops/prevents evaporation/surface run-off;



- ❖ Rotational grazing:- allows grass to recover for soil and water conservation;
- ❖ Crop rotation: maintain soil cover for protection against erosion/improves soil structure thus increasing infiltration;
- ❖ Inter cropping:- provides adequate cover on the soil;
- ❖ Strip cropping:- the different strips reduce speed of run-off/filter soil;
- ❖ Grassed/vegetated waterways:- slow the speed of water/trap eroded soil;
- ❖ Afforestation/Re-afforestation; Act as water catchments/stabilizes soil/canopy intercepts raindrops/wind;
- ❖ Agroforestry:stabilises soil/canopy intercepts raindrops/act as water catchment/wind;
- ❖ Use of manures/fertilizers; Promotes vegetative growth which covers soil against evaporation and erosion;
- ❖ Correct spacing of crops; Ensure adequate soil cover.

(b) Explain four ways in which:

(i) HIV/AIDS limits agricultural production(4 marks)

- ❖ Shortage of labour;
- ❖ Lack of motivation to invest in agriculture
- ❖ Increased cost of living leading to low investment in agriculture/lack of resources for Agricultural production.;
- ❖ Government and NGOs are spending a lot of time and resources controlling the disease instead of investment in agriculture.
- ❖ Lack of market for agricultural produce

(ii)Government policy improves agricultural production (4 marks)

- ❖ Establishment of national food security policy to supply free farm input to farmers to improve production;
- ❖ Facilitate soil conservation;
- ❖ Imposes laws to regulate quality of agriculture products;
- ❖ Imposes laws to regulate production and sale of agricultural produce to Ensure sustainability;
- ❖ Imposes high taxes on imported agricultural products;
- ❖ Providing subsidies on agricultural inputs, e.g. fertilizers;
- ❖ Establishment of government agencies to supply inputs and market Agricultural products;
- ❖ Construction of bulky handling and storage facilities for agricultural products;
- ❖ Funding research into new and improved agricultural production technologies;
- ❖ Ensures control of parasites/diseases/weeds is done effectively;
- ❖ Provision of extension services/education.

(iii) Low level of education and technology influences agriculture. (4 marks)

- ❖ Improper timing of routine practices;
- ❖ Lack of agricultural skills
- ❖ Low production of low quality ;
- ❖ Inappropriate decision - making e.g. disease observation and control;
- ❖ Delayed adoption of new and improved production technologies.
- ❖ Lack of knowledge to apply / types and / of inputs;
- ❖ Inability to collect market information.



AGRICULTURE PAPER 2

No.1. Name four rabbit breeds reared in Kenya. (2 marks)

- ❖ New Zealand white/ Kenya white;
- ❖ California white;
- ❖ Flemish giant;
- ❖ Chinchilla;
- ❖ Rex;
- ❖ Angora;
- ❖ Ear lops;

No.2. Give the meaning of the following terms as used in livestock health:

a) Disease (1 mark)

- ❖ Any deviation or alteration in the state of animal body or its organs which interferes with proper performance of its functions

b) Vaccination (1 mark)

Is the administration of a weakened or killed disease causing agent into the animal to induce production antibodies for immunity against the disease

No.3. State four advantages of artificial calf rearing in dairy cattle management.(2 marks)

- ❖ Farmer is able to keep accurate records of milk yield
- ❖ Easy to regulate the amount of milk taken by the calf
- ❖ cows produce milk even in the absence of the calves
- ❖ allows for maintenance of high standard of hygiene during milking
- ❖ There is a possibility of the farmer selling more milk thereby maximizing profits.

No.4. List four materials that can be used in constructing a Kenya Top Bar Hive.(2 mark)

- ❖ Timber
- ❖ Nails
- ❖ Plain wire
- ❖ Iron sheets

No.5. Give four features of housing that help to control livestock diseases (2 marks)

- ❖ Well ventilated
- ❖ Well lit
- ❖ Easy to clean
- ❖ Free from droughts
- ❖ Spacious
- ❖ Leakproof
- ❖ Proper drainage

No.6. State four characteristics of the Duroc Jersey pig. (2 marks)

- ❖ Long body
- ❖ Black in colour
- ❖ Drooping ears
- ❖ Is hardy;



No. 7. Give four characteristics of a good site for a fish pond. (2 marks)

- ❖ Topography/slope of land should be gentle sloping.
- ❖ Reliable water source.
- ❖ Area with cracks/anthills should be avoided.
- ❖ Soil type/site should be free of gravel/stone/sand/preferably clay soil.
- ❖ Secure from predators and thieves.
- ❖ The site should be accessible.

No. 8. Name four systems of a tractor engine. (2 marks)

- ❖ Fuel systems, 1
- ❖ Lubrication system.
- ❖ Electrical system.
- ❖ Ignition system,
- ❖ Cooling system,
- ❖ Hydraulic system
- ❖ Power transmission system

No. 9. What is dry cow therapy? (1 mark)

- ❖ The application of antibiotics into the teat canals of the cow's udder after drying off the cow to prevent mastitis/bacteria infection.

**No. 10. Give two reasons for steaming up in dairy cattle management.
(2 marks)**

- ❖ Ensures birth of a healthy calf
- ❖ Provides nutrients for maximum foetal growth
- ❖ Build up energy for parturition
- ❖ Increases and maintains high milk yield after birth/stimulates development of alveoli
- ❖ Promotes good health of the cow / mother
- ❖ Accustoms the cow to concentrate feeding

No. 11. State four maintenance practices for a disc plough. (2 marks)

- ❖ Cleaning after use
- ❖ Painting the frame
- ❖ Greasing the moving parts.
- ❖ Repair/replace broken/worn out parts.
- ❖ Metal parts on long storage.
- ❖ Proper storage

No. 12. List four preventive measures for livestock diseases. (2 marks)

- ❖ Vaccination
- ❖ Proper feeding
- ❖ Quarantine imposition
- ❖ Use of prophylactic drugs e.g. coccidiostaf
- ❖ Proper hygiene/ use of antiseptic/disinfectants
- ❖ Treatment of sick animals; all aspects eg deworming. drenching
- ❖ Isolation of sick animals
- ❖ Proper selection and breeding
- ❖ Control of vectors
- ❖ Slaughtering sick animals / culling



No. 13. Give two reasons for using litter in a poultry house. (1 mark)

- ❖ To keep the house warm.
- ❖ To absorb moisture from poultry droppings.
- ❖ Keeps birds busy scratching, thus reducing cannibalism.

No. 14. State four disadvantages of fold system in poultry rearing (2marks)

- ❖ Few birds per unit area.
- ❖ Laborious in moving the folds.
- ❖ Difficult to keep individual bird production records.
- ❖ Produces dirty eggs.
- ❖ Fold breaks easily due to constant movement.

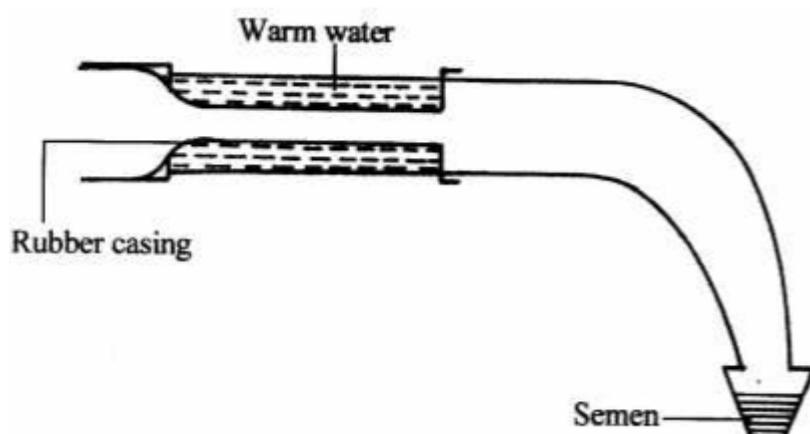
No. 15. State four practices that come immediately after complete milking in a milking shed (2 marks)

- ❖ Teat dipping to control mastitis
- ❖ Weigh and record milk yield
- ❖ Sieve/strain/filter milk
- ❖ Application of milking jelly on teats
- ❖ Store milk in a cool place
- ❖ Clean the milk shed
- ❖ Release the animal
- ❖ Clean the milk equipment

No. 16. List four tools that are used when laying concrete blocks during construction of a wall. (2 marks)

- ❖ Plumb bob/plumb line
- ❖ Mason's trowel
- ❖ Spirit level/pipe level
- ❖ Wood float/steel float
- ❖ Masons square
- ❖ String/masons line/line

No. 17 Below is a diagram illustrating an instrument used in cattle breeding.



(a) Identify the instrument (1 mark)

- ❖ Artificial vagina

(b) State the role of the instrument in cattle breeding. (1 mark)

- ❖ Collection of semen from bulls



(c) When would it be appropriate to serve a cow after the onset of heat?

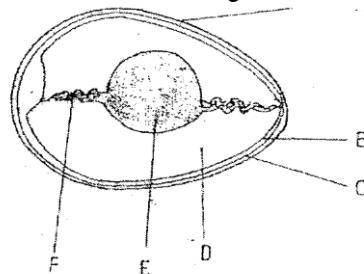
(1 mark)

- ❖ Between 12-18 hours/at standing heat

(d) Apart from the method in which the above instrument is used, name two other methods of serving a cow. (2 marks)

- ❖ Natural mating
- ❖ Embryo transplant;

No. 18. The diagram below is an illustration of an egg. Study it carefully and answer the questions that follow.



a) Name the parts labeled B,C,D and F

- ❖ **B** -Inner shell membrane - ½ Mark
- ❖ **C** -outer shell membrane - ½ Mark
- ❖ **D** -Albumen/egg white - ½ Mark
- ❖ **F** - Chalaza - ½ Mark

(b) State two qualities of the part labeled A that should be considered when selecting eggs for incubation. (1 mark)

- ❖ Texture/ smoothness of the shell
- ❖ Absence of cracks on the shell
- ❖ Cleanliness/absence of the shell
- ❖ Cleanliness/absence of blood stains
- ❖ Oval in shape.

(c) What is the function of the part labeled E in a fertilized egg?

(1 mark)

- ❖ Provides nutrients for the developing embryo/chick.

No. 19 . The photograph below illustrates a method of identification labeled X in cattle.



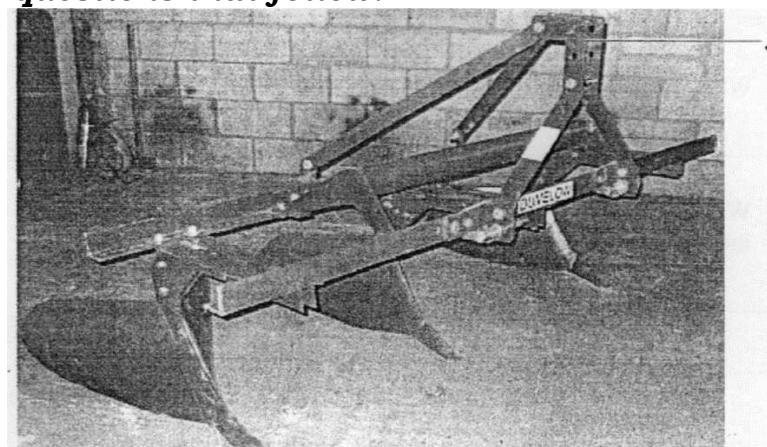
a) Name the identification method (1 mark)

- ❖ Branding

b) Explain three disadvantages of the identification method. (3 marks)

- ❖ Reduces quality of hides/skins/because the heat damages the skin/hide
- ❖ Causes the animal a lot of pain because it uses heat
- ❖ Causes wounds which can result in infections

No.20 .Below is a diagram illustrating a farm implement. Study it and answer the questions that follow.



a) Identify the implement illustrated above

- ❖ A Ridger/mould board ridger.

b) State the use of the:

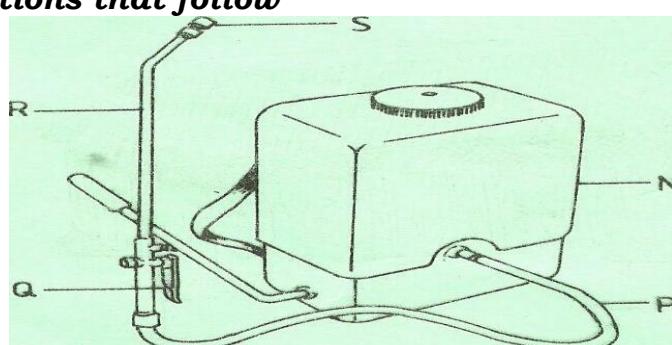
i) Implement on the farm

- ❖ To make ridges/furrows

ii) Part of the implement labelled j

- ❖ used to attach the implement to a tractor.
- ❖ Adjusting the depth of operation.

No.21.Below is a diagram of a knapsack sprayer. Study it carefully and answer the questions that follow



(a) Name the parts labeled N, P, Q and R. (2 marks)

- ❖ N - Tank
- ❖ P - Delivery note rej. hose pipe/hose alone
- ❖ Q - trigger
- ❖ R - Lance



(b) State one function of the part labelled S (1 mark)

- ❖ Breaks the liquid chemical into desired size of droplets/spray form/fume droplets/jets

No.22(a).(i)Describe short-term tractor servicing. (10 marks)

- ❖ The engine should be checked daily by use of dip stick and oil level maintained;
- ❖ The fuel level should be checked at the start of everyday's work and added if necessary;
- ❖ Water level in the radiator should be inspected and if low topped up;
- ❖ The level of electrolyte should be checked daily and topped up with distilled water if low
- ❖ The nuts and bolts should be tightened every day;
- ❖ Grease should be applied regularly to the moving parts;
- ❖ Large sediments from the sediment bowl should be removed;
- ❖ Tyre pressure should be checked every morning before the day's work and adjusted accordingly;
- ❖ The fan-belt tension should be checked to ensure that it deflects between
 - cm - 2.5 cm when pushed;
- ❖ The brake shaft bearing should be greased and break fluid level maintained;
- ❖ Lost bolts and nuts are replaced.

(ii) Explain the maintenance practices that should be carried out on an ox-cart.(5 marks)

- ❖ Moving parts should be oiled/ greased regularly to reduce friction (tear and wear);
- ❖ The yoke should be properly maintained eg. repair when worn out, replaced if not repairable, properly padded;
- ❖ Tyre pressure should be checked daily before the start of work;
- ❖ Broken trailer bodies should be repaired;
- ❖ Loose nuts and bolts should be tightened;
- ❖ Paint it if to be stored for long to avoid rusting;
- ❖ Clean after use;
- ❖ Store under shed;
- ❖ Replace lost nuts and bolts;



No.22b.State five indicators that can be observed on a goat to confirm sickness. (5 marks)

- ❖ By checking the appetite and feeding - if low or excessive it indicates that the goat is sick
- ❖ Defaecation - inconsistency in texture, colour, smell, frequency and posture, presence of arsate segments, egg, larvae or blood
- ❖ Urination - irregular posture, colour and frequency;
- ❖ Change in temperature above or below the normal range;
- ❖ Respiratory rate - irregular respiration shown by non-rhythmic inspiration and expiration indicates ill health.
- ❖ Pulse rate - Abnormal pulse rate under normal physiological status indicates ill- health.
- ❖ Production level - Loss of weight, emaciation and reduced production rate.
Abnormal discharges
- ❖ Posture - while standing or lying.
- ❖ Behaviour eg. abnormal sound, aggression, excitement.
- ❖ Appearance - eg. dullness, restlessness, pot belly, bloated.
- ❖ Movement eg. gait, eg, standing or limping when walking.
- ❖ Mucous membranes (abnormal) eg. bright red colour, yellowish, blueish depending on disease.
- ❖ Skin/animal coat - (abnormal) starring hair, coat, sores/wounds on skin.

No.23a.Describe the uses of fences on the farm. (10 marks)

- ❖ Mark boundaries.
- ❖ Help to avoid boundary disputes
- ❖ Keep off wild animals and intruders from outside the farm.
- ❖ Enable the farmer to practice mixed farming.
- ❖ Facilitates rotational grazing
- ❖ Controls movement of animals and people preventing formation of unnecessary paths in the farm.
- ❖ Control the spread of parasites and diseases by keeping off wild and stray animals the farm.
- ❖ Help the farmer to isolate or confine animals requiring special attention.
- ❖ Enable the farmer to control breeding by rearing different animals in different paddocks.
- ❖ Hedges act as windbreakers.
- ❖ Adds beauty to the farm,
- ❖ Add value
- ❖ For privacy

No.23b Give five harmful effects of liver flukes in sheep rearing. (5 marks)

- ❖ Digestive upsets due to blocking of bile duct.
- ❖ Emaciation/recumbency leading to death
- ❖ Anaemia due to destruction-of-liver tissues
- ❖ Swollen lower jaw/Oedema in the jaws.
- ❖ Swollen abdomen.
- ❖ Destruction of liver tissues /haemorrhage

No.23c.Explain the factors considered when culling livestock. (5 marks)

- ❖ Poor health;
- ❖ Old age;
- ❖ Physical deformities;



- ❖ Hereditary defects;
- ❖ Infertility;
- ❖ Poor mothering ability
- ❖ Poor quality products
- ❖ Low production;
- ❖ Bad temperament.
- ❖ Avoid inbreeding

No.24a .Combs and wattles - small/shrivelled/shrunken. Dry scaly and place.

- ❖ Eyes - dull and pale yellow.
- ❖ Beak - yellowish in colour.
- ❖ Abdomen/breast - hard and full
- ❖ Vent - round, dry and less active
- ❖ Space between knee and pelvic bone - small and fits only one or two fingers
- ❖ Plumage - preened & glossy (smooth) beautiful
- ❖ Moultling - early moultling
- ❖ Shanks/feet - Yellowish in colour
- ❖ Broodiness - Is common/early moultling
- ❖ Temperament - easy and dull

No.24bi. Outline three characteristics of clean milk. (3 marks)

- ❖ Free from disease causing micro-organisms/pathogens
- ❖ Free from hair, dirt or dust.
- ❖ Free from bad odours and tastes/has good flavours.
- ❖ Chemical composition within expected standards.

No.24bii . Explain seven factors that affect milk composition in dairy farming. (7 marks)

- ❖ Age of animal - Butter fat in milk becomes less as an animal grows old thus young animals produce milk with higher BF than older animals.
- ❖ Breed differences e.g. Species of the animal
- ❖ Different breeds of cattle produce milk with differing percentage composition e.g Jersey produce higher BF than Friesian.
- ❖ Type of food eaten by an animal - Roughage feeds produce link with higher fats, lactose and protein compared to grains.
- ❖ Diseases - Diseases such as mastitis reduce the lactose composition in milk because bacteria attack milk sugars.
- ❖ Physiological condition of the animal - Sick/extremely emaciated animals register low percentage of BF/during late pregnancy, cows produce milk with low BF content.
- ❖ Stage of lactation - The BF content in milk is highest at the middle phase of the lactation period and lowers towards end of lactation.
- ❖ Completeness of milking - Milk drawn last from udder during contains high BF content/last drop milk has BF content produce in the milk.
- ❖ Season of the year - accept environmental condition. BF content increases during cold seasons.
- ❖ Time of milking - Milk produced in the morning has a lower BF content than milk produced in the evening 1/2 factor method



BIOLOGY 2016

PAPER 1

No. 1.(a) State two ways in which the muscles of the mammalian heart are special. (2 marks)

- ❖ Muscles are myogenic - able to initiate their own contraction.
- ❖ Presence of intercalated discs hence Interconnencted.
- ❖ Can contract continuously without fatigue.

(b) Name the type of muscles found in the following organs. (2 marks)

Stomach.....

Bone

- ❖ **Stomach** - Visceral muscles/ smooth muscle.
- ❖ **Bone** - Skeletal muscles

No. 2. Why are plants able to accumulate most of their waste products for long?

(1 mark)

- ❖ Most of the waste products are harmless;
- ❖ Waste products are converted into harmless products;

No. 3. State the important of tactic response among some members of the kingdom protista. (2 marks)

- ❖ Move towards favorable environment; accept converse

4. (a) Name one defect of the circulatory system in humans. (1 mark)

- ❖ Thrombosis/ Varicose veins/ Arterion sclerosis/ Antheroma
- ❖ Antherosclerosis
- ❖ Accept cerebral vascular thrombosis

(b) State three functions of blood other than transport. (3 marks)

- ❖ Regulation of the body temperature
- ❖ Regulation of pH of fluids
- ❖ Defense against disease – causing organism/ pathogens/ infection.
- ❖ Prevent excessive bleeding by enhancing clotting/ prevent excessive loss of blood

No. 5. State the economic importance of anaerobic respiration in plants.

(2 marks)

- ❖ Brewing of alcohol accept examples;
- ❖ Baking of bread.
- ❖ Biogas production
- ❖ Compost manure formation
- ❖ Silage formation
- ❖ Commercial production of citric acid
- ❖ Sewage treatment.

No.6.Explain continental drift as an evidence of evolution. (3 marks)

- ❖ Current continents existed as one large land mass/ Pa.gea/ Laurentia Gondwanaland; the present continents drifted leading to isolation of organisms. Organisms in each continent evolved along different lines hence emergence of new species,



No. 7.(a) Explain how the following prevent self-pollination.

(i) Protandry (1 mark)

- ❖ Male reproduction organ/ anthers androecia/ stamens mature earlier than female reproduction organ/ carpels/ stigma/ pistil/ gynoecium.

(ii) Self- sterility.

- ❖ Pollen grains are sterile to stigma of some plants/ flowers

No. 8.State three functions of Golgi apparatus.(3 marks)

- ❖ Form vesicles that transport materials to other parts of the cell e.g. proteins.
- ❖ Transportation secretions to the cell surface for secretion e.g. enzymes and mucus. Packaging of materials such as glycoproteins.
- ❖ They form lysosomes

No. 9.(a) Name two structures for gaseous exchange in aquatic plants.

(2 marks)

- ❖ Pneumatophores
- ❖ Aerenchyma tissues
- ❖ Cuticle

(b) What is the effect of contraction of the diaphragm muscles during breathing in mammals? (3 marks)

- ❖ Leads to the flattening of the diaphragm. This increases the volume of the ribcage and lowers pressure inside compared to atmospheric pressure leading to respiration

No. 10.(a) State two disadvantages of sexual reproduction in animals. (2 marks)

- ❖ Harmful characteristics from the parents may be passed on the offsprings
- ❖ Takes a longer time
- ❖ Few offsprings are produced at a time

(b) State two functions of the placenta in mammals. (2 marks)

- ❖ Exchange of nutrients / oxygen / metabolic wastes between the mother and foetus circulation systems.
- ❖ Secretion of progesterone hormones

No. 11.Name two benefits that a parasite derives from the host (2 marks)

- ❖ Obtains food/ nutrients
- ❖ Shelter

No. 12.Other than using the quadrant, give two methods of estimating population of grass.(2 marks)

- ❖ Belt transect
- ❖ Line transects

No. 13.(a) State two factors that affect enzymatic activities (2 marks)

- ❖ Temperature PH co- factors, co- enzymes; enzyme product concentration; substance concentration/ metabolic poison



(b) Explain how one of the factors stated in (a) above affects enzymatic activities. (1 mark)

- ❖ Temperature- increase in temperature increases rate of enzymatic activity up to an optimum
- ❖ Low temperature decreases enzymatic activity/ too high temp above optimum point denatures enzymes.
- ❖ Ph- Enzymes work best at optimum ph/ extreme ph denatures enzymes.
- ❖ Enzyme conc – Increase in conc. increase enzymatic activity.
- ❖ Co- enzymes – complements enzymes increasing rate of activity
- ❖ Substrate concentration increase enzymatic activity up to certain level.

No. 14. Give three factors that determine the amount of energy a human being requires in a day.(3 marks)

- ❖ Body size
- ❖ Sex
- ❖ Age

No. 15. (a) What is seed dormancy (1 mark)

- ❖ State during which a seed cannot germinate/ state of rest before seed germination; rej inability to germinate

(b) Name a growth inhibitor in seeds (1 mark)

- ❖ Abscisic acid

No. 16. State one use of each of the following excretory products of plants: (2 marks)

(a) colchicine

- ❖ Inducing polyploidy/ treatment

(b) papain

- ❖ Meat tenderizer

17. State the name given to the study of:-

(i) The cell (1 mark)

- ❖ Cytology: Rej cell biology

(ii) Micro-organisms (1 mark)

- ❖ Microbiology

No. 18. Distinguish between haemolysis and plasmolysis. (2 marks)

- ❖ Haemolysis – process by which red blood cells take in water till they burst; while Plasmolysis – loss of water from plant cells until the cell membrane is detached from the cell wall/ until the cell become flaccid.

19. Explain why it is not advisable to be in a poorly ventilated room with a burning charcoal stove.(3 marks)

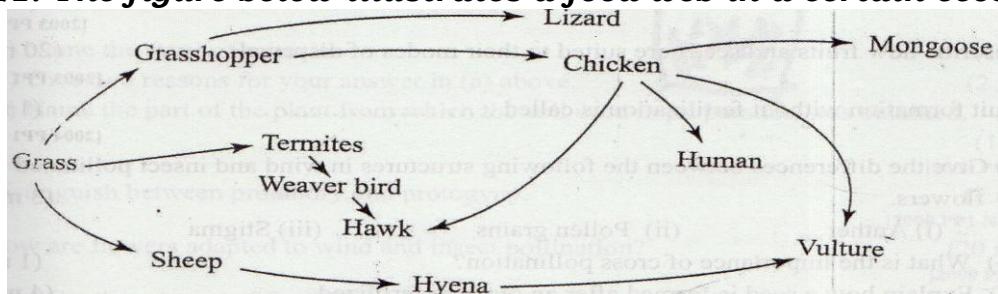
- ❖ Charcoal in limited supply of air produces carbon(ii) oxide, which combines with haemoglobin forming Carboxylhaemoglobin which is a stable compound and does not dissociate easily, reducing capacity of the haemoglobin to carry oxygen leading to suffocation hence death



No. 20. State three factors that contribute to the deceleration phase in the population curve of an organism. (3 marks)

- ❖ Overcrowding
 - ❖ Accumulation of toxic wastes
 - ❖ Limited resources such as nutrients

No. 21. The figure below illustrates a food web in a certain ecosystem.



From the food web:

(a) Draw the shortest food chain; (1 mark)

- ❖ Grass grasshopper lizards

b) Identify the organisms with the highest

(i) Number of predators; (1 mark)

- #### ❖ Chicken

(ii) Biomass. (1 mark)

- Grass

No. 22. State three characteristics of the class Crustacea. (3 marks)

- ❖ Fused head and thorax/ caphothorax (often) protected by carapace.
 - ❖ Gaseous exchange through gills
 - ❖ Two pairs of antennae
 - ❖ Five more pairs of limbs/ five to twenty pairs of limbs; **rej** five
 - ❖ A pair of compound eyes
 - ❖ Three pairs of mouth parts (consisting of labial pulps / maxillae/ mandible)

No. 23. (a) Name one salivary gland in humans. (1 mark)

- ❖ Sublingual: submaxillary/ submandibular; parotid

(b) State two functions of saliva (2 marks)

- ❖ Lubricating food; Digestion of starch; Moistens food; Provides alkaline medium;
 - ❖ Softens food/ Dissolves food.

No. 24. How does nutrition as a characteristic of living organisms differ in plants and animals? (2 marks)

- ❖ Plants make their own food from carbon (IV) oxide and water in the presence of light / photosynthesize/ autotrophic; while animals eat ready-made food (some plants and animals heterotrophic);
 - ❖ If photosynthesis described all raw materials must be mentioned;
 - ❖ Carbon (IV) oxide the (IV) must be bracketed.
 - ❖ If sources of food for animals are mentioned then both plants and animals must appear.



No. 25. Distinguish between diffusion and osmosis. (2 marks)

- Diffusion	- Osmosis
- Involves movement of particles of molecules of liquids or gas	- Involves movements of solvent molecules
- It may be through a membrane or in air	- It takes place though a semi permeable membrane
- Not affected by PH changes	- Rate affected by PH changes

No. 26. State the functions of the following parts of a light microscope. (2 marks)**(a) Objective lens**

- ❖ Magnification of the object/ image

(b) Diaphragm

- ❖ Regulates amount of light (falling on the object on microscope); Acc: Adjust control amount of light

27. (a) What is single circulatory system? (1 mark)

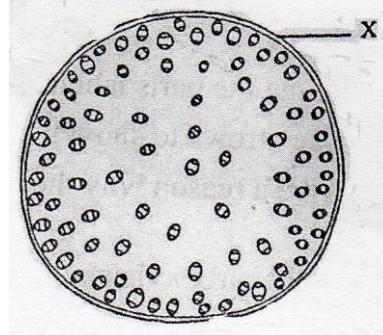
- ❖ Blood goes through the heart once in very complete circulation

(b) Name an organism which has a single circulatory system. (1 mark)

- ❖ Fish

(c) Name the opening to the chamber of the heart of an insect. (1 mark)

- ❖ Ostium

No. 28. The diagram below shows a transverse section of a plant organ**(a) Name the plant organ from which the section was obtained**

- ❖ Stem

(b) (i) Name the class to which the plant organ was obtained. (1 mark)

- ❖ Monocotyledonae

(ii) Give a reason for your answer in (b) (i) above. (1 mark)

- ❖ Vascular bundles are scattered and not arranged in a ring
- ❖ Absence of pith/ cambium

(c) Name the part labeled X (1 mark)

- ❖ Epidermis



**No. 29(a). State a characteristic that is common to all cervical vertebrae
(1 mark)**

- ❖ Have short neural spines

**No. 29(b). Name two tissues in plants that provide mechanical support
(2 marks)**

- ❖ Xylem tissues
- ❖ Collenchyma tissues
- ❖ Sclerenchyma tissues
- ❖ Parenchyma tissues

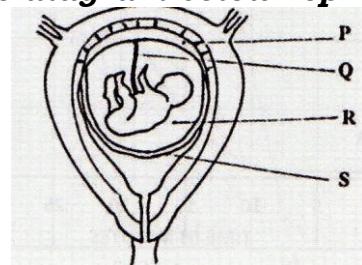
No. 30. State two advantages of hybrid vigour (2 marks)

- ❖ Resistance to pests/ disease/ adverse weather conditions
- ❖ Increase yield
- ❖ Earlier maturity/ early maturity



BIOLOGY PAPER 2

No. 1 . The diagram below represents human foetus in a uterus.



a) Name the part labeled S. (1 mark)

- ❖ Chorion

b) (i) Name the types of blood vessels found in the structure labeled Q. (2 marks)

- ❖ Arteries; veins

(ii) State the differences in composition of blood found in the vessels named in (b)(i)above. (2 marks)

- ❖ More food nutrients; more oxygen in veins less food nutrients more excretory products in arteries

(c) Name two features that enable the structure labeled P carry out its function. (2 marks)

- ❖ Highly vascularized; large surface area
- ❖ Presence of secretory cells

(d) State the role of the part labeled R (1 mark)

- ❖ Cushion/ absorb shock

No. 2. (a) How is sex determined in man? (4 marks)

- ❖ Males have two dissimilar chromosomes X and y/heterogametic;
- ❖ Females have two similar chromosomes X and X/homogametic;
- ❖ Male gamete/sperms have either X or y chromosome, while all ova have X chromosome;
- ❖ if a sperm with X fuses with an ovum a female is formed and if a sperm with Y fuses with an ovum a male is formed;

(b) (i) Differentiate between sickle cell anaemia and sickle cell trait. (2 marks)

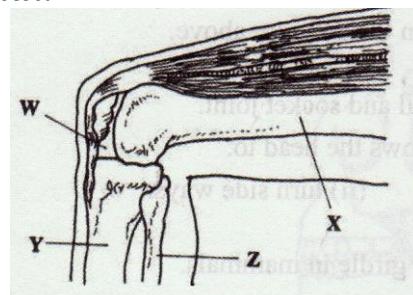
- ❖ Sickling trait is heterozygous while sickle cell anaemia is a homozygous condition

(ii) Explain why people with sickle cell trait have an adaptive survival advantage over normal individuals in malaria endemic regions. (2 marks)

- ❖ People with sickle cell trait are resistant to malaria; because the plasmodium cannot survive in sickle shaped red blood cells; it thrives for survival



No. 3. The diagram below represents bones at a joint found in the hind limb of a mammal.



(f) Name the bones labeled X, Y, and Z (3 marks)

- ❖ X- Femur
- ❖ Y- Tibia
- ❖ Z- Fibula

(g) (i) Name the substance found in the place labeled W. (1 mark)

- ❖ Synovial fluid

(ii) State the function of the substance named in (b) (i) above (1 mark)

- ❖ Lubrication of the joint/ shock absorption
- ❖ Distribution of pressure

(h) Name the structure that joins the bones together at the joint.

(1 mark)

- ❖ Ligament

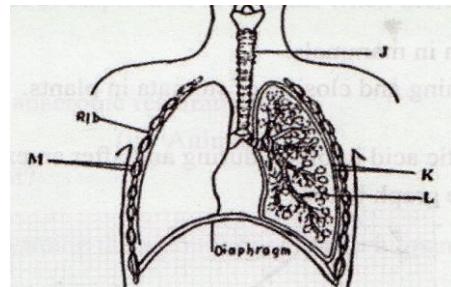
(i) State the differences between ball and socket joint and the one illustrated in the diagram above. (1 mark)

- ❖ Ball and socket joint allows movement in all planes while the illustrated allows movement in one plane only. Accept 360° for all planes 180° for one plane

(j) Name the structure at the elbow that performs the same function as the same function as the patella. (1 mark)

- ❖ Olecranon process

No. 4. The diagram below represents some gaseous exchange structures in humans.



(a) Name the structures labeled K, L, and M . (3 marks)

- ❖ K- Pleural membranes
- ❖ L- Alveolus
- ❖ M- Intercostal muscles



(b) How the structure labeled J is suited to its function? (3 marks)

- ❖ Has C-shaped cartilage rings that support it preventing it from collapsing and allow free flow of air
- ❖ Inner lining has mucus secreting cells that trap fine dust particles and micro-organisms
- ❖ Inner lining has hair like structures called cilia that enhance upward movement of the mucus to the larynx

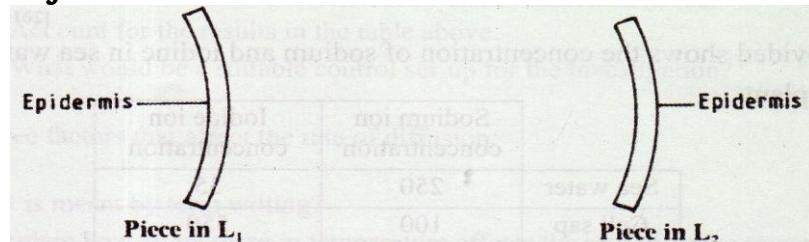
(c) Name the process by which inhaled air moves from the structure labeled L into blood capillaries (1 mark)

- ❖ Diffusion

(d) Give the scientific name of the organism that causes tuberculosis in humans (1 mark)

- ❖ *Mycobacterium tuberculosis* (underline separately). Reject if not done so.

No. 5. A freshly obtained dandelion stem measuring 5 cm long was split lengthwise to obtain two similar pieces. The pieces were placed in solutions of different concentrations in petri dishes (L₁ and L₂) for 20 minutes. The appearance after 20 minutes is as shown



(a) Account for the appearance of the pieces in solutions L₁ and L₂ (6 marks)

- ❖ L₁ - Inner cells gained water by Osmosis; hence increased in length; epidermal cells did not gain water because they are covered by a waterproof cuticle leading to curvature.
- ❖ L₂ - Inner cells lost water by osmosis; leading to (flaccidity) decrease in length; epidermal cells did not lose water due to waterproof leading to curvature

(b) State the significance of the biological process involved in the experiment (2 marks)

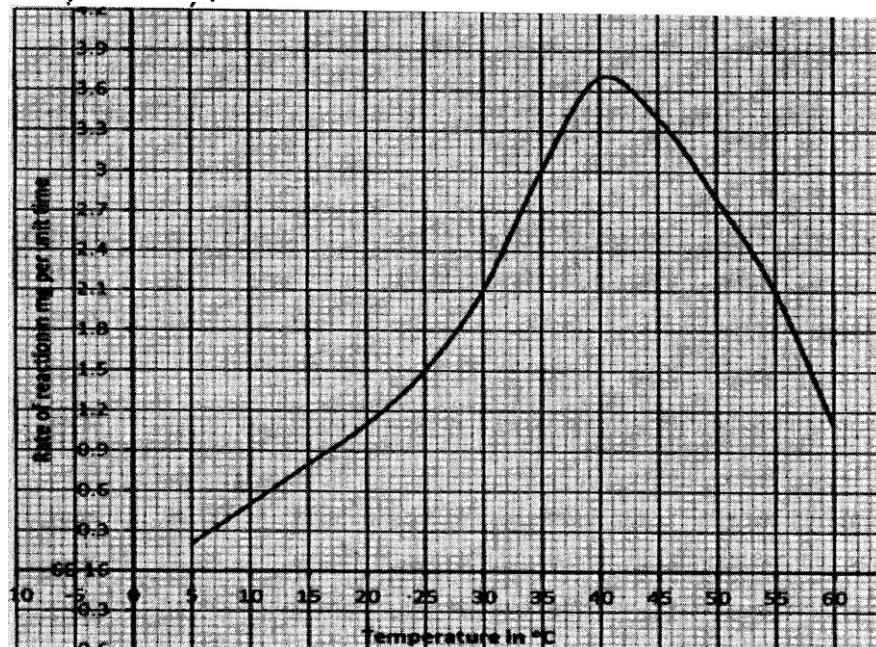
- ❖ Absorption of water by the roots
- ❖ Opening and closing of the stomata



No. 6. An experiment was carried out to investigate the effect of temperature on the rate of reaction catalyzed by an enzyme. The results are shown in the table below.

Temperature (°C)	Rate of reaction in mg of products per unit time
5	0.2
10	0.5
15	0.8
20	1.1
25	1.5
30	2.1
35	3.0
40	3.7
45	3.4
50	2.8
55	2.1
60	1.1

(a) On the grid provided draw a graph of rate of reaction against temperature. (6 marks)



(b) When was the rate of reaction 2.6 mg of product per unit time? (2 marks)

- ❖ 33°C and 51.5 ($\pm 0.5^{\circ}\text{C}$)
- ❖ 32.5 - 33.5 and 51.0 – 52.0

(c) Account for the shape of the graph between

(i) 5°C and 40°C (2 marks)

- ❖ As temperature is increased rate of reaction is increased/ more products are formed (per unit time) because enzymes become more active

(ii) 45°C and 60°C (3 marks)

- ❖ As temperature increase rate of reaction decreases less/products are formed (unit per time) because enzymes become denatured by high temperatures above 40°, hence cannot act on substrate.



(d) Other than temperature name two ways in which the rate of reaction between 5°C and 40°C could be increased. (2 marks)

- ❖ Increase in enzyme and substance concentration
- ❖ Use of cofactors and co-enzymes

(e) (i) Name one digestive enzyme in the human body which works best in acidic condition. (1 mark)

- ❖ Pepsin,
- ❖ Chymosin
- ❖ Renin

(ii) How is the acidic condition for the enzyme named in (e) (i) above attained? (2 marks)

- ❖ Wall of stomach/ gastric gland/ oxyntic/ parietal/ cell produced Hydrochloric

(f) The acidic conditions in (e) (ii) above is later neutralized

(i) Where does the neutralization take place? (1 mark)

- ❖ Duodenum

(ii) Name the substance responsible for neutralization. (1 mark)

- ❖ Bile juice/ e.g. NaHCO_3

No. 7. Using a relevant example in each case, describe simple and conditional reflex actions.(20 marks)

- ❖ Simple reflex action eg. withdrawal of finger from a sharp object/ hot object; its an automatic response to a specific stimulus; when the finger touches sharp object/ hot object, the pain receptors/ thermoreceptors in the skin are stimulants; and trigger off a nerve impulse; the nerve impulse is transmitted via the sensory neurone; to the grey matter of the spinal cord/ CNS/ brain; the impulse is then transmitted via synapse; to the relay neurone; and then through another synapse; to the motor neurone; and then through another synapse; to the motor neurone; the impulse is then transmitted to the effector muscles in the hand; ace - efferent neurone for motor neurone
- ❖ Afferent neurone for sense neurone
- ❖ intermediate/ associative/ connector/ interauricular neurone - for relay. The effector muscles/ biceps contract; and the finger is withdrawn from the hot object/ sharp object; conditioned reflex action - salivation in a dog/ human being (ace. any other relevant example) student in response to sound; it is an automatic response evoked from an animal by unrelated stimulus; substituted for the one which normally elicits the response; it develops from a past experience; and involves modification of behaviour/ involves learning; it weakens with time; and must be reinforced by repeating the related stimulus; the dog/ student salivates when the bell (for meals) rings; because they have learnt to associate the ringing of the bell at meal time with food; everytime it rings (accept use of other relevant examples) they are offered food.



No. 8. Describe how a mammalian heart is structurally adapted to its function.(20 marks)

- ❖ Cardiac muscles which contract and relax continually without fatigue/ myogenic
- ❖ Cardiac muscles are interconnected / a synclination form of network of fibres to rapidly and uniformly spread the contractions
- ❖ Divided into four chambers for Atria to receive blood and ventricles to pump blood out of the heart
- ❖ Divided into two sides by a longitudinal septum to prevent mixing of oxygenated and deoxygenated blood / for double circulation
- ❖ Ventricles have thicker walls to generate high prevention pressure to pump blood
- ❖ Wall of the left ventricle is thicker than that of right ventricle to pump blood over a long distance.
- ❖ Have valves to prevent back flow of blood
- ❖ Cuspid valves have strands of connective tissues / tendinous codes / valve tendons to prevent turning in/out during systole / when ventricles contract
- ❖ Has coronary artery to nourish / supply oxygen to the heart/muscles; has a coronary vein to remove metabolic wastes carbon(iv)oxide
- ❖ Enclosed by a pericardium to keep it in position / prevent over dilation
- ❖ Pericardium secretes pericardial fluid to reduce friction / absorbs shock
- ❖ Has Sino Artrio Node (SAN) which acts as a pacemaker
- ❖ Has Atrio Ventricular Node (AVN) which relays contraction waves from SAN to the puncinje tissues
- ❖ Has puncinje tissue / bundle of HIS to relay waves from AVN to the ventricular myocardium
- ❖ Cardiac muscles have numerous mitochondria to generate energy for the muscular contractions
- ❖ Has venacava and pulmonary vein to supply blood to the heart.
- ❖ Has aorta and pulmonary artery to transport blood away from the heart.



BUSINESS STUDIES 2016

PAPER 1

No.1..State four external factors that may negatively influence the operations of a business. (4 marks)

- ❖ Unfair competition.
- ❖ Inadequate technology.
- ❖ Unstable political environment.
- ❖ Unstable economic environment.
- ❖ Unfavorable legal frameworks.
- ❖ Unreliable supply systems.
- ❖ Strong consumer bargaining power.
- ❖ Poor physical facilities and infrastructure.
- ❖ Low population level.
- ❖ Insecurity.
- ❖ Unfavorable socio-cultural environment.
- ❖ Natural calamities.

No.2.10.Highlight four benefits of a business plan to an entrepreneur. (4 marks)

- ❖ Facilitates acquisition of loans from financial institutions and other financiers
- ❖ Provides guidance for opening new or expanding existing business / adaptability
- ❖ It acts as a management tool for the business / monitoring tool / identifies strengths
- ❖ It's a tool for evaluating business performance
- ❖ It lays the strategy to be used in marketing the products
- ❖ It enhances the credibility of the business
- ❖ It's a motivational tool
- ❖ To avoid mistakes
- ❖ Proper allocation of resources
- ❖ To determine how much resources are required e.g. labour, capital etc / source of capital
- ❖ Will help to identify the nature and scope of the market.

No.3.State four ways in which a good filing system may facilitate the operations of an office. (4 marks)

- ❖ Easy retrieval of information.
- ❖ Office is kept tidy.
- ❖ Information is preserved for future reference.
- ❖ Security of documents is ensured.
- ❖ Facilitates quicker decision making.
- ❖ Ensures confidentiality of information by restricting access by unauthorized people



No.4..Highlight four activities that may be carried out in a stock exchange market. (4 marks)

- ❖ Buying and selling of shares.
- ❖ Mobilising savings for investment.
- ❖ Listing of companies.
- ❖ Issuing of new securities / raising capital.
- ❖ Publication of statistical information.
- ❖ Advising investors.

No.5.Outline four circumstances under which a co-operative society may be dissolved. (4 marks)

- ❖ By government order / change in the law.
- ❖ Where the co-operative continuously make losses.
- ❖ Where a stipulated majority of members agree to dissolve it .
- ❖ By a court order.
- ❖ Where the co-operative society has achieved objectives for which it was formed.

No.6.Outline four methods that the government of Kenya uses to regulate business activities. (4 marks)

- ❖ Licensing business activities
- ❖ Setting of standards
- ❖ Formulating of policies – enacting laws / legislation
- ❖ Setting quotas
- ❖ Enforcement of laws
- ❖ Imposing total ban
- ❖ Subsidizing businesses
- ❖ Taxation
- ❖ Price control

No.7.State four ways in which a youthful population may be useful to an economy. (4 marks)

- ❖ Less expenditure on social security and pension.
- ❖ Wider market for goods meant for the youth like clothing.
- ❖ Guaranteed continuous supply of labour.
- ❖ Flexibility and adaptability to technological changes which improve production.
- ❖ Faster growth of some sectors like the music, fashion and fast food industries.
- ❖ Increased innovation due to their adventurous nature.

No.8.Outline one circumstance under which each of the following telecommunication services may be used: (4 marks)

- (i) Paging
- (ii) Facsimile (fax)
- (iii) Radio call.
- (iv) Telex.

(i) Paging

- ❖ When there is need to call a person to attend to an emergency in a specific location



(ii) Facsimile (fax)

- ❖ Where there is need to send a copy of a printed document urgently.

(iii) Radio call

- ❖ When there is need to give co-ordinated information through a central point

(iv) Telex.

- ❖ Sending and receiving written messages

No. 9.. The following transactions relate to Jelimo Stores:

(a) 10th October 2015 sold unused stationery for Sh 3,000 on credit to K. Likia.

(b) 23rd October 2015, bought a motor vehicle on credit from Onjwaria Motors for Sh 700,000.

Required: Record the above transactions in the general Journal given below:(4 marks)

Date	Particulars	Folio	Dr.	Cr.

Date	Particulars	Folio	Dr.	Cr.
2015				
Oct. 10	K Likia Stationery (sale of stationery on credit)		3,000	3,000
Oct. 23	Motor vehicle Onjwaria Motors (purchase of motor vehicle on credit)		700,000	700,000

No. 10. State four features of an insurable interest. (4 marks)

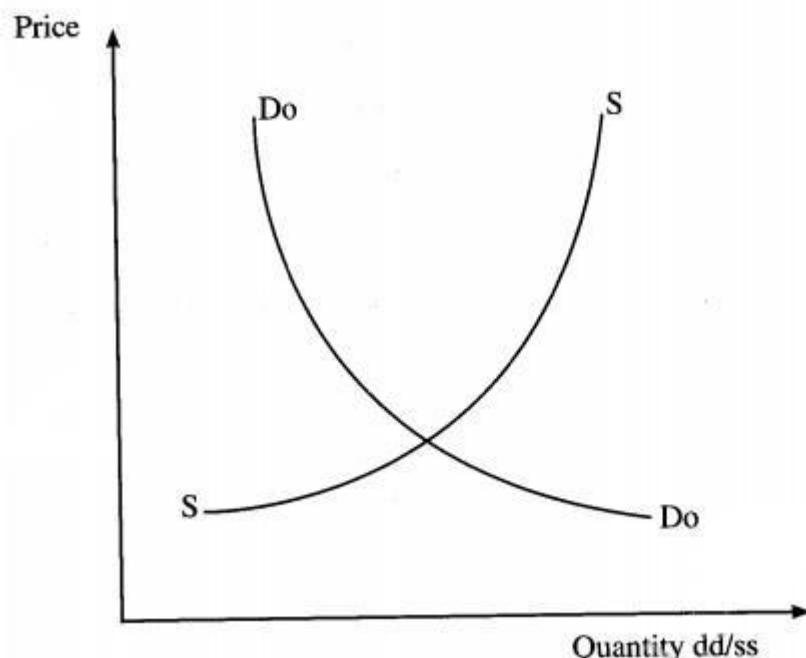
- ❖ Presence of property rights or interest
- ❖ Potential insurable risk must be present
- ❖ The property must have monetary value
- ❖ The insurable risk must be legal
- ❖ There must be the possibility of suffering financial loss in case of a risk happening



No.11.State four features of a parastatal. (4 marks)

- ❖ Provide essential services.
- ❖ Not profit motivated.
- ❖ Is formed by an Act of Parliament.
- ❖ Is mainly funded by the government.
- ❖ Is managed by government appointees.
- ❖ Any surplus earned-is surrendered to the government.
- ❖ Has limited liabilities.
- ❖ Attachment to a government ministry.
- ❖ Can be dissolved only through an act of parliament

No.12..The graph given below represents the demand and supply curves of milk:



State four effects of a shift of the demand curve to the right. (4 marks)

- ❖ The price will increase
- ❖ The quantity demanded will increase / demand will increase
- ❖ The equilibrium quantity shifts to right / increases
- ❖ The equilibrium price shifts upwards / increases
- ❖ The equilibrium point shifts upwards / right

No.13 .Outline four functions of the World Bank. (4 marks)

- ❖ Providing finances to reduce budgetary deficits
- ❖ Provide loans for development projects.
- ❖ Provide finance to correct and adverse balance of payments.
- ❖ Provide technical expertise to support development.



PP1 No.14. Outline four ways of reducing the level of unemployment in Kenya.(4mks)

- ❖ Diversification of the economy by encouraging the establishing of different industries /sectors to create employments opportunities
- ❖ Transforming agricultural sector to curb rural urban migration to create more jobs and reduce unemployment)
- ❖ Transforming education sector making graduates acquire relevant skills.
- ❖ Establishing an employment policy by government to make it easy for people to get jobs/Accept e.gs of policy as mention
- ❖ Lending /setting of a fund to assist unemployed to stat income generating activities/accept e.gs of funds as a mention
- ❖ Exporting Labour by assisting unemployed people to acquire jobs abroad /countries with labour deficiency.
- ❖ Encouraging the informal Jua Kali sector to promote self employment
- ❖ Delocalization/ decentralization policy for balanced regional development/reduced rural urban irrigation
- ❖ Population policy to control growth/have a labour force that the economy can absorb
- ❖ To improve infrastructure in order to have suitable economic activities /accept e gs of infrastructure as a rating.
- ❖ Increase government expenditure to expand the size of the economy/ to finance development projects.
- ❖ Effective use of natural resources to increase production activities
- ❖ Income /wage policy to harmonize differences between regions/sectors
- ❖ Attract (Local /foreign) investments through vision incentives/to grow the economy
- ❖ Reviving collapsed industries/projects by injector, funds/selling them /increased production activities

No.15. The following balances were extracted from the books of Highlife General Stores on 31st December 2015.

Item	Ksh
Land and buildings	650,000
Stock	470,000
Bank overdraft	80,000
Debtors	350,000
10 year Bank Loan	500,000
Creditors	220,000
Cash	50,000
Motor Van	150,000
Capital	?

Required: Prepare the balance sheet of Highlife General Stores as at 31st December 2015. (4 marks)



*Highlife General Stores
Balance Sheet
as at 31st December 2008*

Sh.	Sh.	Sh.	Sh.
<u>Fixed Assets</u>			<u>Capital</u>
870,000			
<i>Land and building</i> 650,000			
Motor Van	150,000	800,000	<u>Long term liabilities</u>
			10 year bank loan
500,000			
<i>Current Assets</i>			<u>Current liabilities</u>
Stock	470,000		Creditors
Debtors	350,000		220,000
Cash	50,000	<u>870,000</u>	Bank overdraft
<u>300,000</u>			80,000
		<u>1,679,000</u>	<u>1,670,000</u>

No. 16..Outline four circumstances in which the government may be involved in business. (4 marks)

- ❖ When a business venture requires investment of large sums of money which individual entrepreneurs may not provide.
- ❖ When the goods or services to be provided are essential to the welfare of the citizens.
- ❖ When there is need to protect citizens from exploitation by private entrepreneurs.
- ❖ When the government desires to create employment for the citizens.
- ❖ When the government needs to generate income through revenue collection.
- ❖ When there is need to safeguard national security.
- ❖ When the venture is strategic but provides low profits hence unattractive to private investors.
- ❖ Where there are monopolies in the economy, the government gets involved in business to increase competition.
- ❖ Where there is need to balance regional development.
- ❖ To reduce foreign dominance in the economy.
- ❖ Where there is need to attract foreign investment.

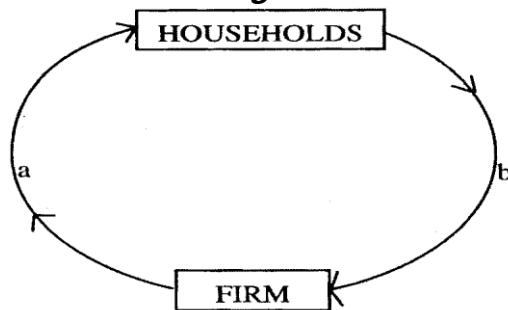
No. 17..Identify the ledgers in which the following accounts are kept.(4mks)

ACCOUNT	LEDGER
(i) Pendo (debtor)	
(ii) Machinery	
(iii) Rent	
(iv) Capital	

Account	Ledger
Debtors	Sales / Debtors
Machinery	General
Rent	Nominal;
Capital	Private
Juma (Creditor)	Purchases / Creditors



PP1 No.18. The following diagram represents the circular flow of income in a two sector closed economy



Identify two factors represented by each of the arrows labelled a and b. (4 marks)

- (a) (i) Payment for goods and services.
(ii) Factor services / inputs / factors of production.

- b) (i) Payment for factor inputs,
(ii) Goods and services.

No.19. State four reasons for privatising public corporations. (4 marks)

- ❖ To improve efficiency in their operations.
- ❖ To generate revenue to the government through sale of shares and taxes.
- ❖ To enhance competition.
- ❖ To increase public participation in economic activities of the country.
- ❖ To reduce government expenditure.
- ❖ To comply with conditions set by development partners and international donor agencies.
- ❖ To enable the government to concentrate on other state responsibilities.
- ❖ To minimize political interference.

No.20.. State four reasons for the increased use of cell phones in banking. (4 marks)

- ❖ Easy to transact / easy ownership
- ❖ It saves on time since there is no traveling and queuing for the services.
- ❖ The speed of transaction is fast / quick feedback.
- ❖ It reduces paper-work by eliminating the need for physical files and other documentations.
- ❖ The use of PIN enhances security
- ❖ Increased ownership of mobile phones
- ❖ Transactions can be conducted any time
- ❖ Reduce transaction costs (travel and bank charges)
- ❖ Easy access to transaction records
- ❖ It is a requirement by service providers (utility bills)
- ❖ Easy to obtain credit facilities e.g. M-Shwari loan

No.21. List four sources of public finance. (4 marks)

- ❖ Taxes
- ❖ Licenses
- ❖ Court fines
- ❖ Donor aid
- ❖ Fees
- ❖ Treasury bonds and bills



No.22.State two situations in which each of the following types of inflation may occur.

(i) Creeping inflation (2 marks)

- ❖ When the general price levels rise gradually/ single digit over a period of time usually at single digit. Where the value of money tends to be stable over time the effects on the economy is not severe.

(ii) Hyperinflation (2 marks)

- ❖ Where the general price rise at high rate/ usually more than two digits. Where there is drastic loss in the value of money effect on the economy is very severe

No.23..Outline four factors that may make a producer to by-pass the wholesaler when distributing goods. (4 marks)

- ❖ Having own retail outlet.
- ❖ Dealing in perishable goods like bread which require shorter channels.
- ❖ Dealing in technical goods which require elaborate after sales services.
- ❖ Consumers and retailers buying in large quantities.
- ❖ Need to keep price of goods low.
- ❖ Limited geographical spread of the market.
- ❖ Government policy.
- ❖ When the production is in small quantity.
- ❖ Where the producer has enough storage facilities.
- ❖ When goods are produced on order

No.24.Outline four goals of development to a country. (4 marks)

- ❖ Alleviation of poverty
- ❖ Attainment of high and sustainable economic growth
- ❖ Provision of adequate social amenities e.g. health
- ❖ Diversification of the economy to reduce over-reliance on a few products
- ❖ Alleviation of unemployment
- ❖ Attainment of more equitable distribution of incomes
- ❖ Enhancement / upholding of human freedom, rights and self esteem / democracy
- ❖ Provision of security
- ❖ Maintenance of political sustainability / good governance.
- ❖ Attainment of food security for population
- ❖ Alleviation of illiteracy
- ❖ Elimination of harmful cultural practices
- ❖ Improvement of infrastructure e.g. transport, communication, water



No.25..Outline four characteristics of services. (4 mark)

- ❖ Difficult standardize/ heterogeneous give to varying quality (over time)/ the quality cannot be uniform (from time to time) may be offered by sufficient people.
- ❖ Service cannot be stored for future/ service is only consumed at the time it is being offered/ service capacity cannot be stored.
- ❖ Service cannot be touched/ it is intangible/ invisible can only be felt/ experienced
- ❖ Services cannot be separated from service properties the provider must directly offer the service to the user
- ❖ Service is perishable service can only be enjoyed at the time the provider is available/ it expires after it is provided.
- ❖ Services cannot be owned by the buyer/ ownership cannot be transferred as the buyer only pays for the experience
- ❖ Services/ have utility to satisfy wants.
- ❖ Services are mobile since they can be received/ provided at different places/locations



BUSINESS STUDIES PAPER 2

No. 1a. Explain five factors that may promote entrepreneurship in Kenya. (10 marks)

- ❖ Government support/ favourable government policies/ funding regulation (of business activities) may encourage the emergence expansion of business venture.
- ❖ Training/ in education entrepreneurship/ trainees are equipped with skills/ knowledge to undertake entrepreneurial activities to start businesses.
- ❖ Entrepreneurial culture/ cultural practices that encourage entrepreneurship through early exposure to business activities opportunities/ positive attitude towards business.
- ❖ Presence of role model interaction with successful business people who may inspire/ create interest in entrepreneurship/ business ownership.
- ❖ Availability of capital/ loans/ credit facilities for start expanding a business (may facilitate entrepreneurship).
- ❖ Political stability/ non political interference that creates a confused environment for starting/ running expanding business.
- ❖ Availability of market/ market information.
- ❖ Availability of security- that ensure safety of businesses/ property/ business owners.
- ❖ Healthy/ fair competition that business owners can withstand/ be safe with.
- ❖ Good government that ensures accountability in conducting business activities.
- ❖ Availability of technology that can lead to the production of desired quality/ quantity of goods/ services.
- ❖ Employment creation for self/ others.
- ❖ Independence/ needs to earn an income/ livelihood.

No. 1b. Explain five circumstances under which a partnership may be dissolved. (10 marks)

- ❖ Temporary partnership/ (expiry of time / accomplishment of purpose / where the partnership was formed for a definite time /for a particular purpose) hence the expiry of time / accomplishment of purpose terminates the partnership
- ❖ Mutual / voluntary agreement among partners / where the partners agree among themselves(to terminate the partnership), when they may have no alternative for whatever reason.
- ❖ Bankruptcy/ insanity of a partner where (a court declares) the value of one of the partner's property insufficient to settle his or her debt. / due to loss of contractual capacity.
- ❖ Change in law/ government policy that makes the operation of the partnership illegal.
- ❖ Permanent inability of a partner to perform /fulfill part of the partnership agreement either as a result of diseases / ill health /incapacitation.
- ❖ Internal dissension /disagreement among partners /disagree irreconcilably then the partnership may be terminated.
- ❖ Persistent losses in operation / where the business has continued to operate at a loss then it is terminated hence making it difficult to meet its financial obligations.



- ❖ Court orders (where the partnership was formed under) due to fraud / mistake / misrepresentation / breach of law / partnership agreement court of law may order it dissolution.
- ❖ Request by one / some partners to dissolve the partnership hence having to abide by their wish / granting their wish.
- ❖ Withdrawal / admission of a partner which changes the status of the partnership.
- ❖ Death of a partner which alters the composition of a partnership / which may necessitate a new agreement / arrangement.

**No.2a..Explain five advantages of government involvement in business.
(10 marks)**

- ❖ Provision of essential services / goods for fair / reasonable prices / affordable.
- ❖ Provision of large capital investment / undertake ventures that require large sums – which private sectors may not be able to raise / without which development would be minimal.
- ❖ Protection of citizens / to protect citizens from exploitation / malpractices by business.
- ❖ Stimulation of economic development by developing social amenities / infrastructure / roads / injecting funds into the economy / through development projects.
- ❖ Creation of employment / to create jobs (for its citizens) to earn a living / improve standards of living.
- ❖ Income generation / to generate government revenue through taxation / activities.
- ❖ Stabilization of the economy – through regulation / market intervention.
- ❖ Promote equity / fairness in distribution of resources
- ❖ Control use of resources – through conservation / legislative measures / ensure their sustainability.
- ❖ Maintenance of law / order – which allows for smooth operations (of country's affairs).
- ❖ Promotion of best practices through encouraging adoption of ICT / good governance / social programmes / inclusivity.
- ❖ Promoting a country's identity / image – through cultural programmes / branding initiatives / participation in international competition / fairs.
- ❖ Reduce foreign dominance / promote a country's sovereignty by regulating foreign participation / encouraging local participation in the economy.
- ❖ Promotion of entrepreneurship cultures by encouraging business ownership / training / funding businesses.
- ❖ Promotes investment in the country by creating enabling environment.



No.2b.Traders are required to observe ethical practices when carrying out product promotion. Explain five reasons for observing such ethical practices.(10 mrk)

- ❖ To ensure fair competition.
- ❖ To protect consumers/customers.
- ❖ To protect the environment.
- ❖ To protect the rights of employees.
- ❖ To promote social responsibility.
- ❖ To maintain a positive image.
- ❖ To abide by the country's laws,
- ❖ To maintain suppliers.
- ❖ To promote positive cultural practices.

No.3a.Explain five methods of determining the price of a product other than price control (10 marks)

- ❖ Bargaining / Haggle – terms of exchange is negotiated / argued / debated between buyers and sellers.
- ❖ Demand and supply / price mechanism interactions between forces of demand and supply.
- ❖ Auction – prices determined by the highest bidder.
- ❖ Tendering – Prices determined by the (lowest) bidder who meets the required specifications.
- ❖ Retail price maintenance / recommended retail price / products price fixing / price fixing where producers / manufacturers agree on the price of commodities.
- ❖ (Price) collusion – where different market players such as buyers / sellers conspire to fix the price.
- ❖ Taxation / subsidy – which will influence the selling / buying price.
- ❖ Private treaty – a sale of property at a price agreed on by the seller and buyer without an intervening agency.

No.3b .Explain five benefits that may be realised by a country as a result of government policy to relocate industries to rural areas (10 marks)

- ❖ Increased availability of variety of goods and services as a result of new businesses in the area,
- ❖ Availability of auxiliary services - citizens would enjoy more and better auxiliary services like transport,
- ❖ Increased job opportunities - there will be more jobs available that would reduce unemployment,
- ❖ Increased utilization of locally available resources - locally available factors of production will be used and the citizens would earn rewards associated with them,
- ❖ Improved standard of living as development of the rural areas increases the quality and variety of goods and services,
- ❖ Reduced congestion in towns - this would benefit the few citizens remaining in the city,
- ❖ Balanced economic development as economic activities are spread throughout the country.'
- ❖ Transfer of technology to rural areas which leads to production of better quality goods/services,
- ❖ Creation of market for goods/services produced in rural areas.



No.4a. On 1st January 2015, Ndovu Traders had Ksh 30,000 in cash and Ksh 75,000 at the bank.

During the month, the following transactions took place:

January 2: Bought goods in cash worth Ksh 15,500.

5: Received cash from Chui Ksh 23,750 after allowing 5% cash discount.

8: Withdraw Ksh 8,900 from the bank for personal use.

11: Maro, a debtor settled her account of Ksh 16,800 by a cheque of Ksh 16,000.

15: Sales amounted to Ksh 24,250 in cash.

17: Paid Furaha traders Ksh 29,100 in cash in full settlement of their account less

3% cash discount.

20: Withdraw Ksh 15,000 from the bank for business use.

22: Koko a debtor settled her account of Ksh 40,000 by cheque less 2.5% cash discount.

25: Paid wages Ksh 21,000 cash

Required: Prepare a duly balanced three column cash book. (12 marks)

Date	Details	Discount Allowed	Cash (shs)	Bank (shs)	Date	Details	Discount Received	Cash (shs)	Bank (shs)
Jan 1 st	Bal b/d		30,000	75,000	Jan 2 nd	Purchases		15,500	
Jan 5 th	Chui	1,250	23,750		Jan 8 th	Drawings		8,900	
Jan 11 th	Maro	800		16,000	Jan 17 th	Furaha	900	29,100	
Jan 15 th	Sales		24,250		Jan 20 th	Cash			15,000
Jan 20 th	Bank		15,000		Jan 25 th	Wages		21,000	
Jan 22 nd	Koko	1,000		39,000	Jan 30 th	Bal c/d		27,400	106,000
	Bal b/f		3.050	93.000			900	93.000	130.000
				27,400					

**NDOVU TRADERS
THREE COLUMN CASH BOOK**

No.4b . The following balances were extracted from the books of Rehema Traders on 1st January 2015.

	Ksh
Capital	600,000
Creditors	180,000
Motor van	200,000
Furniture	200,000
Stock	60,000
Debtors	80,000
Cash	240,000



The following transactions took place during the year ended 31st December 2015:

- (i) Sold furniture worth Ksh 60,000 for which Ksh 40,000 cash was received and the balance was due at the end of the year.
- (ii) Purchased goods worth Ksh 100,000 for which cash of Ksh 70,000 was paid and the balance was still outstanding at the end of the year.
- (iii) Cash Ksh 10,000 was taken from the business by the proprietor to settle the spouse's hospital bill.

Required: Outline the effect of each transaction on the items of the balance sheet.(8 marks)

Rehema Traders Balance Sheet As at 31 December 2007			
	Kshs.	Kshs.	Kshs.
Fixed Assets			Capital
Motor Van	200,000		600,000
Furniture	140,000	340,000	Less drawing
			<u>10,000</u>
Current Assets			590,000
Stock	160,000		Current Liabilities
Debtors	100,000		Creditors
Cash	200,000	460,000	210,000
		<u>800,000</u>	
			<u>800,000</u>

No.5a ..Explain five guidelines that may be used by the government of a country to promote efficient use of her resources. (10 marks)

- ❖ Maximum social benefit/optimal benefit. Government spending should benefit as many people as possible.
- ❖ Flexibility. Should be elastic enough to accommodate changing circumstances.
- ❖ Economy. Should be capable of being changed to accommodate prevailing economic circumstances.
- ❖ Equity. Should aim at distributing incomes fairly.
- ❖ Sanction. Government spending must be approved by the relevant authority to enhance accountability.
- ❖ Accounting. Proper accounting records should be kept to facilitate good financial management.
- ❖ Productivity. A larger proportion of the national income should be spent on development projects.
- ❖ Surplus. Expenditure should be less than the total revenue collected.
- ❖ Elasticity - should be capable to being expanded/contracted depending on the size of the economy.



No.5b. Explain five disadvantages that a country may face if she restricted trade with other countries. (10 marks)

- ❖ Reduced competition – leading to low quality goods/ services
- ❖ Reduced/ low consumer goods – trade restriction reduces the availability of goods/ services available to consumer leading to low state of living.
- ❖ Retaliation/ trading partners are likely to retaliate – leading to loss of business (between two involved/ reduced export/ imports)
- ❖ Reduced/ low investment – due to limited trading opportunities
- ❖ Reduced limited market – hence under exploitation of available resources/ reduced production capacity.
- ❖ Inappropriate allocation of resources – It may force the use her resources in areas where she has no comparative interest/ not best suited in.
- ❖ Cost to the government – (This may happen) if measures are used (to enhance restriction / by encouraging import substitution) meet part of the costs.
- ❖ Reduced/ loss of government revenue earned from import/ export services not exported.
- ❖ Leads to increased unemployment due to reduced trading activities.
- ❖ Poor international relations which may lead to conflicts/ friction, among countries/ may not get assistance in times of calamities.
- ❖ Curtailed transfer of technology/ factors of production that may lead to poor quality goods low quantity of products.
- ❖ Reduced/ limited supply of goods/ services which may adversely affect consumers (access /examples of adverse effect as explanation)
- ❖ Encourages smuggling/ black marketing leading to loss of revenue/ entry of counterfeit goods/ services.

No.6a. On 1st September 2015, Gondi had Ksh 55,000 in hand and Ksh 250,000 at bank. During the month, the following transactions took place:

- September 2 Cash sales banked Ksh 35,260
3 Bought ribbons in cash Ksh 4,500
8 Paid Wangila, a creditor Ksh 94,000 by cheque in full settlement of his account after deducting 6% cash discount
12 Received a cheque for Ksh 58,800 from Wetu after allowing her a cash discount of Ksh 1,200
15 Paid salaries Ksh 34,000 in cash
25 Withdrew Ksh 50,000 from bank for office use
28 Anyango, a debtor paid her account of Ksh 75,000 by cheque less 10% - cash discount
30 Deposited all the cash into bank except Ksh 13,700

Required: Prepare a three column cash book and balance it off. (10 marks)



Date	Particulars	Disc	Cash	Bank	Date	Particulars	Disc Rec'd	Cash	Bank
Sept. 1	Balance b/d	Shs	Shs 55,000	Shs 250,000	Sept. 3	Ribbons	Shs	Shs 4,500	Shs
Sept 2	Sales			35,260	Sept. 8	Wangila	6,000		94,000
Sept 12	Wetu	1,200		58,800	Sept. 15	Salaries		34,000	
Sept. 25	Ban k(c)		50,000		Sept.25	Cash(c)			50,000
Sept. 28	Anyango	7,500		67,500	Sept.30	Bank(c)		52,800	
Sept. 30	Cash (c)			52,800	Sept. 30	Bal.c/d		13,700	320,360
		8700	105,000	464,360			6,000	105,000	464,360
Oct. 1	Bal. b/d		13,700	320,360					

No.6b .. Outline five reasons that may influence the government to start a parastatal. (10 marks)

- ❖ To provide strategic goods and services.
- ❖ To increase revenue collection.
- ❖ To encourage import substitution industries/to discourage importation.
- ❖ To encourage foreign investment.
- ❖ To reduce foreign influence.
- ❖ To address special social needs.
- ❖ To take care of sensitive ventures.
- ❖ To take care of business that requires a large initial capital.
- ❖ To create employment.
- ❖ To provide goods & services all over the country.
- ❖ To stimulate economic development.
- ❖ To provide essential goods and services at low cost.
- ❖ To promote competition with private sector in security.
- ❖ To provide goods and services with low returns (low profits).
- ❖ To regulate business activities.



2016 C.R.E.

PAPER 1

1.(a) Name eight historical books in the Old Testament.(8 marks)

- ❖ Joshua
- ❖ Judges
- ❖ Ruth
- ❖ First Samuel
- ❖ Second Samuel
- ❖ First Kings
- ❖ Second Kings
- ❖ First Chronicles
- ❖ Second Chronicles
- ❖ Ezra
- ❖ Nehemiah
- ❖ Esther

(b) Outline the reasons why the Bible is referred to as a Library. 7 marks)

- ❖ It contains many books.
- ❖ The books were written by different authors
- ❖ It has different categories of books/divisions
- ❖ The books are written in different styles/forms
- ❖ The books in the Bible were written at different times/situations/backgrounds
- ❖ The books in the Bible address different issues/topics/purposes
- ❖ The books were written for different audiences/readers
- ❖ The books are systematically arranged /order/chronologically

(c) Give five occasions when Christians use the Bible. (5 marks)

- ❖ When preaching the word of God (crusade/church sermons)
- ❖ When in court
- ❖ When instructing new converts/conducting Bible study
- ❖ During different Christian religious ceremonies/festivals
- ❖ When teaching Christian Religious Education
- ❖ When composing Gospel songs/plays/Christian literature
- ❖ During fellowships/prayers/guidance and counselling
- ❖ During a swearing in ceremony

2.(a) Narrate Abraham's attempt to sacrifice his son Isaac.(Genesis 22:1-19)6mks)

- ❖ God told Abraham to take his only son to the land of Moriah/offer him as a sacrifice,
- ❖ Abraham took his son, two servants and wood for burnt offering,
- ❖ They arrived at the place after a three day's journey,
- ❖ Abraham commanded his servants to remain behind as he and Isaac went up to worship.
- ❖ He took Isaac, the firewood and the knife and went up.
- ❖ Isaac asked his father where the lamb for the offering would come from,
- ❖ Abraham told Isaac' that God would provide the lamb for a burnt offering. When they arrived at the place God had commanded, Abraham build an altar. He bound Isaac, laid him on the altar upon the wood
- ❖ Abraham took the knife to slay his son but the angel of the Lord stopped him.
- ❖ Abraham saw a ram, which he offered instead of his son.



- ❖ He called the name of the place. The Lord will provide.
- ❖ The angel appeared to Abraham a second time and gave him promises because of his obedience.
- ❖ Abraham returned with his men to Beersheba.

(b) What are the differences between the Jewish and Traditional African practices of circumcision? (8 marks)

- ❖ In the Jewish community circumcision is for the male children only **whereas** in African practices, it is for both male and female.
- ❖ Among the Jews, circumcision is performed on babies of 8 days old: whereas in traditional African communities, it is done during adolescence stage.
- ❖ In African communities, it is a test of courage, whereas in Jewish community, it is a sign of covenant with God/sign of faith,
- ❖ Circumcision in African communities is a communal practice whereas among the Jews, only members of the immediate family participate.
- ❖ In Traditional African communities, initiates take up responsibilities while among the Jews, the initiates are too young to shoulder any responsibility.
- ❖ In traditional African communities circumcision is carried out during specific seasons while among the Jews, it is continuous.

(c) Give six ways through which Christians portray themselves in society today. (6 marks)

3. (a) Explain six ways used by King David to promote the worship of Yahweh in Israel.(12 marks)

- ❖ He brought the Ark of the Covenant to Jerusalem.
- ❖ He made Jerusalem a holy city where Israelites from all over the land came for important religious occasions.
- ❖ He composed the Psalms which were used in worship by the Israelites.
- ❖ He showed respect to the prophets of Yahweh/listened to their messages.
- ❖ He wanted to build a temple for God/made preparations for its construction.
- ❖ When he made mistakes, he asked for Yahweh's forgiveness/repented.
- ❖ He sought for God's guidance in whatever he wanted to do
- ❖ He entered into a covenant with God.
- ❖ He built altars / offered sacrifices

(b) Discuss four life skills used by prophet Elijah to fight against false religion in Israel.(8 marks)

- ❖ **Assertiveness** - He told Ahab that he was the cause of trouble in Israel.
- ❖ **Creative thinking** - He requested for a contest between the prophets of Baal and himself.
- ❖ **Decision making** - He killed the prophets/prophetesses of baal.
- ❖ **Self esteem** - He was convinced that God was on his side.
- ❖ **Negotiation** - Elijah asked the Israelites to choose between God and Baal.
- ❖ **Conflict resolution** - Through the contest, he convinced the Israelites that Yahweh was the true God.
- ❖ **Effective communication** - He explained to the people how the contest was to be carried out.
- ❖ **Self awareness** - He knew that he was the prophet of the true God/ he had confidence in himself.



4. (a) Describe three groups of true prophets in the Old Testament.

(6 marks)?

- ❖ Major prophets-their messages/ books / are elaborate
- ❖ Minor prophets- they have short / brief messages
- ❖ Canonical prophets- they are prophets whose utterances are recorded in books that bear their names
- ❖ Non- Canonical prophets – they are prophets whose oracles / messages have been compiled by other authors
- ❖ Cultic/ early prophets- they are prophets whose duties were associated with places of worship
- ❖ Early prophets were sent by God for specific tasks e.g. Moses

(b) Give six similarities between the Traditional African prophets and the true prophets in the Old Testament.(6 marks)

- ❖ Both predicted future events/ disasters
- ❖ Both acted as mediators between God and the people
- ❖ Both had supernatural powers to exercise their duties
- ❖ Both had a personal relationship with God/ received revelations through visions/ dreams
- ❖ They were religious leaders who could offer sacrifices/ prayers
- ❖ Both played an advisory role to the political leaders/ acted as the conscience of the leaders
- ❖ Both urged their people to be morally upright / condemned evil in society
- ❖ They led exemplary lives / were role models
- ❖ In both cases there were prophets and prophetesses

**(c) Identify eight problems experienced by church leaders in their work.
(8 marks)**

- ❖ Church leaders are rejected/ persecuted
- ❖ They have rivalry among themselves / inferiority / superiority complex
- ❖ They experienced discrimination based on nepotism / tribalism/ gender status
- ❖ There is hypocrisy among church members / religious syncretism
- ❖ Inadequate finance / materials for their work/ poverty
- ❖ They encounter temptations in their duties
- ❖ They encounter language barriers while spreading the word of God
- ❖ There is conflicting interpretation of the Bible
- ❖ There is political interference in their work
- ❖ They are faced with competition from false prophets/ cults
- ❖ Permissiveness in society hinders their work
- ❖ Poor infrastructure makes it difficult for them to access some areas
- ❖ Insecurity / hostility



5. (a) Describe the meaning of the symbolic act of buying land by the Prophet Jeremiah. (8 marks)

- ❖ It showed the people of Judah still had a future despite the coming crisis/Judah will regain freedom after conquest.
- ❖ It was assurances that the people would be restored back to their homeland/reclaim their land.
- ❖ It demonstrated that the people would resume their normal lives/construct homes/cultivate land/own property.
- ❖ Divine judgment was not an end in itself.
- ❖ Restoration was to take place at God's own time/God was to determine when the people would be restored back.(Time).
- ❖ The people had to wait patiently for their return from exile.
- ❖ It showed that God was loving/faithful/was to keep his promise of restoration/bring them back to their ancestral land.
- ❖ It made them feel secure/they were not to lack anything

(b) Explain the challenges faced by the Prophet Jeremiah during his ministry.(7 marks)

- ❖ He was rejected by his own family/relatives.
- ❖ People made false accusations against him.
- ❖ He was threatened with death because of speaking for God.
- ❖ He lived a lonely solitary life/was commanded to neither marry nor attend any social gathering.
- ❖ His message was rejected by the Israelites.
- ❖ He went through spiritual struggle as he saw the evil prosper while the righteous suffered.
- ❖ He was physically assaulted/ beaten.
- ❖ The enemies attempted to kill him/He was put in a muddy cistern.
- ❖ He was humiliated in public/mocked.
- ❖ He was imprisoned/ jailed.
- ❖ He was arrested and put on trial.

(c) Give five ways through which Christians settle disagreements among themselves.(5 marks)

- ❖ They pray over the issue/problem
- ❖ They offer guidance and counseling to the affected
- ❖ Paying visits/talking to the offender/fellowship
- ❖ By involving church leaders as arbitrators.
- ❖ Forgiving the one who has wronged the other/asking for forgiveness
- ❖ Willingness by the offender to accept the mistakes made/accepting liability.
- ❖ Withdrawing some privileges for a period of time so that one can reform
- ❖ By sharing meals /eating together
- ❖ Through shaking of hands/accepting a greeting.



6. (a) Explain the significance of rituals conducted during the naming ceremonies in Traditional African Communities. (10 marks)

- ❖ Bathing of the baby sets in the beginning of new life
- ❖ Shaving of the mother and baby's hair symbolizes new status
- ❖ Choosing of the appropriate name to give the baby is for identification/incorporation into the wider society/honour to the ancestors
- ❖ Feeding of the baby symbolized new life growth
- ❖ Holding of the baby by members of the community shows concern for it/shared responsibility by the extended family
- ❖ Saying prayers/words of blessings for the mother and baby signifies long life
- ❖ Slaughtering of animals is a way of thanksgiving to ancestors/God
- ❖ Feasting is a sign of joy/socialism/welcoming the baby/acceptance
- ❖ Giving of presents to the baby/mother is a sign of good will/ownership of property
- ❖ Wearing of charms signifies protection for the baby/mother

(b) Which moral values were acquired during marriage in Traditional African Communities? (5 marks)

- ❖ Faithfulness/loyalty/obedience
- ❖ Respect/courtesy
- ❖ Responsibility/hard work
- ❖ Hospitality/kindness
- ❖ Tolerance/perseverance/endurance/patience
- ❖ Love
- ❖ Co-operation/unity
- ❖ Humility
- ❖ Honesty
- ❖ Integrity
- ❖ Courage

(c) Give reasons why Traditional African Communities feared death.

- ❖ It disrupts the rhythm of human life/activity
- ❖ It is irrevocable/inescapable
- ❖ It brings impurity to the family
- ❖ It deprives the community of the individuals
- ❖ It involves too many rituals
- ❖ It comes unannounced
- ❖ It separates one from the loved ones/marks the end of life on earth
- ❖ Nobody knows about the life after death
- ❖ It may cause misunderstanding in the community
- ❖ Death rites reveal people's characteristics
- ❖ It brings poverty to the family involved



C.R.E.PAPER 2

1.(a) Narrate the visit of the Angel to the shepherds on the night Jesus was born. (7 marks)

- ❖ The shepherds were looking after their flocks in the field at night
- ❖ The angel appeared to them
- ❖ The glory of the lord shone around them
- ❖ They were filled with fear
- ❖ The angel reassured them/ told them not to fear
- ❖ He told them of the Good News of the birth of Jesus
- ❖ They were told where to find baby Jesus
- ❖ The angel gave them a sign on how they would find Jesus
- ❖ There appeared a host of angels singing/ praising God
- ❖ The angel left them/ went back to heaven
- ❖ The shepherds went to Bethlehem/ found baby Jesus

(b) Outline the differences between the work of John the Baptist and that of Jesus Christ.(8 marks)

- ❖ John the Baptist preached mainly in the wilderness/ the desert of Judah, while Jesus preached in the synagogues/ homes cities/ towns/ temple
- ❖ John the Baptist called people to repentance, while Jesus forgave/ died for their sins
- ❖ John the Baptist was Baptist with water, but Jesus was baptized with the Holy spirit/ fire
- ❖ John the Baptist lived the life of a Nazarite, while Jesus mixed freely with all people
- ❖ The emphasis of John the Baptist preaching was in the promised Messiah, while that of Jesus was about the kingdom of God
- ❖ John the Baptist's message was direct whereas Jesus preached in parables
- ❖ While John the Baptist disciples fasted, the disciples of Jesus ate and drank
- ❖ John the Baptist did not perform miracles, but Jesus ministry was full of signs/ wonders
- ❖ John the Baptist was the fore runner / prepared the way while Jesus fulfilled/ was the messiah

(c) What five lessons do Christians learn about family relationships from the occasion when Jesus accompanied His parents for the Passover festival? (5 marks)

- ❖ Christians should obey their parents
- ❖ Parents should teach their children about God
- ❖ Parents should provide opportunities for their children to mix with others
- ❖ Parents should love/ be concerned about their children
- ❖ Family ties should not be broken/ families should live in unity
- ❖ God's work takes priority over the family
- ❖ Parents should recognize their children's talents/ abilities
- ❖ There should be open communication among family members



1.(a) Narrate Jesus' baptism by John the Baptist in the river Jordan in Luke 3: 21-22.(5 marks)

- ❖ All the people had been baptised by John.
- ❖ Jesus was also baptized.
- ❖ Jesus then started praying.
- ❖ The heavens opened.
- ❖ The Holy Spirit descended upon Jesus in a bodily form as a dove.
- ❖ Then a voice came from heaven.
- ❖ Then it said, 'thou art my beloved son with thee am well pleased.'

(b) Identify four teachings by John the Baptist. (8 marks)

- ❖ He told the people to repent and be baptised for forgiveness of their sins/he asked people to prepare the way for the Lord.
- ❖ He told them to be faithful/obedient to God and not to pride in Abraham as their ancestor.
- ❖ He warned them of God's punishment on sin.
- ❖ He encouraged the rich to share with the needy.
- ❖ He told the tax collectors not to steal/be honest.
- ❖ He told the soldiers to be contented with their wages/stop greed.
- ❖ He told the soldiers to stop robbing/accusing people falsely/should be truthful.
- ❖ He told them that the messiah who was to come after him was mightier/He was unworthy to untie his sandals.
- ❖ The Messiah would baptize the people with fire and the Holy Spirit.
- ❖ The Messiah would separate the good from the evil/the evil would be punished.
- ❖ He condemned Herod for his adulterous life/marrying his brother's wife.

(c) Give reasons why Christians find it difficult to apply the teachings of John the Baptist in their lives. (7 marks)

- ❖ They lack faith in God's word.
- ❖ Divisions along tribal/racial/denominational lines affect unity among Christians.
- ❖ Clinging to the past/inability to abandon the old/previous life style.
- ❖ Negative attitude by the rich towards the needy/poor.
- ❖ The influence of the mass media/moral decadence in society.
- ❖ Some Christians lack what to share with others/poverty.
- ❖ There is rampant corruption in the society.
- ❖ The emergence of cult leaders/false prophets in the society/lack of role models.
- ❖ Some Christians lead hypocritical lives.
- ❖ Peer pressure.

3.(a) Explain the healing of the ten Lepers. (7 marks)

- ❖ Jesus was on his way to Jerusalem
- ❖ He met ten lepers/men who were suffering from leprosy.
- ❖ The men stood at a distance/shouted at Jesus to have mercy on them.
- ❖ Jesus told them to go and show themselves to the priest.
- ❖ As they went, they were healed/cleansed.
- ❖ One of them, a Samaritan came back praising God/thanked Jesus
- ❖ Jesus asked where the other nine were.



- ❖ Jesus wondered at the fact that only a foreigner returned to give praise to God.
- ❖ Jesus asked him to rise/go his way for his faith had made him well.

(b) Discuss Jesus' teaching on the power of faith. (8 mks)

- ❖ Faith gives believers strength to overcome temptations/sin.
- ❖ It enables them to forgive each other constantly
- ❖ It makes even the weakest strong.
- ❖ Enables believers to perform their duties without expecting material rewards.
- ❖ Faith enables believers to work tirelessly because there is a lot of work to be done.
- ❖ Faith leads to physical healing.
- ❖ Faith enables believers to show gratitude to God for his blessings/benefits they have received from Him.
- ❖ It enables them to experience the kingdom of God in their hearts.
- ❖ It enables believers to enter the kingdom of God/receive eternal life.

(c) What five lessons can Christians learn from the parable of the ten pounds? (3 marks)

- ❖ Christians should use the abilities that God has given them for the benefit of others.
- ❖ Christians will be rewarded according to their performance.
- ❖ Christians have been given different gifts/abilities by God.
- ❖ Christians will give an account of how they used their abilities.
- ❖ Christians need to be obedient/ honest.
- ❖ God expects Christians to use opportunities provided for His glory.
- ❖ Christians will lose their abilities if not put to use/punished.

4.(a) Describe how the unity of believers is expressed in the body of Christ. (8 marks)

- ❖ St. Paul describes the believers as the body of Christ
- ❖ Christ is the head of the church
- ❖ The believers form parts of the body.
- ❖ The body has different organs. In the same way the Church has different members
- ❖ They all need to work together for the well being of the church.
- ❖ Every part of the body is needed to make it whole / all parts are interdependent/ one part cannot be without the other.
- ❖ The different church members are given different spiritual gifts by the Holy Spirit to carry out God's work.
- ❖ Believers are united through baptism in the Holy Spirit.

(b) Give six reasons why the use of the gifts of the Holy Spirit brought disunity in the church at Corinth. (6 marks)

- ❖ The people who had the gifts of speaking in tongues despised those who did not
- ❖ There was competition in speaking in tongues
- ❖ There was no interpretation of tongues hence messages were not understood
- ❖ People did not show love to one another as they used the gifts of the Holy



- ❖ There was disorder/ confusion in worship as people with different gifts tried to outdo one another
- ❖ People did not use their gifts for the growth/ development of the church
- ❖ Gifts such as prophecy/ teaching/ preaching were looked down upon

(c) State ways in which Christians in Kenya demonstrate the New Testament teaching on unity. (6 marks)

- ❖ Christians meet for prayers/fellowship together.
- ❖ They observe a day of worship to honour God.
- ❖ They share the Holy communion/ meals.
- ❖ They help those who are poor/needy
- ❖ They solve problems affecting the Church members
- ❖ They hold joint crusades/ rallies
- ❖ They also cooperate by providing Christian programmes in the mass media/ resource materials.
- ❖ They speak in one voice to condemn evil in society

5.(a) Discuss four causes of unemployment in Kenya today.(8 marks)

- ❖ High population whereby there are too many people for the available job opportunities.
- ❖ Lack of money to start individual businesses/unavailability of finances.
- ❖ Some people lack skills which make them not to be absorbed in the job market.
- ❖ Rural-urban migration:- many people are congested in towns where job opportunities are limited.
- ❖ Foreign aid:- dependence on foreign aid causes the donors to give conditions of employment, that is lean service.
- ❖ Selfishness/greed:- some Kenyans have more than two jobs, while others lack.
- ❖ Education system:- many Kenyans prefer white collar jobs after school and because of stiff competition for available spaces, many remain unemployed.
- ❖ Negative attitude towards work:- some Kenyans lack the initiative to do or participate in economic activities/just idle around.
- ❖ Unequal distribution of wealth: Some regions have more resources that create employment than others.
- ❖ New technological advances that has led to retrenchment.
- ❖ Bribery/corruption is a social evil that denies jobs to those qualified

(b) Outline eight causes of disagreements between the employer and employees in Kenya today (8 marks)

- ❖ Lack of respect to the employer by employees.
- ❖ Employees not given time for leisure/leave.
- ❖ Poor working conditions/environment/ Poor/low remuneration.
- ❖ When the employees do not receive wages/not paid in time.
- ❖ When employers fail to consider the welfare of employees/allowances.
- ❖ When employees fail to accomplish tasks within the expected time/poor time management.
- ❖ When employees are not allowed to join trade unions.
- ❖ Unequal chances of promotion/discrimination by the employer/lack of promotion.
- ❖ Sexual harassment by the employer.



- ❖ Differences in religious affiliation between employer and employees.
- ❖ Racial/tribal/ ethnic differences may bring conflict.
- ❖ Misuse/ destruction of property by the employee.
- ❖ Divulging of secrets of the employer/organization.

7.(c) Identify four roles a Christian should play during a strike. (4 marks)

- ❖ Not to take part in strikes.
- ❖ Encourage other people to find better means of solving problems.
- ❖ To inform the authority of any grievances if they are not aware/mediate.
- ❖ To pray for a solution to the problem/ seek God's guidance for a solution to the problem.
- ❖ Should not take part in violent demonstrations/ encourage peaceful demonstrations.
- ❖ To report the matter to the nearest police station.

6.(a) Outline the rights of a Kenyan citizen. (7 marks)

- ❖ Right to life/ live
- ❖ Right to have basic needs/ food/ shelter/ clothing
- ❖ Right to receive education
- ❖ Right to marry/ raise up a family/ belong to a family
- ❖ Right to have freedom of association/ assembly
- ❖ Right to freedom of speech/ receive information/ expression
- ❖ Right to own property
- ❖ Freedom of worship
- ❖ Right to liberty/ movement
- ❖ Right to work/ earn a living
- ❖ Right to medical care/ health
- ❖ Right to security/ protection by law
- ❖ Freedom of conscience / right to vote

(b) Explain the importance of paying taxes as a Christian to the Government of Kenya.(5 marks)

- ❖ To emulate Jesus who paid tax to the Roman authorities
- ❖ To heed Jesus instructions to respect the civil authorities
- ❖ Christians pay taxes in order to receive service from the government
- ❖ To provide essential services
- ❖ Christians pay taxes as a sign of patriotism
- ❖ Christians pay taxes as a way of sharing their wealth/ resources with others
- ❖ It is their duty to pay taxes to the government
- ❖ To enable the government to meet its financial obligations

(c) Discuss four ways in which the church could help to eradicate crime in Kenya.(8 marks)

- ❖ Providing guidance and counselling
- ❖ Preaching about love for one another in the society
- ❖ Rehabilitating law breakers
- ❖ Providing jobs/ offering training opportunities to the people
- ❖ Giving loans to people to start/ run business
- ❖ Providing recreational facilities/ organizing recreational activities for the youth
- ❖ Reporting criminals to the law enforcement authorities



- ❖ *Disciplining deviant members of the church*
- ❖ *Participating in government programmes established to fight crime (e.g. community policing)*
- ❖ *Obeying the laws of the country/ being role models*
- ❖ *Praying for peace/ harmony*
- ❖ *Teaching responsible parenthood*
- ❖ *Providing basic needs for the needy*
- ❖ *Condemning evil practices in the society/ teaching against crime.*



2016 CHEMISTRY

PAPER 1

No. 1. A student investigated the effect of an electric current by passing it through some substances. The student used inert electrodes, and connected a bulb to the circuit. The table below shows the substances used and their states.

Experiment	Substance	State
1	Potassium Carbonate	Solid
2	Copper (II) sulphate	Solution
3	Sugar	Solution
4	Lead (II) iodide	Molten

(a) In which experiment did the bulb not light? (1 mark)

- ❖ 1 and 3

(b) Explain your answer in (a) above. (2 marks)

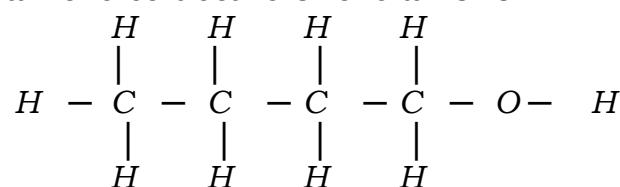
- ❖ In 1 ions K_2CO_3 are held rigidly within the crystal cannot move (no mobile ions)
- ❖ In 3 sugar exist as molecule hence no mobile ions.

No. 2. An alkna has the following composition by mass: hydrogen 13.5%, oxygen 21.6% and carbon 64.9%

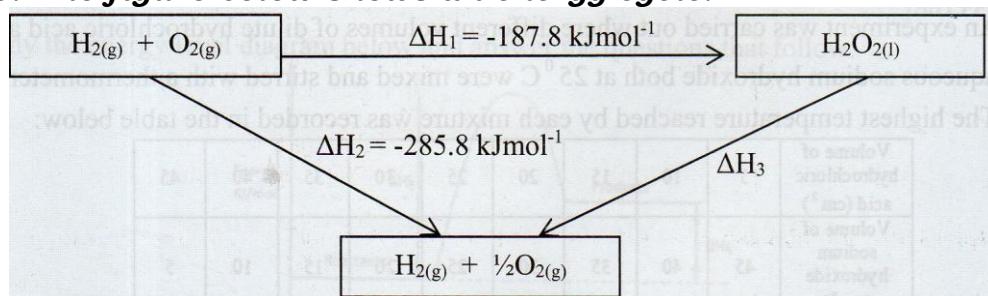
(a) Determine the empirical formula of the alcohol ($C=12.0$; $H=1.0$; $O=16.0$). (2mks)

- ❖ [E.F. = C_4H_9OH]

(b) Given that empirical formula and the molecular formula of the alkanol are the same, draw the structure of the alkanol



No. 3. The figure below shows an energy cycle.



Give the name of the enthalpy change ΔH_1 . (1 mark)

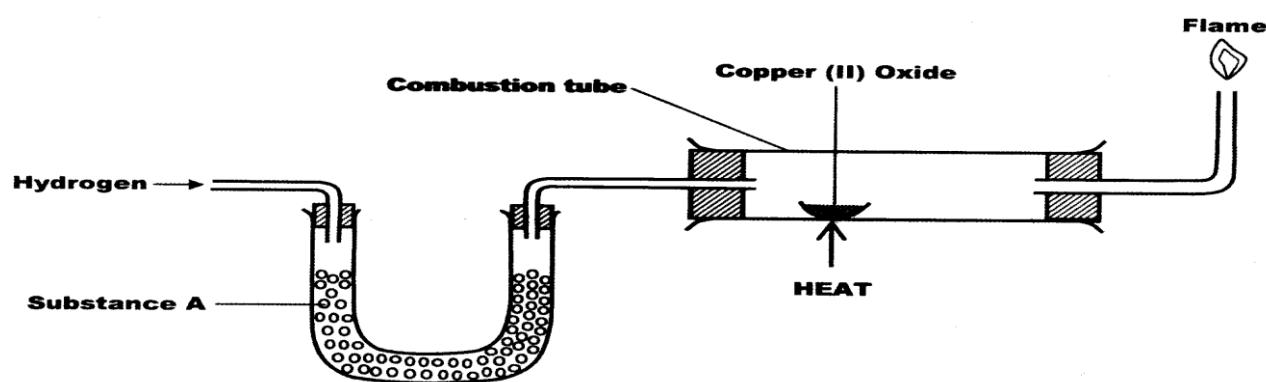
- ❖ Enthalpy of formation of hydrogen peroxide or enthalpy of formation

(b) Determine the value of ΔH_3 . (2 marks)

- ❖ $\Delta H_1 + \Delta H_3 = \Delta H_2 \implies \Delta H_2 = \Delta H_2 - \Delta H_1$
- ❖ $= -285.8 - (-187.8) = 187.8 - 285.8 = -98 \text{ kJmol}^{-1}$



4. The set up below was used to investigate the reaction between dry hydrogen gas and copper



(a) Name substance A. (1 mark)

- ❖ Fused anhydrous calcium chloride
- ❖ Cao: fused CaCl_2

(b) State the observation made in the combustion tube. (1 mark)

- ❖ Black CuO changes to brown Cu metal
- ❖ Formation of colourless liquid on the cooler parts of the combustion tube.

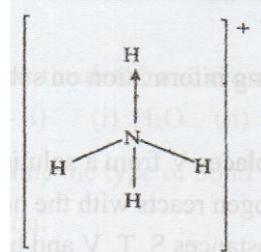
(c) Explain the observation stated in (b) above. (1 mark)

- ❖ Copper (II) oxide is reduced by hydrogen to copper metal while hydrogen is oxidized to water / CuO reduced to Cu / H_2 Oxidized to H_2O

No. 5. Starting with sodium metal, describe how a sample of crystals of sodium hydrogen carbonate may be prepared. (3 marks)

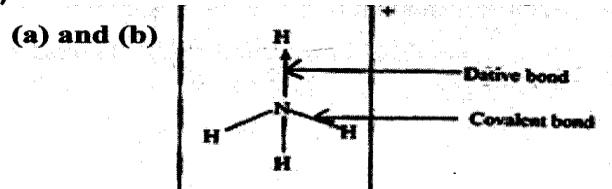
- ❖ React sodium with water to get sodium hydroxide. Bubble into this solution excess carbon (IV) oxide to get sodium hydrogen carbonate

No. 6. Ammonium ion has the following structure



Label on the structure:

- (a) covalent bond;**
- (b) coordinate (dative) bond.**



No. 7. When 8.53g of sodium nitrate were heated in an open test-tube, the mass of oxygen gas produced was 0.83 g . Given the equation of the reaction as $2\text{NaNO}_3(s) \rightarrow 2\text{NaNO}_2(s) + \text{O}_2(g)$ Calculate the percentage of sodium nitrate that was converted to sodium nitrite. (Na = 23.0, N = 14.0, O = 16.0) (3 marks)

$$\text{Moles of oxygen} = 0.83 = 0.026 \left(\frac{1}{2}\right) / 0.0259375$$

$$\begin{aligned}\text{Moles of NaNO}_3 &= 2 \times 0.026 / 0.051875 \\ &0.05 \left(\frac{1}{2}\right) / 0.051875\end{aligned}$$

$$\text{R. M. M } \text{NaCO}_3 = 85 \left(\frac{1}{2}\right)$$

$$\text{Mass of NaNO}_3 = \text{converted} \frac{0.052 \times 85}{4.41} / 4.4094 \left(\frac{1}{2}\right)$$

$$\frac{4.41 \times 100}{8.53}$$

$$= 51.693\% = 51.7\%$$

No. 8. Aluminium is both malleable and ductile.

(a) What is meant by?

(i) Malleable: (1 mark)

- ❖ Can be hammered into sheets.

(ii) Ductile (1 mark)

- ❖ Can be drawn into wires.

(b) State One use of aluminium based on:

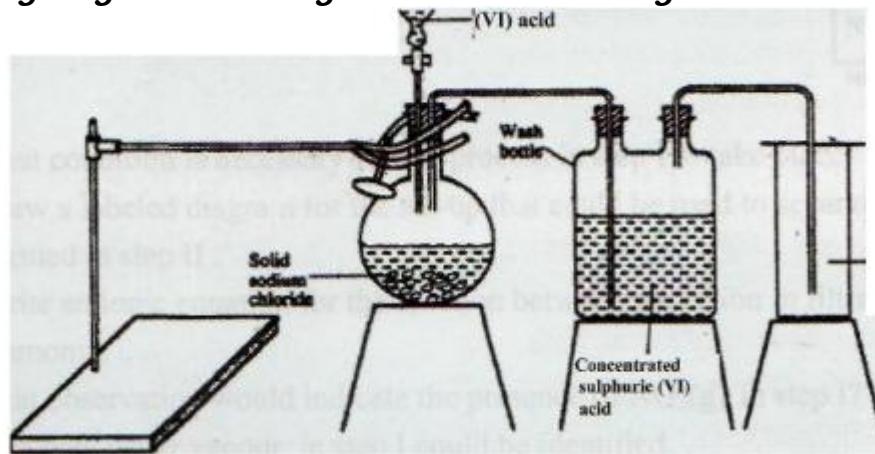
(i) malleability (½ marks)

- ❖ Making of sufurias/ motor vehicle parts/ aeroplane parts, window / door frames, cups, plates, packaging materials, pans, making sheets/ roof.

(ii) ductility (½ marks)

- ❖ electricity cables/ wires.

No. 9. The diagram below represents the set-up that was used to prepare and collect hydrogen chloride gas in the laboratory.



State the purpose of concentrated sulphuric (VI) acid in the wash bottle.

(1 mark)

- ❖ It is a drying agent.



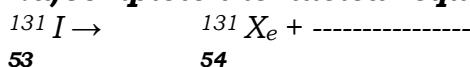
Write an equation for the reaction between dry hydrogen chloride gas and heated iron. (1 mark)



No. 10 . Iron (III) oxide was found to be contaminated with copper (II) sulphate. Describe how a pure sample of iron (III) oxide can be obtained. (3 marks)

- ❖ Add water to dissolve $CuSO_4$, Fe_2O_3 doesn't dissolve
- ❖ Filter out the undissolved Fe_2O_3
- ❖ Wash the residue with plenty of water to remove traces of the filtrate.
- ❖ Dry the residue between the filter papers

No. 11.a) Complete the nuclear equation below: (1 mark)



(b) The half-life of I is 8 days.

Determine the mass of ^{131}I remaining if 50 grammes decayed for 40 days (1 mark)

53

❖ 50g 25g 12.5g 6.25g 3.125g 1.5625g
 Or $NW = 0.4(\frac{1}{2})^n$
 $NW = 50 \times (\frac{1}{2})^5 = 1.5625g$

(c) Give one harmful effect of radioisotopes. (1 mark)

- ❖ Instant / cause death
- ❖ Cause cancer
- ❖ Cause gene mutation

No. 12. During an experiment, chlorine gas was bubbled into a solution of potassium iodide.

(a) State the observations made. (1 mark)

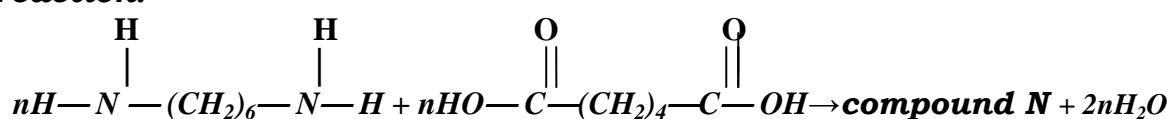
- ❖ Solution turned from colourless to dark brown
- ❖ Greenish yellow / pale green colour of Cl_2 disappears
- ❖ Brown solution / black solid is deposited

(b) Using an ionic equation, explain why the reaction is redox. (2 marks)

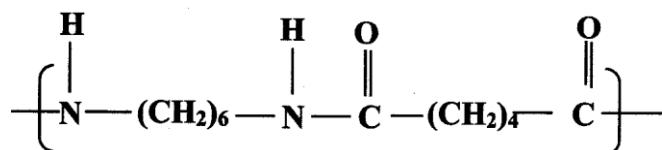
- ❖ $Cl_2 (aq) + 2I^-_{(aq)} \rightarrow I_2 (aq) + 2Cl^-_{(aq)}$
- ❖ **Explanation:** Iodine oxidation state changes from -1 to 0 hence oxidation while Cl_2 0.5 changes from 0 to -1 hence reduction / increase is ON and decrease is OFF or movement of electrons Cl_2 gains e's where lose



No. 13.(a) Draw the structure of compound N formed in the following reaction.



ANSWER

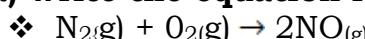


(b) Give one use of compound N. (1mk)

- ❖ Making synthetic fibres such as for: - Ropes
- ❖ Blouses
- ❖ Stockings
- ❖ Undergarments Trousers

No. 14. When fuels burn in the internal combustion engine at high temperature, one of the products formed is nitrogen (II) oxide.

(a) Write the equation for the formation of nitrogen (II) oxide. (1 mark)



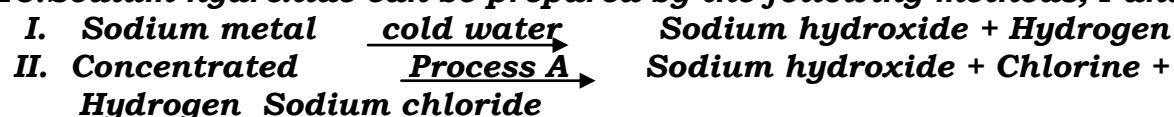
(b) Give a reason why nitrogen (II) oxide is not formed at room temperature. (1 mark)

- ❖ Nitrogen atoms in the molecule are joined by strong triple covalent bond that requires a lot of energy to break than provided at room temperature

(c) Describe how formation of nitrogen (II) oxide in the internal combustion engine leads to gaseous pollution. (2 mark)

- ❖ Nitrogen (II) oxide reacts with oxygen in air to form nitrogen (IV) oxide that dissolves in water vapour causing acid rain.

15. Sodium hydroxide can be prepared by the following methods; I and II.



(a) Name one precaution that needs to be taken in method I. (1 mark)

- ❖ Small piece of sodium metal (pea size) with a lot of water
- ❖ Perform the experiment wearing goggles.

(b) Give the name of process A. (1 mark)

- ❖ Electrolysis

(c) Give one use of sodium hydroxide. (1 mark)

- ❖ Manufacture of paper (soften), soaps and detergents
- ❖ Fractional distillation of liquid air
- ❖ Extraction of aluminium metal
- ❖ Manufacture of bleaching agents eg NaOCl paper, textiles, oil refinery
- ❖ Making herbicides on weed killers
- ❖ Textile industry to soften



No. 16. The atomic number of sulphur is 16. Write the electron arrangement of sulphur in the following: (2 marks)

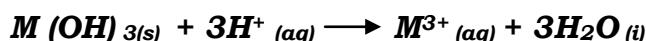
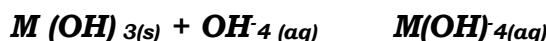
(a) H₂S

❖ 2.8.8

(b) SO₃²⁻

❖ 2.8.2

No. 17. A compound whose general formula is M(OH)₃ reacts as shown by the equation below.



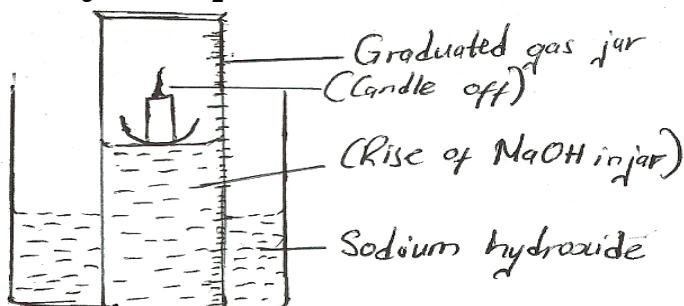
(a) What name is given to compounds which behave like M(OH) 3 in the two reactions. (1 mark)

❖ Amphoteric

(b) Name two elements whose hydroxides behave like that of M. (2 marks)

❖ Lead, Zinc and Aluminium

No. 18. A water trough, aqueous sodium hydroxide, burning candle, watch glass and a graduated gas jar were used in an experimental set up to determine the percentage of active part of air. Draw a labeled diagram of the set up at the end of the experiment.



No. 19. In an experiment on rates of reaction, potassium carbonate was reacted with dilute sulphuric (VI) acid.

(a) What would be the effect of an increase in the concentration of the acid on the rate of the reaction? (1 mark)

❖ The rate of reaction increases. This is because when the concentration is high: the number of collisions between particles is also high hence reacts faster,

(b) Explain why the rate of reaction is found to increase with temperature. (2 mark)

❖ Increase in temperature results in increase in the kinetic energy of the particles. This makes particles move faster and collide frequently leading to faster rate of reaction.



No. 20. *60 cm³ of oxygen gas diffused through a porous partition in 50 seconds. How long would it take 60cm³ of sulphur (IV) oxide gas to diffuse through the same partition under the same conditions? (S = 32.0, O = 16.0) (3 marks)*

$$\frac{\text{Time for } \text{SO}_2}{\text{Time for } \text{O}_2}$$

$$= \sqrt{\frac{\text{R.M.MSO}_2}{\text{R.M.MO}_2}}$$

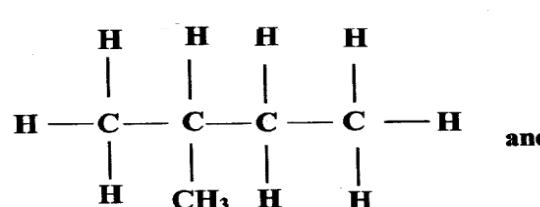
$$\begin{array}{ll} \text{R.M.M of SO}_2 & = 64 \\ \text{R.M.M of O}_2 & = 32 \end{array}$$

$$\frac{\text{Time for } \text{SO}_2}{50}$$

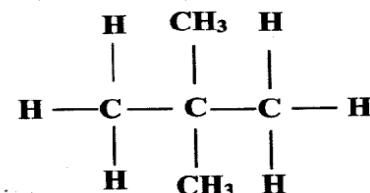
$$= \sqrt{\frac{64}{32}}$$

$$\text{Time for } \text{SO}_2 = 70.7 \text{ seconds}$$

No. 21. *Draw and name the isomers of pentane.(3 marks)*

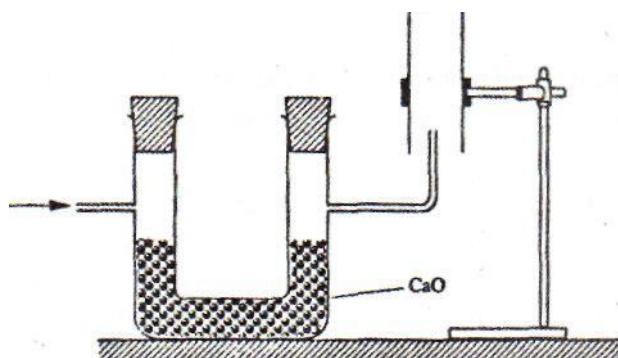


Name: 2-methylbutane



Name: 2,2 dimethylpropane

No. 22. *The set-up below was used to collect a dry sample of a gas*



Give two reasons why the set-up cannot be used to collect carbon (IV) oxide gas. (2 marks)

- ❖ It is denser than air
- ❖ It will react with calcium oxide since CO₂ is acidic and CaO is basic



No. 23. Given the following substances: wood ash, lemon juice and sodium chloride.

(a) Name one commercial indicator that can be used to show whether wood ash, lemon juice and sodium chloride are acidic, basic or neutral. (1 mark)

(b) Classify the substances in 15(a) above as acids, bases or neutral.

(2 marks)

No. 24. Describe how a solid sample of potassium sulphate can be prepared starting with 200cm³of 2M potassium hydroxide. (3 marks)

❖ Vol of 2KOH = 100cm³ (or mols = $\frac{0.4}{2} = 0.2$)

- ❖ Mix the KOH_(aq) and H₂SO₄ acid
- ❖ Concentrate the mixture/ heat the mixture
- ❖ Crystallise the solution (or heating the solution to dryness)
- ❖ Dry crystals

No. 25. Charcoal is a fuel that is commonly used for cooking. When it burns it forms two oxides.

(a) Name the two oxides. (2 marks)

- ❖ Carbon (IV) oxide / CO₂/ carbon dioxide
- ❖ Carbon (II) oxide/ CO/ carbon monoxide

(b) State one use of the two oxides. (1 mark)

- ❖ Fire extinguisher/ photosynthesis
- ❖ Refrigeration
- ❖ Solvay process
- ❖ Fizzy drinks
- ❖ Food preservation
- ❖ Extraction of metals
- ❖ Manufacture of methanol
- ❖ Manufacture of fuel (water, gas)

NO. 26. Hydrogen sulphide is a highly toxic and flammable gas. It is normally prepared in a fume chamber.

(a) Name two reagents that can be used to prepare hydrogen sulphide in the laboratory.(1 mark)

- ❖ Iron (II) sulphide or conc sulphide / copper sulphide (Accp formula: FeS/ HCl)
- ❖ Hydrochloric acid or lead (II) sulphide/ HNO₃

(b) One of the uses of hydrogen sulphide is to produce sulphur as shown in the following equation: 2H₂S(g) + SO₂ (g) -> 3S(s) + 2H₂O(l)

Identify the reducing agent in this reaction and give a reason for your answer. (1 mark)

- ❖ Hydrogen sulphide
- ❖ The sulphur changes from -2 to zero/ (it reduces SO₂ to S) i.e. +4 to 0 / sulphur lost e's in the H₂S to form sulphur

(c) Other than production of sulphuric (VI) acid, state one commercial use of sulphur.(1 mark)

- ❖ Vulcanization of rubber
- ❖ Manufacture of sulphur drugs
- ❖ Manufacture of gun powder/ match sticks / explosives/ fungicides



No. 27. Describe an experimental procedure that can be used to extract oil from nut seeds. (2 marks)

- ❖ Crush grind using a pestle and mortar, add suitable solvent of propanone ethanol alcohol and stir to dissolve oil. Filter the mixture to obtain a solution of the oil. Leave the solution in the sun for propanone to evaporate leaving the oil.

No. 28 . A mixture contains ammonium chloride, copper (II) oxide and sodium chloride. Describe how each of the substances can be obtained form the mixture. (3 marks)

- ❖ Heat the mixture to sublime the NH_4Cl . Add water to dissolve the NaCl . Copper (II) oxide does not dissolve. Filter and evaporate the filtrate to obtain sodium chloride.

No. 29 . When a student was stung by a nettle plant, a teacher applied an aqueous solution of ammonia to the affected area of the skin and the student was relieved of pain. Explain. (2 marks)

- ❖ The product from nettle plant is acidic; aqueous ammonia solution being basic neutralize the acidic product



CHEMISTRY PAPER 2

No. 1. Use the information in the table below to answer the questions that follow. The letters do not represent the actual symbols of the elements.

Element	Atomic Number	Meltrng Point CC)
R	11	97.8
S	12	650.0
T	15	44.0
U	17	-102
V	18	-189
W	19	64.0

(a) Give reasons why the melting point of:

(i) S is higher than that of R; (1 mark)

- ❖ Metallic bonds in S are stronger than in R

(ii) V is lower than that of U. (2 marks)

- ❖ V is monoatomic while U is diatomic
- ❖ The Van der Waals force in V are weaker than in U

(b) How does the reactivity of W with Chlorine compare with that of R with chlorine? (2 marks)

Explain.

- ❖ W reacts more vigorously
- ❖ It is easier to lose the odur/valence electrons in W than in T
- ❖ W is more electropositive than R
- ❖ Reactivating of groups elements. Increases down the group

(c) Write an equation for the reaction between T and excess oxygen.

(1 mark)



(d) When 1.15g of R were reacted with water, 600cm³ of gas was produced. Determine the relative atomic mass of R. (Molar gas volume = 24 000 cm³). (3 marks)



$$\text{Moles of gas} = \frac{600}{24000} = 0.025 \text{ moles}$$

$$\text{Moles of R} = 2 \times 0.025 \\ = 0.05 \text{ moles}$$

$$\text{RAM} = \frac{1.15}{0.09} = 23$$

(e) Give one use of element V. (1 mark)

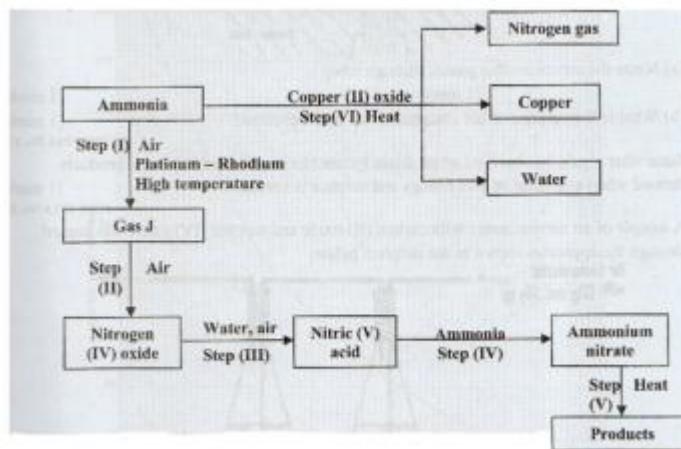
- ❖ Used in florescent bulbs / lumbs
- ❖ Used in arc welding
- ❖ Used in fire extinguishers
- ❖ Used as a preservative in museum



No. 2 .Describe the process by which Nitrogen is obtained from air on a large scale. (4 marks)

- ❖ Filter the air/ electrostatic precipitation/ Purify the air
- ❖ Pass air through NaOH in KOH to remove CO_2
- ❖ Cool to remove to remove water vapour
- ❖ Cool the remaining gases from a liquid air
- ❖ Perform fractural distillation of liquid air
- ❖ Nitrogen is collected at -196°C

(a) (b) Study the flow chart below and answer the questions that follow.



(i) Identify gas J.(1 mark)

- ❖ Nitrogen II Oxide (NO)

(ii) Using oxidation numbers, show that ammonia is the reducing agent in step (VI)(2 marks)

- ❖ $4\text{NH}_3(g) + 3 \text{CuO} \rightarrow 2\text{N}_2(g) + 3\text{H}_2\text{O}(l) + 3 \text{Cu}$
- ❖ Oxidation no of N in ammonia increases from -3 to 0
- ❖ Oxidation number of reducing agent increases
- ❖ Oxidation number Cu decreases from + 2 to 0 hence an oxidizing agent
- Ammonia is a reducing agent

(iii) Write the equation for the reaction that occurs in step (V). (1 mark)

- ❖ $\text{NH}_4\text{NO}_3(s) \text{ or } (\text{aq}) \rightarrow \text{N}_2\text{O}(g) + 2\text{H}_2\text{O}(g \text{ or } l)$

(iv) Give one use of ammonium nitrate. (1 mark)

- ❖ Fertilizer
- ❖ Explosive

(c) The table below shows the observations made when aqueous ammonia was added to cations of elements E, F and G until in excess.

Cation of	Addition of a few drops of Aqueous ammonia.	Addition of excess aqueous ammonia
E	White precipitate	Insoluble
F	No precipitate	No precipitate
G	White precipitate	Dissolves

(i) Select the cation that is likely to be Zn^{2+} (1 mark)

- ❖ G or G^{2+}

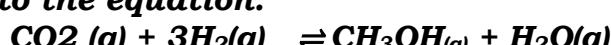


(ii) Given that the formula of the cation of element E is E^{2+} , write the ionic equation for the reaction between $E^{2+}(aq)$ and aqueous ammonia.

(1 mark)



No.3.(a) Methanol is manufactured from carbon (IV) oxide and hydrogen gas according to the equation:



The reaction is carried out in the presence of a chromium catalyst at 700K and 30kPa. Under these conditions, equilibrium is reached when 2% of the carbon (IV) oxide is converted to methanol

(i) How does the rate of the forward reaction compare with that of the reverse reaction when 2% of the carbon (IV) oxide is converted to methanol? (1 mk)

- ❖ Rate of forward reaction is equal to that of backward reaction

(ii) Explain how each of the following would affect the yield of methanol:

I Reduction in pressure (2mks)

- ❖ Production will reduce since equilibrium will shift backward so as to raise the pressure.

II Using a more efficient catalyst (2mks)

- ❖ No change in amount of methanol since a catalyst will help reaction to come to equilibrium

(iii) If the reaction is carried out at 500K and 30kPa, the percentage of carbon (IV) oxide converted to methanol is higher than 2%

I what is the sign of ΔH for the reaction? Give a reason (2mks)

- ❖ Negative: the reaction is exothermic since it requires low temperature to be fast.

II Explain why in practice the reaction is carried out at 700K but NOT at 500K (1mk)

- ❖ To ensure that the reacting particles possess more activation energy

(b) Hydrogen peroxide decomposes according to the following equation:



In an experiment, the rate of decomposition of hydrogen peroxide was found to be $6.0 \times 10^{-8} \text{ mol dm}^{-3} \text{ S}^{-1}$.

(i) Calculate the number of moles per dm³ of hydrogen peroxide that had decomposed within the first 2 minutes (2mks)

❖ No. of seconds = $2 \times 60 = 120 \text{ Sec}$

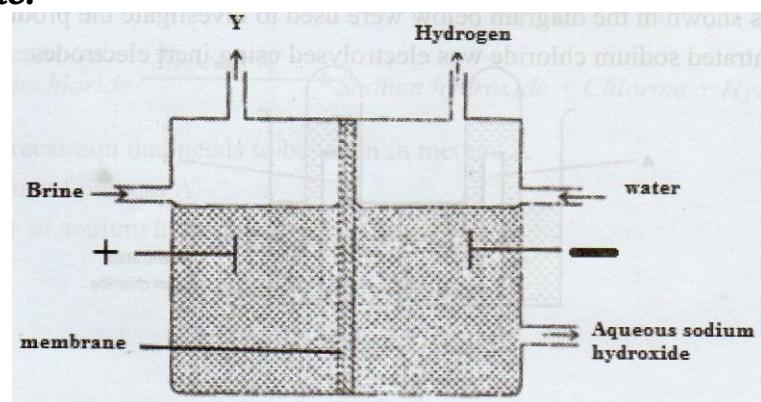
Moles of H_2O_2 decomposed
 $= 120 \times 6.0 \times 10^{-8} = 7.20 \times 10^{-6}$

(ii) In another experiment, the rate of decomposition was found to be $1.8 \times 10^{-7} \text{ mol dm}^{-3} \text{ S}^{-1}$. The difference in the two rates could have been caused by addition of a catalyst. State, giving reasons, one other factor that may have caused the difference in two rates of decomposition (2 marks)

- ❖ Concentration of H_2O_2 may be higher since concentration increases the rate of reaction.



No.4.The set up below can be used to produce sodium hydroxide by electrolysing brine.



(i) Identify gas Y. (1mk)

- ❖ Chlorine or Cl

(ii) Describe how aqueous sodium hydroxide is formed in setup above. (2mks)

- ❖ Na^+ and H^+ migrate to the cathode. The H^+ ions are preferentially discharged liberating hydrogen gas. Cl^- and OH^- migrate to anode. The Cl^- are preferentially discharged liberating Cl_2 gas. Na^+ migrate to anode through the membrane , they combine with OH^- to form NaOH

(iii) One of the uses of sodium hydroxide is in manufacture of soaps. State one other use of sodium hydroxide. (1mk)

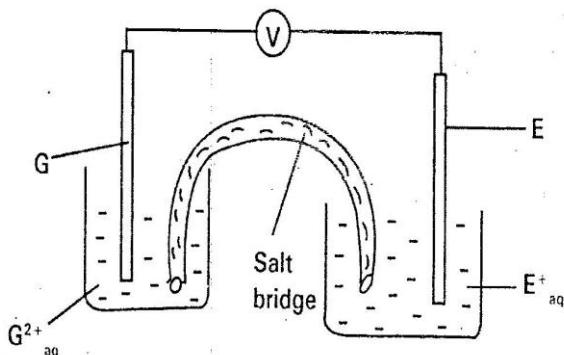
- ❖ Glass making
- ❖ Separating components of air.
- ❖ Manufacture of soda lime, NaOCl and NaClO_3
- ❖ Purification of bauxite
- ❖ Used in science lab.

(b) Study the information given in the table below and answer the questions that follow.

Half reactions	Electrode potential $E^\theta \text{V}$
$D_{(aq)}^{2+} + 2e \longrightarrow D_{(s)}$	-0.13
$E_{(aq)}^+ + e \longrightarrow E_{(s)}$	+0.80
$F_{(aq)}^{3+} + e \longrightarrow F_{(aq)}^{2+}$	+0.68
$G_{(aq)}^{2+} + 2e \longrightarrow G_{(s)}$	-2.87
$H_{(aq)}^{2+} + 2e \longrightarrow H_{(s)}$	+0.34
$J_{(aq)}^+ + e \longrightarrow J_{(s)}$	-2.71



(i) Construct an electrochemical cell that will produce the highest emf. (3mks)



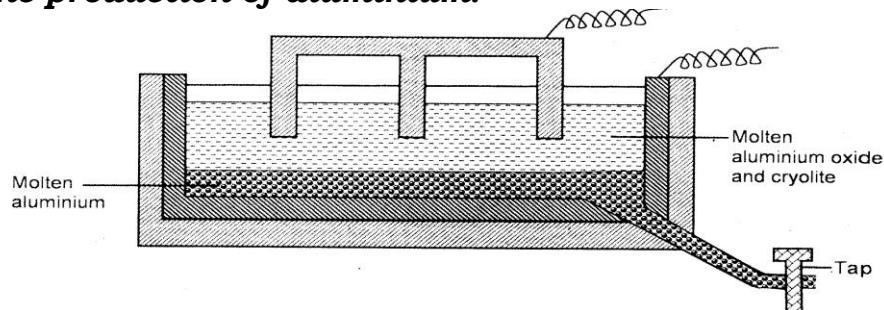
(ii) Calculate the emf of the cell constructed in (i) above. (2mks)

$$\diamond \quad E = E_{red} - E_{ox} = + 0.80 - (-2087) = + 3.67V$$

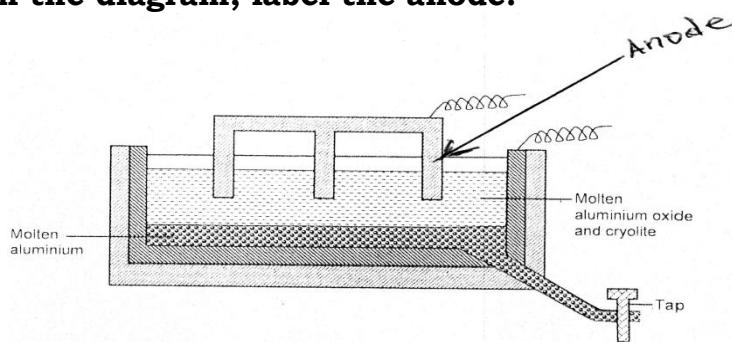
(iii) Why is it not advisable to store a solution containing E^+ ions in the container made of H? (2mks)

$\diamond \quad H$ has a high tendency to lose electrons hence will react with the solution by displacing E^+ ions

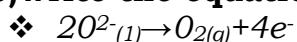
No.5. The diagram below represents a set up of an electrolytic cell that can be used in the production of aluminium.



(a) On the diagram, label the anode.



(b) Write the equation for the reaction at the anode.(1 mark)



(c) Give a reason why the electrolytic process is not carried out below $950^\circ C$. (1 mark)

$\diamond \quad$ Aluminium oxide would solidify hence the ions will not be free to conduct current.

(d) Give a reason why the production of aluminium is not carried out using reduction process (1 mark)

$\diamond \quad$ The common reducing agents such as carbon cannot reduce aluminium oxide.



(e) Give two reasons why only the aluminium ions are discharged. (2 marks)

- ❖ They are in higher concentration than Na^+ from cryolite
- ❖ Aluminium is lower than sodium in electrochemical series.

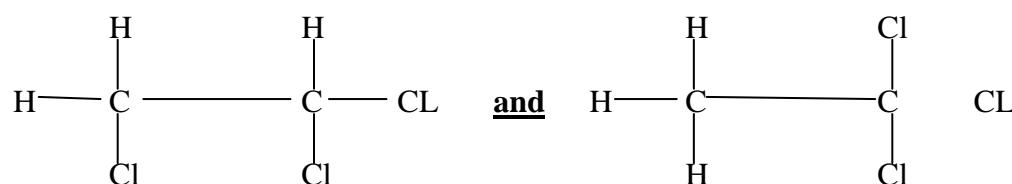
(f) State two properties of duralumin that makes it suitable for use in aircraft industry.(2 marks)

- ❖ It is stronger than pure aluminium
- ❖ It is light

(g) Name two environmental effects caused by extraction of aluminium. (2 marks)

- ❖ It causes land degradation due to mining the ores from deep down from the earth.
- ❖ Carbon (IV) Oxide produced cause global warming.

No. 6.a) Draw the structural formula for all the isomers of $\text{C}_2\text{H}_3\text{Cl}_3$ (2marks)

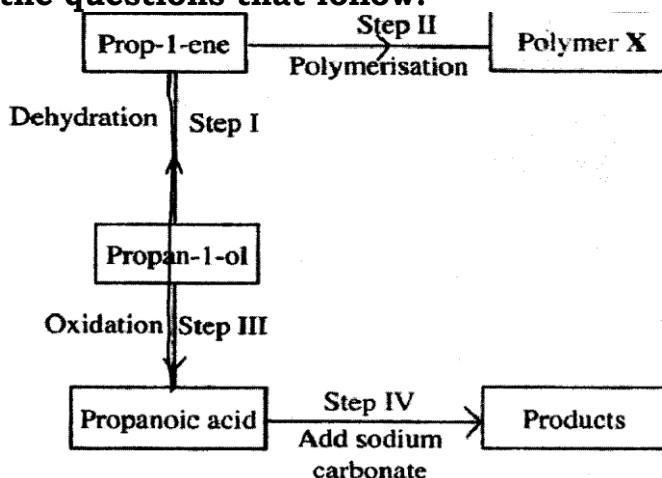


b) Describe two chemical tests that can be used to distinguish between ethane and ethene. (4marks)

- ❖ Add a few drops of acidified potassium dichromate with ethene the solution changes from orange to green while in ethane the solution remains orange
- ❖ Add a few drops of acidified potassium manganate with ethene solution changes from purple to colourless while in ethane the solution remains purple.

c) The following scheme represents various reactions starting with propan-1-ol.

Use it to answer the questions that follow.

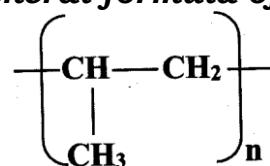


i) Name one substance that can be used in step I. (1mark)

- ❖ Concentrated sulphuric (VI) acid / Al_2O_3 / concentrated phosphoric (V)



ii) Give the general formula of X. (1 mark)



iii) Write the equation for the reaction in step IV. (1 mark)



iv) Calculate the mass of propan-I-ol which when burnt completely in air at room temperature and pressure would produce 18dm³ of gas. (C = 12.0; O = 16.0; H = 1.0; Molar gas volume = 24dm³) (3 marks)



$$\text{Moles of CO}_2 = \frac{18}{24}$$

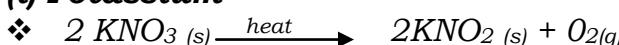
$$\text{Moles of CH}_3\text{CH}_2\text{CH}_2\text{OH} = \frac{18}{24} \times \frac{1}{3}$$

$$\text{R.M.M of CH}_3\text{CH}_2\text{CH}_2\text{OH} = 60$$

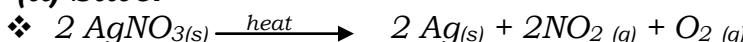
$$\text{Mass of propan-I-OL} = \frac{18}{24} \times \frac{1}{3} \times 60 = 15\text{g}$$

No. 7. (a) Write an equation to show the effect of heat on the nitrate of: (2 marks)

(i) Potassium



(ii) Silver



(b) The table below gives information about elements A₁, A₂, A₃, and A₄

Element	Atomic Number	Atomic Radius (nm)	Ionic radius (nm)
A ₁	3	0.134	0.074
A ₂	5	0.090	0.012
A ₃	13	0.143	0.050
A ₄	17	0.099	0.181

i) In which period of the periodic table is element A₂? Give a reason. (2 marks)

❖ Period 2, two energy levels

(ii) Explain why the atomic radius of:

I. A₁ is greater than that of A₂;

- ❖ A₂ has greater atomic number than A₁
- ❖ A₂ has greater nucleus charge than A₁
- ❖ A₂ has more protons than A₁
- ❖ Therefore across the period from left to right nuclear charge, exert greater pull on electrons hence reduction in size.

II. A₄ is smaller than its ionic radius. (2 marks)

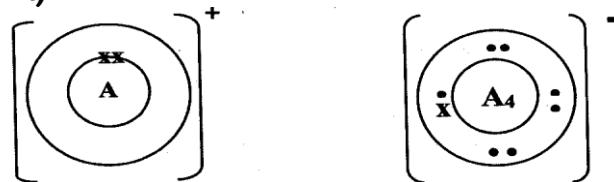
- ❖ A₄ gains electrons, incoming electron is repelled by existing electrons then electrons cloud increases.



(iii) Select the element which is in the same group as A3.(1 mark)

❖ A₂

(iv) Using dots (•) and crosses(x) to represent outermost electrons, draw a diagram to show the bonding in the compound formed when A_i reacts with A₄. (1 mark)



COMPUTER STUDIES PAPERS 1

No.1.(a) State the meaning of the term disk defragmentation as used in computers. (1 mark)

- ❖ The process of rewriting parts of a file to contiguous sectors on a disk.

(b)State the purpose of disk defragmentation. (1 mark)

- ❖ to increase the speed of access and retrieval of files.
- ❖ to increase space on the disk space

No.2. Identify the appropriate computer output device suitable for each of the following tasks:

(a) generating receipts where carbon copies are required; (1 mark)

- ❖ Carboncopies - impact printers e.g. dot matrix.

(b)an architectural drawing where precision is required; (1 mark)

- ❖ Architectural design - plotter

(c) producing document output for a visually impaired person. (1 mark)

- ❖ Visual impairment - speakers/brailles

No.3.Pesa Tele Company has offices in Nairobi and Kampala connected in a network. The management is convinced that someone is illegally gaining access to the data in their computers. State three ways in which the company can overcome this problem. (3 marks)

- ❖ Encryption.
- ❖ Firewalls.
- ❖ User profiles/passwords/user.
- ❖ Limit the number of log-in attempts.
- ❖ Audit trail/tracking.
- ❖ Physical protection of computers.

No.4.Explain two ways in which the use of Internet could make reporting of corruption easier.(4 marks)

Interactivity:

- ❖ the internet based technology enables real-time dialogue hence instantaneous reporting of cases;

Outreach:

- ❖ the technology allows the coverage of wide areas/can be reported from anywhere;

Social mobilisation:

- ❖ It is easy to use technology to create a network with people or organisations with similar concerns;

Anonymity:

- ❖ With use of the technology, it has become easy to report corruption cases without being known;

Security:

The message sent reaches the destination with less risk of being intruded



No.5. State two ways in which software errors can be prevented in program development. (2 marks)

- ❖ Use of anti-virus software.
- ❖ Update system frequently.
- ❖ Purchase software from authentic sources.
- ❖ Test the software before implementation.
- ❖ Test syntax/logic.
- ❖ Proper training.
- ❖ Proper enactment of laws.

No.6. Convert each of the following binary numbers to decimal equivalent given that the left most digit is a sign bit:**(a) 00101101**

$$\begin{array}{rcl}
 1 \times 2^5 & = & 32 \\
 1 \times 2^3 & = & 8 \\
 1 \times 2^2 & = & 4 \\
 1 \times 2^0 & = & 1 \\
 \hline
 & & 45_{10}
 \end{array}
 \quad \frac{1}{2} \quad \frac{1}{2} \quad \left. \frac{1}{2} \right\} \quad \frac{1}{2}$$

(b) 11001001

$$\begin{array}{rcl}
 1 \times 2^6 & = & 64 \\
 1 \times 2^3 & = & 8 \\
 1 \times 2^0 & = & 1 \\
 \hline
 & & -73_{10}
 \end{array}
 \quad \frac{1}{2} \quad \frac{1}{2} \quad \frac{1}{2}$$

No.7. State the functions of each of the following keys on the computer keyboard: (2 marks)**(a) backspace;**

- ❖ moves the display cursor one position backwards, deletes the character at that position, and shifts back the text after that position by one position

(b) insert (ins)

- ❖ When insert is selected, keys add characters to the screen at the cursor (insertion point) without deleting those already there. When typeover is selected the new characters type over the old, deleting them as they go

No.8. An organisation intends to replace an existing system by carrying out the process in stages.**(a) Name this implementation strategy; (1 mark)**

- ❖ The implementation strategy is: - phased change-over/modular

(b) Give two reasons why the organisation is opting to use the implementation strategy in (a) above. (2 marks)

- ❖ It gives employees opportunity to learn
- ❖ Organization can revert to old system in case of failure.
- ❖ Reduces resistance by employees.



(c) A manager wishes to replace the current manual system with a computerised one. Describe three main areas that must be evaluated to justify the replacement. (6 marks)

Technical feasibility:

- ❖ Does' the current technology (hardware & software) allow.

Economic feasibility:

- ❖ Are funds available?

Social feasibility:

- ❖ How will the new system impact on the organization/society?

No.9. Headache, back and neck pain may result from the use of computers. State how each of them can be minimised. (2 marks)

Headache

- ❖ Use of filters/antiglare.
- ❖ Proper lighting.
- ❖ Regular break.

Back & Neck Pain

- ❖ Proper/correct furniture for the computer.
- ❖ Correct position of the screen.
- ❖ Correct sitting posture.
- ❖ Taking a break.

No.10. Students of a school intend to elect their school captain by secret ballot. State three ways in which computers can be used to improve the election process. (3.marks)

- ❖ Registering voters/(faster);
- ❖ Voter identification (accurate);
- ❖ Actual voting;
- ❖ Tallying process (speedy).

No.11. Explain why an intranet is a more secure way to share files within an organisation compared to the Internet. (2 marks)

- ❖ Intranet involves interconnection of computers within an organisation, in intranet it's easier to monitor the access and sharing of files since the users working in the organisation can be assigned accounts and passwords which will enable them access the files they are authorised to access unlike the internet where many people can access whatever is stored in the organisation website.

No.12. List two career opportunities directly associated with computer networking. (2 marks)

- ❖ Network administrators
- ❖ Network engineers
- ❖ Network technicians



No.13. Distinguish between a formula and a function as used in spreadsheets. (2 marks)

- ❖ A **formula** is a mathematical expression that creates a relationship between cells to return a new value while a **function** is an inbuilt predefined formula that the user can quickly use instead of having to create a new one every time they want to do a calculation

No.14. The C directory of a computer has folders named Form 1, Form 2, Form 3 and Form 4. Each class has students' folders named according to their admission number. The students created their own folder for subjects they are studying based on the table shown below:

Form 1	Form 2	Form 3	Form 4
OS	SP	Prog.	ADB
WP	DTP DB	Internet	

(a) A form four student intends to create a folder named proj to store project documents.

State the path for the project folder. (1 mark)

- ❖ C:\FORM4\STUDNO\ADB\PROJECT

(b) Suggest how the student can ensure that:

(i) work is not lost in case the hard disk fails; (1 mark)

- ❖ Keep backup copies of the project on offline secondary storage media.

(ii) the project is not copied by other students. (1 mark)

- ❖ Use passwords for opening and modifying the project

No.15.A water company sends out clerks to read meters. The data collected by the clerks is then fed into the computer and then all bills are printed at the same time.

(a) State two advantages of this approach; (2 marks)

- ❖ Shifts time of processing to when computers are less busy.
- ❖ No user input required hence no idle computer time as it awaits input.
- ❖ Input is done once (batch).
- ❖ Can enable use of hired equipment hence cost effective.

(b) Name this type of data processing.(1 mark)

- ❖ Batch processing.
- ❖ Electronic



No.16. Figure 1 shows a flowchart. Use it to answer the questions that follow.

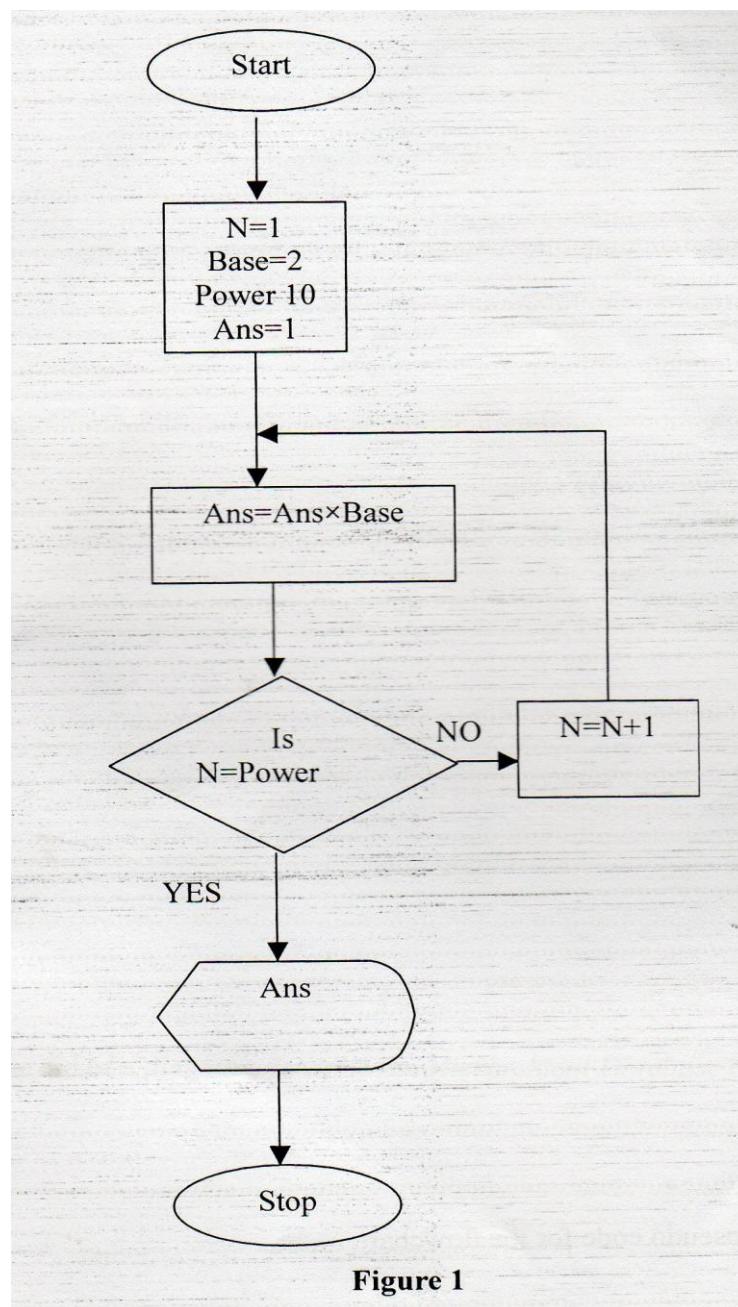
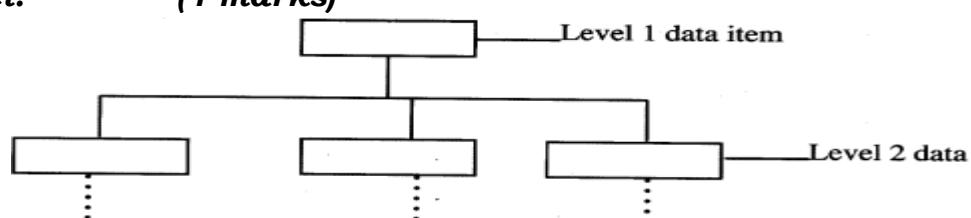


Figure 1

(a) Interpret the flowchart. (9 mark)

(b) Write a pseudo code for the flowchart. (6 marks)

No.17.(a)With the aid of a diagram, describe the Hierarchical Database Model. (4 marks)



- ❖ Data items are arranged in a tree like format.
- ❖ Access is through a single path and all from one single item called the root component



(b) List three factors that should be considered when developing a database application and give reasons why each should be considered.

(6 marks)

Factors

- ❖ Complexity of data/user needs/user friendliness
- ❖ Security and integrity
- ❖ Complexity of DBMS
- ❖ Volume of data/size
- ❖ Software compatibility with existing DBMS
- ❖ Cost of the data base

Reasons

- ❖ Complexity of data - Complex data requires complex DBMS.
- ❖ Security and integrity - Data which is intended to be secured in terms of access, can be handled by complex DBMS which provides for such requirements.
- ❖ Complexity of DBMS - Complex DBMS do require complex skills, hence more training. It is therefore costly to run/use such system.
- ❖ Volume of data - Voluminous data require to be ran on stable application. They also take up extra computer system resources.
- ❖ Software compatibility - enables pre-existing databases to be exported to the new one.

(c) (i) Name three types of validation checks during data entry in data processing.(3 marks)

- ❖ Field type/data type
- ❖ Field size
- ❖ Format
- ❖ Reasonableness
- ❖ Range constraint
- ❖ Presence check

(ii) Differentiate between primary key and index key as used in databases. (2 mark)

- ❖ Any **index key** is a database feature used to speed up search and sort operations in a table; whereas
- ❖ A **primary key** is a field that enforces uniqueness in a table so that one record is not entered twice or a **primary** key is a field that uniquely identifies each record.

No.18.(a) Explain two health issues that could arise from the use of unsuitable computer desk. (4 marks)

- ❖ It could lead to back problems if the desk is of an unrealistic height.
- ❖ If it does not provide good positioning of the monitor, it could result in eye strain.
- ❖ Wrist problems will arise if the keyboard and mouse seating positions are bad.
- ❖ Injury as a result of falling computer components due to weak computer desks/ small size.



No.18 (b) i) Describe two ways in which a positive number and a negative number can be represented in a computer (2 marks)

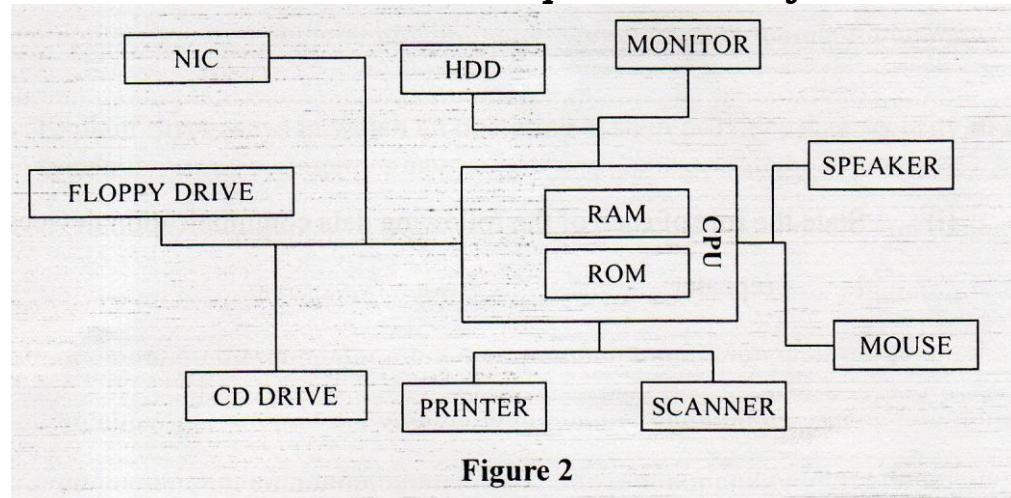
- ❖ In binary one bit usually the most significant or leading bit is used to indicate either positive or negative, and store the unsigned binary representation of the magnitude in the remaining bits.
- ❖ Signed magnitude.
- ❖ Using the twos complement.
- ❖ Using the ones complement.

(ii) A particular computer stores numbers in a single 8-bit word.

Determine how the number 0.3125_{10} would be represented. (3 marks)

$$\begin{array}{r}
 0.315 \\
 \times 2 \\
 \hline
 0.6250 \\
 - \quad 0 \\
 \hline
 0.12500 \\
 \times 2 \\
 \hline
 0.25000 \\
 - \quad 1 \\
 \hline
 0.50000 \\
 \times 2 \\
 \hline
 1.00000 \\
 - \quad 1 \\
 \hline
 \Rightarrow 0.0101 \\
 \Rightarrow 0000.0101
 \end{array}$$

No.19.(a) Figure 2 shows a block diagram of a computer system and its peripheral devices. Use it and answer the questions that follow.



(i) Name two devices that may be used for storing data for a long duration. (2 marks)

- ❖ 2GB HDD
- ❖ 32 MB Rom

(ii) Name three peripheral devices that are used for input.(3 marks)

- ❖ Mouse
- ❖ Scanner
- ❖ CD drive



(iii) Name two other devices that a Computer Aided Design (CAD) user might wish to add to the set up above in order to perform his tasks effectively. (2 marks)

- ❖ Digitizer
- ❖ Keyboard
- ❖ USB port

19 (b) A customer wishes to purchase a computer system. The customer can buy word processor, spreadsheet, database, and a drawing package separately or as an integrated package. State three reasons why the customer would prefer an integrated package to separate packages(3mks)

- ❖ The software provides easy movement of data among the separate applications,
- ❖ A common group of commands is used for all the applications in the software package,
- ❖ Provides easy switching between functions without having to go back to the operating system and ability to share data between functions.

No.20.(a) Explain three ways in which an operating system provides data security in a computer system (6 marks)

Access control:

- ❖ Deals with the problem of verifying / authenticating the identity of a user before permitting access to the request resource (e.g. use of passwords, user account);

Encryption

- ❖ Transforming data into an unreadable format so that they are safely transmitted;

Firewalls

- ❖ Filters out unwanted data and programs/ criminals/ hackers/ malicioius persons;

Log files

- ❖ A means by which transactions in a computer system can be recorded thereby deterring potential infiltrators;

Alerts

- ❖ Alerting a user when he/ she is about to delete a file/folder.

20.(b) State two instances where observation is not a viable method of gathering data during system analysis stage. (2 marks)

- ❖ When the analyst wants to collect confidential information,
- ❖ When there is a large group of people involved in the system,
- ❖ Where the people you want to gather information from are vastly dispersed

(c) (i) State the role of each of the following data communication devices:

I. repeater (1 mark)

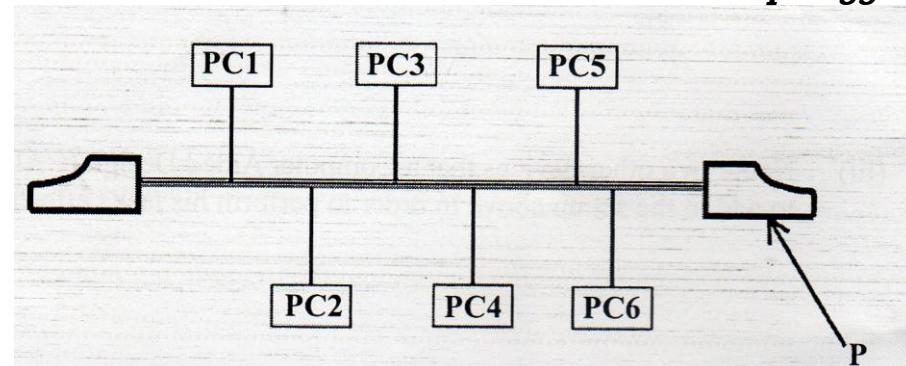
- ❖ A device used to re-construct data signal during data transmission to its original strength/ amplify/ boost/ regenerate.

II. router. (1 mark)

- ❖ It is a device used to facilitate movement of data or packets between two or more LANS of different configuration (expansion of networks).
- ❖ Delivers a packet/data directly to destination computers.
- ❖ Interconnects different networks/provides network services.



(ii) The figure below shows a network based on the bus topology.



I. Identify the component labelled P.

- ❖ The component P is the terminator.

II. State the function of the component labelled P.

- ❖ Terminator in a backbone is used to prevent data signal from bouncing back/absorb signals.



COMPUTER STUDIES PAPER 2

1. Perfect Pizza Factory manufactures pasta for distribution to restaurants in Nairobi. Assuming that you are now working for the factory and have been given the following sales data:

	A	B	C	D	E	F	G	H	I
1	Restaurants	July	August	September	October	November	December	Total Product Sales	Average
2									
3	Nankos	34567	45671	89650	67222	56113	96282		
4	Burgees	100000	97600	82199	105999	140663	190654		
5	Kenge	96543	97600	82199	105999	140663	190654		
6	Tika	65000	97600	82199	105999	140663	190654		
7	Appetos	103456	97645	82297	105669	140220	175000		
8	Marries	76899	85400	96709	101324	140882	181230		
9	Generals	98000	97600	82199	105999	140663	190654		
10	My Café	25000	19654	15222	8000	5602	200		
11	Shooters	86777	75432	84366	105999	55678	201345		
12									
13									
14	Total Monthly Sales								

(a) Enter the data shown above into a spreadsheet and save it as Exam 1.(10 marks)

Answer

Award 1 mark for each of the 10 rows (for correct entries only).

(b) The sales for Appetos for October have been entered incorrectly, and should be 115669. Update the information in the spread sheet. (3 mark)

Answer

115699 to replace 105669.

(c) Move the row containing Tika's information to the beginning of the list above Nankos. (1 mark)

Answer

Moving Row 7 to Row 2.

(d) Delete the blank row after Shooters. (1 mark)

Answer

Deleting of R12.

(e) Format all numeric values to 2 decimal places and use comma separators.(2 marks)

Answer

Formatting to 2 decimal places

Comma separator

(f) Use a formula in Column H2 to calculate the Total Sales for the first restaurant.(1 mark)

Answer

= B2 + C2+ D2 + E2+ F2+ G2



(g) Copy the formula down (he column to calculate the Total Sales for all restaurants. (I mark)

Answer

Copy of the formula in (f)

(h) Use a formula to calculate the Total Sales for the Month of July. (2 marks)

Answer

= Sum (B2:B10)

(i) Copy the formula across the row to calculate the totals for the other months.(1 mark)

Answer

Copy of the formula in (h)

(j) Using an appropriate function, calculate the Average Sales for each restaurant in Column 1. (3 marks)

Answer

= Average (B2 : G2)

(k) Format Columns H and I to currency with 2 decimal places. (1 mark)

Answer

Formatting of "Total Product Sales" and 'average' to currency with 2dp.

1) Given that the July sales were 10% above the sales for June in all restaurants:

(i) enter the label *% increment' in cell A16 and a value 10 in cell B1 6;(1 mark)

Answer

Value 10 in cell B 16.

(ii) insert a column before July and use absolute cell referencing to calculate the sales for June; (5 marks)

Answer

Insertion of a column.

Formula C₂*\$C\$16.

Copy of formula

Saving (file = Exam 2).

(iii save the file as EXAM 2. (2 marks)

Answer

(m) Using a formula on cells B17 and B18 respectively, determine:

(i) the number of restaurants whose sales were above 60000 for the month of November; (2 marks)

Answer

= Count if (G2:G10, ">60 000").

(ii) the maximum sales for the month of December. (2 marks)

Answer

= Max(H₂: H₁₀).



(n) Create a line graph on a new sheet (monthly sales) using the file EXAM 2 in part (1) above and label the following: (8 marks)

Chart title: *Monthly Pasta Sales July-Dec 2005*

Y-axis: *Total Monthly Sales*

X-axis: *Month*

Legend Position: *Right*

Answer

Chart sheet.

Data selection.

V chart type.

Chart Title.

Axes title.

Legend placement.

(o) Print EXAM 1, EXAM 2 and the graph in landscape orientation.

(6 marks)

Answer

landscape orientation.

hardcopies.



2. The Figure on page 5 shows the design of the cover page of a book. It comprises of the front, the back and space in between where book pages will be attached. Use a desktop publishing package to design the cover page as follows:

(a) Create a new publication named book cover with the following page layout.

(i) paper size: A4,

(ii) orientation: landscape,

(iii) margins: 3 cm or 1.18 inches all round.(4 marks)

Answer

Margin - page layout	4 @ $\frac{1}{2}$ mark each	2
Orientation (order/arrangement of back/spine/front)	$\frac{1}{2}$ mark	$\frac{1}{2}$
Paper size	$\frac{1}{2}$ mark	$\frac{1}{2}$
Saving (Book Cover)	1 mark	1
Fit of the three parts - back, spine and front		1

(b) Enter the text and objects and format them as they appear in the Figure. The front and back sections of the book cover, each measures 18 cm (7.1 inches) by 12.5 cm (4.9 inches) and the space between them measures 1.7 cm (0.7 inches). (45 marks)

Answer

FRONT COVER		
Authors / Rectangle		
Text typing 1 mark	text either case $\frac{1}{2}$ mark	1
Text box positioning/text position at centre	$\frac{1}{2}$ mark	$\frac{1}{2}$
Insertion of Rectangle/text-box	$\frac{1}{2}$ mark	$\frac{1}{2}$
Fill type (gradient shading)/gradient centre	$\frac{1}{2}$ mark	$\frac{1}{2}$
Positioning the rectangle	$\frac{1}{2}$ mark	$\frac{1}{2}$
Size	$\frac{1}{2}$ mark	$\frac{1}{2}$
Inserting textbox/thick outline border	$\frac{1}{2}$ mark	$\frac{1}{2}$
Book title		
text typing (capital) text + title case	1 mark	
positioning in relation to the front cover	$\frac{1}{2}$ mark	$1\frac{1}{2}$ marks



Activity	Marks
Computer	
Position of the computer $\frac{1}{2}$ mark	$\frac{1}{2}$
Drawing four polygons 4 @ $\frac{1}{2}$ mark	2
Filling polygons 4 @ $\frac{1}{2}$ mark penalise $\frac{1}{2}$ mark for wrong shading	2 marks
Stars	
Six sided star 1 mark / 5 sided and 8 sided $\frac{1}{2}$ mark	1
No outline $\frac{1}{2}$ mark	$\frac{1}{2}$
Fill pattern $\frac{1}{2}$ mark	$\frac{1}{2}$
Positioning star 1 and star 2 @ $\frac{1}{2}$ mark	1
Copying and pasting star $\frac{1}{2}$ mark	$\frac{1}{2}$
Lower rectangle	
Positioning $\frac{1}{2}$ mark	$\frac{1}{2}$
Sizing $\frac{1}{2}$ mark	$\frac{1}{2}$
Outline (bigger) $\frac{1}{2}$ mark	$\frac{1}{2}$
Filling (fill) different from the border $\frac{1}{2}$ mark	$\frac{1}{2}$
Revised edition triangle	
Right angled triangle $\frac{1}{2}$ mark	$\frac{1}{2}$
Positioning $\frac{1}{2}$ mark	$\frac{1}{2}$
Fill (white) - no shade $\frac{1}{2}$ mark	$\frac{1}{2}$
Text typing 1 mark (award $\frac{1}{2}$ mark if test is in one line)	1
Textbox rotation 1 mark	1
Quick revision guide	
Typing text (text & caps + initial) 1 mark	1
Background colour of the textbox $\frac{1}{2}$ mark	$\frac{1}{2}$
Positioning of textbox $\frac{1}{2}$ mark	$\frac{1}{2}$
Nyota Publishing Press	
Typing Text 1 mark Text $\frac{1}{2}$ mark case $\frac{1}{2}$ mark	1
Positioning of textbox $\frac{1}{2}$ mark	$\frac{1}{2}$
Spine	
Typing of text (text & case) 1 mark	1
Rotating 1 mark	1
Positioning of text box $\frac{1}{2}$ mark	$\frac{1}{2}$
Background (fill pattern) $\frac{1}{2}$ mark	$\frac{1}{2}$
Fitting in between $\frac{1}{2}$ mark	$\frac{1}{2}$
Star	
Spine star	
Resizing/ 1 star fitting inside the spine $\frac{1}{2}$ mark	$\frac{1}{2}$
Shading $\frac{1}{2}$ mark	$\frac{1}{2}$
Copying star/existence of the star $\frac{1}{2}$ mark	$\frac{1}{2}$
Positioning $\frac{1}{2}$ mark	$\frac{1}{2}$
Positioning star 2 $\frac{1}{2}$ mark	$\frac{1}{2}$ marks



BACK PAGE

Big rectangle

Outline (thick border)	$\frac{1}{2}$ mark	$\frac{1}{2}$
Fitting	$\frac{1}{2}$ mark	
Filling/any fill	$\frac{1}{2}$ mark	
Positioning	$\frac{1}{2}$ mark	

Rounded rectangle

Outline (none)	$\frac{1}{2}$ mark	$\frac{1}{2}$
Filling (no fill)/ white	$\frac{1}{2}$ mark	
Positioning/placement	$\frac{1}{2}$ mark	
Sizing/fitting proportional to the rectangle	$\frac{1}{2}$ mark	

Correct shape $\frac{1}{2}$ mark

Text in rounded rectangle

Typing text 4 paragraphs (existence and completeness) @ 1 mark x 4	4
Bullets (style & character)	$\frac{1}{2}$ mark x 2
Paragraphing (spacing)	$\frac{1}{2}$ mark
title case -last paragraph	$\frac{1}{2}$ mark

ISBN rectangle

Text ISBN 214s @ 1 mark	1
Bars varying thickness @ 1mark	1
Position of ISBN and Bars @ $\frac{1}{2}$ mark	$\frac{1}{2}$
No fill ISBN and bars @ $\frac{1}{2}$ mark	$\frac{1}{2}$ marks
Text at bottom	
Copyright symbol $\frac{1}{2}$ mark	$\frac{1}{2}$
Text and case 1 mark	1
Positioning $\frac{1}{2}$ mark	$\frac{1}{2}$

(c) Save and print the publication. (1 mark)**Answer**

Printing 1 mark

| 1 mark



Peters Sylvester
Lynne Sliza

Beginning Computer Studies is one in a series of books published by Nyota Publishing Press to comprehensively cover introductory Computer Studies.

The content in the book is skilfully developed to enable the learners understand the concepts and skills expected at every stage of learning.

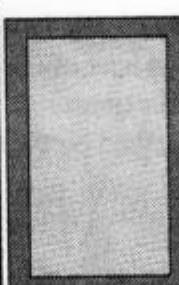
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- ◆ Wordprocessing
- ◆ Management Information Systems
- ◆ Data Communication Essentials Dummies
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BEGINNING COMPUTER STUDIES
A Quick Revision Guide

BEGINNING COMPUTER STUDIES



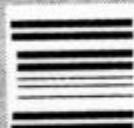
QUICK REVISION GUIDE

Nyota Publishing Press

REVISED EDITION
2012

©Nyota Publishing Press

ISBN 2 145



ENGLISH 2016

English (101) - Testing functional skills; 2015

Functional Skills 2016

Read the advertisement below and answer the questions that follow.

The Ministry of Health is seeking to recruit Form Four graduates to serve in a campaign aimed at creating awareness among young people on the importance of healthy eating. Applicants must be:

- citizens of Kenya
- 16 years and above
- in possession of a national identification card
- fluent in English and Kiswahili
- able to demonstrate knowledge and experience on issues of healthy eating
- creative and innovative.

Interested persons are required to send their application to the following by 30th November, 2016.

The Principal Secretary
Ministry of Health
P.O. Box 6789-001000
NAIROBI

**(a) Write a letter of application in response to the advertisement.
(12 marks)**

UPISHI BORA,
P.O.BOX 12345- 100,
NAIROBI.
12-11- 2016.

TO THE PRINCIPAL SECRETARY,
MINISTRY OF HEALTH,
P.O.BOX 6789-001000,
NAIROBI.

Dear Sir/Madam,
RE: APPLICATION FOR RECRUITMENT.

In reference to the advertisement in the Daily Newspapers on 5th November 2016, I humbly request you to offer me an opportunity in the campaign team. I am a Kenyan, aged nineteen years old and I have recently acquired my Identification Card. I am fluent in Kiswahili and English and I have undertaken a two year course in food and nutrition leading to a K.N.E.C. diploma. I have been disseminating information on healthy eating especially to those people living with A.I.Ds. Your consideration of my application will be highly appreciated.

Yours faithfully,
WILLIS ONYANGO



**(b) Write a Curriculum Vitae to accompany your application letter.
(8 marks)**

NAME: WILLIS OONYANGO
AGE: 19 YEARS
GENDER: MALE
MARITAL STATUS: SINGLE
NATIONALITY: KENYAN
ADDRESS: UPISHI BORA
BOX P.O.BOX 12345- 100 NAIROBI
RELIGION: CATHOLIC
ID. NO.: 1234567821

ACADEMIC HISTORY AND QUALIFICATION

2013-2016: K.C.S.E HURUMA ACADEMY B+
2005-2012: K.C.P.E BINGWA PRIMARY SCHOOL 402 marks

WORK EXPERIENCE

DIPLOMA IN FOOD AND NUTRITION

HOBBIES

COOKING ,FOOTBALL & LISTENING TO MUSIC

REFERENCES

THE PRINCIPAL,
HURUMA ACADEMY,
P.O.BOX 32150 - 200
NAIROBI.

THE SUPERVISOR,
UPISHI BORA,
P.O.BOX 12345- 100 ,
NAIROBI.



Close Test

2016

Read the passage below and fill in each blank space with the most appropriate word.

Neither time nor affluence removes memories (1) childhood poverty. Experiences of poor children illustrate how significant (2).....and status are in our society. Some adults think their (3).....or father was responsible (4).....their attitudes about money. Their current understanding of (5) parents' past problems with money often provide little solace. A (6).....of adults overcome the stigma of having been (7)as children. There are (8) children who also develop unhealthy attitudes about money. Such (9) imagine that money is all they need to (10) it in life. There is, however more to life than money. (10 marks)
(Adapted from: Harbrace Handbook, by Cheryl Glen, et al. Boston: Thomson Wadsworth 2004)

1. of 2. money 3. mother 4. for 5. their 6. number 7. poor
8. affluent/ wealthy/ rich 9. children 10. make

Oral Skills Oral Poetry/Narrative 2016

1.(a) Write down another word with a similar pronunciation for each of the ones given below. (5 marks)

- (i) blew.....
(ii) serial.....
(iii) cite.....
(iv) nun.....
(v) some.....

- (i) blew.....blue
(ii) serial.....cereal
(iii) cite..... sight
(iv) nun..... none
(v) some..... sum

(b) In each group of the words below underline the word that is pronounced differently from the others. (3 marks)

- (i) bread bleed bred
(ii) arch arc ark
(iii) hair heir air

- (i) bread bleed bred
(ii) arch arc ark
(iii) hair heir air

Read the poem below and then answer the questions that follow:



Giraffes

Beyond the brassy sun-stare where each shade
Crouches beneath its substance at mid-noon,
The tall giraffes are gathered in a glade
Grazing the green fruit of the midday moon.
Patched with sienna shadows of the jungle,
In pencil-slender attitudes they stand;
Grotesque in camouflage, each curve and angle
Is merged into the backcloth of the land.
These circus creatures of a poet's dreaming
Whose destiny on silent strings is spun,
Are patterned in designs of nature's scheming
To move through dappled woods and dun.
Strange genesis in which the substance seeming
The shadow, is the street of the sun!

By Phoebe Hesketh

(Adapted from: *Modern Poems for Common-wealth*, by Maurice Wollman & John Spencer. London: George G Harrap, 1966)

(i) Describe the rhyme scheme of this poem and explain its function.

(3 marks)

- ❖ ab ab cd cd ef ef ef. Creates musicality, memorability and enhances rhythm,

(ii) Identify two instances of alliteration in this poem. (2 marks)

beyond	brassy
silent	string
gathered	grade
camouflage	curve
substance	seeming

(iii) How would you say the last line of the poem? (3 marks)

- ❖ Raising the voice to achieve emphasis while articulating every word
- Brightening the face to show the marvel of nature Stress content words i.e. shadow, street, sun for emphasis.

Listening and Speaking Skills (Oral)

You are listening to a speech about careers by a visitor to your school. A few minutes into the speech, you look around and notice some of your fellow students are yawning, while others are showing signs of definite restlessness.

(i) What would be likely cause of the students' behavior? (3 marks)

- ❖ The audience's behavior would indicate that the speech has been going on for too long; or that the people think they will be late for something else; or they are tired, bored or uncomfortable,

(ii) What would you do to ensure you continue listening effectively?

(3 marks)

- ❖ Move closer to the speaker
- ❖ Maintain eye contact
- ❖ Scribble notes in summary of the speakers main points



Etiqutte

You accidentally broke the windscreen of a stranger's car at the market near your home. Complete the following conversation between you and the stranger. Use courteous language.

You:.....(2 marks)

Stranger: I can't believe it. This is a brand new car.

You:.....(2 marks)

Stranger: Your parents will have to meet the cost of replacing the windscreen.

You:.....(2 marks)

Stranger: I hope you will learn the lesson to be more careful in future.

You:.....(2 marks)

You: Excuse me Sir, I am very sorry for breaking the windscreen to your car.

Stranger: I can't believe it. This is a brand new car.

You: I am sorry, I will try as much as possible to find a way of handling this issue.

Stranger: Your parents will have to meet the cost of replacing the windscreen.

You: I am sure, I will humbly request them to replace the windscreen and they will do so.

Stranger: I hope you will learn the lesson to be more careful in future.

You: Thank you Sir, I promise to be very cautious in all my undertakings in future



PAPER 2 (101/2) - Testing Comprehension, Literary Appreciation and Grammar

Comprehensions

2016

Read the passage below and then answer the questions that follow. (20 marks)

I hate to tell you this, but your kid is spoiled. Mine aren't much better. That, in essence, is the finding of a recent media poll. Most of us think most of our kids are overindulged, materialistic brats.

I bring this issue up to talk about a controversial study that deals with corporal punishment-spanking - and it has outraged those who oppose the practice while rearming those who support it.

Dr. Diana Baumrind studied 164 families from the time their children were in pre-school until they reached their 20s. She found that most families used some form of corporal punishment. She further found that, contrary to what we have been told for years, giving a child a mild spanking (defined as open-handed swats on the backside, arm or legs) does not leave the child scared for life.

Baumrind makes a distinction between the minor punishments practiced by most parents who spank and the harsher variants practiced by a tiny minority (shaking and blows to the head or face, for example).

For my money, there was always something spurious about the orthodoxy that assured us all corporal punishment, regardless of severity, was de facto abuse. Nevertheless, we bought into it, with the result being that parents who admitted to spanking were treated as primitive dolts and heaped with scorn. They were encouraged to negotiate with misbehaving children in order to nurture their self esteem.

But the orthodoxy was wrong on several fronts. In the first place, it is plainly ridiculous to equate a child who has been swatted on the butt with one who has been stomped, scalded or punched. In the second, the argument that reasonable corporal punishment leads inevitably to mental instability always seemed insupportable and has just been proved by Baumrind's study.

Don't get me wrong, contrary to what its proponents sometimes claim, corporal punishment is not a panacea for misbehavior. Rearing a child requires not just discipline, but also humour, love and some luck.

I have seen too many children behave with a sense of entitlement to believe it is. Heard too many teachers tell horror stories of dealing with kids from households where parents are not sovereign, adult authority not respected. So the pertinent question is not: to spank or not to spank? Rather, it is who's in charge here? Some folks think it's abuse when you swat a child's backside. But maybe, sometimes, it's abuse when you don't.

(Adapted from The Allyn & Bacon Guide to Writing by John Ramage, John Bean and June Johnson. Boston: Longman, 2012)

(a) What does the author mean when he says "most of us think most of our kids are overindulged, materialistic brats". (2 marks)

- ❖ Most parents believe that their children are provided with all they need plus more making them became spoilt pampered brats



(b) According to the author, what is the effect of mild punishment?

(2 marks)

- ❖ Mild punishment does not leave a child scared for life either physically or emotionally and it is helpful

(c) What is the controversy in the passage? (3 marks)

- ❖ The controversy is whether it is beneficial to administer corporal punishment on their children

(d) What are the two major findings of Dr. Diana Baumrind's study?

(2 marks)

- ❖ Corporal punishment has actually been used by most families on their children in various forms. There is no physical harm caused by mild spanking

(e) What is the author's personal view about corporal punishment?(4 marks)

- ❖ The author's personal view about corporal punishment supports mild corporal punishment.
- Not supporting severe punishment
- Punishment must be administered with love and humour.
- Corporal punishment is not a guarantee to stop child misbehavior

(f) Identify two other words that the author uses in the passage to mean mild corporal punishment? (2 marks)

- ❖ Spanking.
- ❖ Swats/ Swatting.

(g) Use two illustrations from the passage to explain the author's use of informal language. (3 marks)

- ❖ Kids/brats,
- ❖ Folks.
- ❖ Swatted on the butt.
- The general public finds informal language appealing.

(h) Explain the meaning of each of the following words as used in the passage.

(i) Materialistic (1 mark)

- ❖ More interested in what money can provide / buy in their life.

(ii) Panacea (1 mark)

- ❖ Cure/ Remedy / measure to correct wrong doings /solution.



Literacy Appreciation

2016

Read the excerpt below and then answer the questions that follow. (25 marks)

"Brothers, people of Sakwa, we are pleased to welcome you to Yimbo. It is customary, because of the good *dak* between us, for you to marry our daughters and we yours. We are therefore more than neighbours, we have great *wat* between us because of the intermingling of blood though this has not occurred between our two lines so there is no danger of brother marrying sister - a great taboo. Since you are our brothers, we will not make things difficult for you." Here he stopped to take a sip of *kong'o* and you could have heard the ants talk, so great was the silence. However, nobody was fooled by his sweet words.

He continued, enjoying immensely the tension he was creating. "Our daughter, Adoyo Obanda is a great beauty whose assets have been praised and sung by many a *nyatiti* singer from here to ChumbuKombit, from Sakwa to Loka Nam. She is as fleet as a gazelle and her flying feet have been incorporated into the sayings of our village so that mothers sending their daughters on errands tell them to run like Adoyo of the flying feet. She has been carefully brought up and has been taught all the requirements of *Chik*. She is very apt pupil, and will therefore not bring shame and ruin to her husband by improper conduct.

Her antecedents are peerless for she can trace her bloodline clear to Ramogi our great father and her blood is pure for we have always taken care to marry correctly. She is also the eldest daughter of our great chief, a man whose fame is known throughout this land. After careful consultation, we have therefore decided that thirty head of cattle should be the proper bride price." Was that an inaudible gasp from someone at the back? Chief Owuor Kembo signaled to his uncle and the old man spoke.

"Brothers, people of Yimbo, we have listened with great care to what you have to say. Since the contract of marriage is a matter of great import, we wish to beg leave to consult with each other outside before we return our verdict."

"Feel free to do so," Aloo said magnanimously. They moved some distance away and Akoko watching from her mother's kitchen thought amusedly to herself, "I should ask father to give me a piece of land to settle on because at this rate I shall never leave his house."

(Adapted from *The River and the Source* by Margaret A. Ogola. Nairobi: Focus Publishers, 2012)

(a) What reasons had the old man given that had prompted the need for Chief Owuor Kembo to urgently seek a wife? (3 marks)

- ❖ Chief Kembo K' Agina dies young Owuor Kembo is now the chief. It is unthinkable that the chief should be unmarried,

(b) "It is customary, because of the good *dak* between us for you to marry our daughters and we yours." Identify two other customary practices on marriage in this community that are revealed in this excerpt. (2 marks)

- ❖ **Wat** - A way of preventing blood relatives marrying each other. Brother from marrying a sister.
- ❖ **Chik** - Education of young maiden's requirements of marriage. Payment of bride price.



(c) Explain the character traits of Chief Owuor Kembo and Aloo that emerge in this excerpt. (4 marks)

Owuor Kembo

- ❖ Observant/ sensitive/ alert/ keen/ attentive
- ❖ Follows every bit of conversation and the marriage negotiations.
- ❖ Notices that there is a negative reaction.
- ❖ Wise/respectful/ tactful - Allows his uncle to speak.
- ❖ Decisive - Knows when his uncle's turn to speak .
- Signals his uncle to speak.

Aloo

- ❖ Articulate/ captivating/ eloquent - Leads a discussion /clearly/ decisively able to create suspense.
- ❖ Tactful/ respectful/ hospitable/wise and proud - enjoys every bit of conversation. Skilful/ crafty/ ingenious/cunning - The way he presented his case.

(d) What was the response of Chief Owuor Kembo's party on the bride price requested for by Aloo? (2 marks)

- ❖ Bride price should be paid in full come that day on a specified date, the cattle would be driven to the in-law's homestead/ compound for marriage to take place

(e) In what circumstances was the thirty head of cattle referred to unfavourably later in the story when Akoko was married to Chief Owuor Kembo? (2 marks)

- ❖ When Akoko is blamed of slow birth-rate and is accused of standing in the way of the chief marrying another wife.

(f)"I should ask father to give me a piece of land to settle on because at this rate I shall never leave his house."

(i) Why did Akoko say these words? (2 marks)

- ❖ Akoko said these words because it looked like when the negotiations were going out their suit had been rejected like others before.
- ❖ Many suitors had been dismissed before and when she saw them walk out she thought that they too had been dismissed.

(ii)What do Akoko's words reveal about Chief Odero's character? (2 marks)

- ❖ The Chief was possessive of his daughters and concerned about their future well-being. He is choosy, adamant/ loving/ proud and demanding .

(g) "Since the contract of marriage is a matter of great import, we wish to beg leave to consult with each other outside before we return our verdict."

(i) What is your view on the success of Akoko and Chief Kembo's marriage? (2 marks)

- ❖ Their success is hinged on commitment of each to marriage and the chief not listening to the voice of relatives about the slow birth rate of his wife.
- ❖ Hardworking and loving



(ii) Identify and comment on one marriage you consider successful in The River and the Source. (2 marks)

- ❖ The marriage of Aoro and Wandia inspite of demands by their careers as doctors they are committed deeply to each other and to raising a good family. Mark Sigho and Elizabeth

(h)"Feel free to do so," Aloo said magnanimously. Rewrite in indirect speech. (1 mark)

- ❖ Aloo said magnanimously that they should feel free to do so.

(i) Explain the meaning of the following words as used in the excerpt.

(i) errands 1 mark

- ❖ Short missions/journeys to deliver something

(ii) apt (1 mark)

- ❖ Ready to learn/ quick/ has an attitude to learn

(iii) import(1 mark)

- ❖ Importance now and in the future/ of great value/ significance

Poetry 2016

Read the poem below and then answer the questions that follow.

The Road Not Taken

Two roads diverged in a yellow wood,
And sorry I could not travel both
And be one traveler, long I stood
And looked down one as far as I could
To where it bent in the undergrowth;

Then took the other, as just as fair,
And having perhaps the better claim,
Because it was grassy and wanted wear;
Though as for that the passing there
Had worn them really about the same,

And both that morning equally lay
In leaves no step had trodden black.
Oh, I kept the first for another day!
Yet knowing how way leads on to way,
I doubted if I should ever come back.

I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood, and I –
I took the one less travelled by,
And that has made all the difference.

By Robert Frost

(Adapted from Understanding Poetry by Jim Reeves London: Heinemann, 1965)



(a) Explain the meaning of the poem. (4 marks)

- ❖ Literal meaning: The traveler comes to a cross road and has to determine between the two ways which one to take in order to continue with his journey. After much mental debate, the traveler picks the road "less travelled".
- ❖ Symbolic meaning: Our choices determine how our lives will be in the days to come/future. The persona makes a rare choice (uncommon choice which will determine his destiny).

(b) Explain the meaning of the line 'Yet knowing how way leads on to way.'
(2 marks)

- ❖ Our choice will lead to new things and other opportunities
- ❖ One road will always lead to another. The choices we make lead to other openings/opportunities.

(c) Identify and explain the use of symbolism in the poem. (3 marks)

- ❖ Symbols: forked road - process of making choices in life obstacles/challenges/pitfalls
- ❖ grassy- The road is not well used and needed someone to walk on it. It is more challenging or difficult option to take .It is less popular and people avoided it.
- ❖ Undergrowth – Challenges / hardship in life

(d) What does the poet means when he says that 'I took the one less travelled by'? (3 marks)

- ❖ He took the road that looked less used. A rare / unusual option

(e) What does the poem reveal about the character of the persona?
(3 marks)

Characteristics of the persona:

- ❖ Adventurous – explores unknown territory
- ❖ Daring/ courageous – challenges the unknown
- ❖ Cautious – weighs his option
- ❖ Decisive - makes uncommon choices

(f) What is the tone of the poem? (3 marks)

- ❖ The tone is solemn (negative)/ soul-searching/ regretful/ remorseful - makes a bad choice and regrets.
- ❖ The tone is contentment/ relief/ contented/ optimism - made the choice he doesn't regret/ a way leads to another way

(g) Explain the meaning of the following words as used in the poem.

(i) diverged (1 mark)

- ❖ Divided/forked/ separated/ parted/ branched/split

(ii) sigh (1 mark)

- ❖ relief/ sign of good/ bad ending/ satisfaction/ contentment/ regret/



Grammar 2016

4. (a) Rewrite each of the sentences below to make it communicate more sensibly. (3 marks)

(i) Powerful and comfortable the buyer really liked the car. (The buyer really liked the powerful and comfortable car.

- ❖ Powerful and comfortable, the car was really liked by the buyer.
 - ❖ The buyer really liked the car:/ powerful and comfortable.
 - ❖ The buyer really liked the car because/since/for/as it was powerful and comfortable.
- ✓ *This required candidates to apply grammatical knowledge to rewrite the given sentences to remove ambiguity occasioned by misplacement of related segments.*

(ii) They left the field full of sweat. (b i)

- ❖ Full of sweat, they left the field/sweaty/sweating
- ❖ When they left the field, they were (all) sweating/sweaty/full of sweat/sweaty/sweating.

(iii) Mukasa loves growing vegetables.

- ❖ Vegetables are what Mukasa loves growing on his farm.

(b) Insert the correct punctuation marks in the sentences given. (4 marks)

(i) Whose responsibility is it to see whether this machine is working

- ❖ Whose responsibility is it to see whether this machine working?

(ii) My one big question however is what you do with your free time

- ❖ My big question, however, is what you do with your free time,

(iii) Amazing That was the best party I have attended in years.

- ❖ Amazing! That was the best party I have attended in year

(iii) Please tell me the way to the police station

- ❖ Please, tell me the way to the police station.

(c) Complete each of the following sentences using the correct phrasal verb formed from the word given in brackets. (4 marks)

(i) Kimeto.....of the marathon race due to fatigue, (pull)

- ❖ pulled out

(ii) The local council fire brigade.....the fire after many hours,

(put)

- ❖ put out

(iii) It is clear from her looks that Claire.....her mother, (take)

- ❖ takes after

(iv) The youth should.....to adults for guidance, (look)

- ❖ look up

(d) Rewrite the following sentences according to the instructions after each. (4 marks)



(i)It was tough but we eventually made it up the mountain. (Begin: Tough.....)

- ❖ Tough as it was, we eventually made it up the mountain.

(ii) Rashidi said that he had not insulted me. (Use.....denied.....)

- ❖ Rashidi denied having insulted me / Rashid denied that he had insulted me.

(iii) She is busy renovating her house so that she may rent it out. (rewrite using: with a view)

- ❖ She is busy renovating her house with a view to renting it out.

(iv) Mshamba will not at any cost support your cause. (Begin: At.....)

- ❖ At no cost will Mshamba support your case.



Paper 3 (101/3): Testing Conventional Composition and Essays based on Set Texts.

Composition and Essays based on Set Texts.

- (a) Answer *three* questions only.
- (b) Questions *one* and *two* are **compulsory**.
- (c) In question *three* choose only *one* of the optional texts you have prepared on.
- (d) Where a candidate presents work on more than one optional text, only the first one to appear will be marked.
- (e) Each of your essays must **not** exceed **450** words.
- (f) All answers should be written in the answer booklet provided.
- (g) This paper consists of **2 printed pages**.
- (h) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing. (i) Candidates must answer the questions in English.

2016

1.Imaginative composition (compulsory) (20 marks)

Either

- (a) Write a story to illustrate the saying: "The early bird catches the worm."

Points of Interpretation

- ❖ Must be a story.
- ❖ Must end with the sentence given.
- ❖ Must present a credible scenario suggested by and leading to / culminating in the ending sentence given. The narrator should outline what had landed him / her in the situation they find themselves in and what has occasioned the realization and change of attitude.

Or

- (b) Write a story beginning:

'I regretted ever having had Riziki for a friend ...'

- ❖ Must be a story.
- ❖ The story must illustrate how the candidate or the persona has had to learn through the hard school of experience.

2.The Compulsory Set Text (20 marks)

Bertolt Brecht: *The Caucasian Chalk Circle*

One's self-sacrifice and determination will always be rewarded in life. Using illustrations from the play *The Caucasian Chalk Circle* write an essay in support of this statement.

In this world ,there are people who are selfless and benevolent and will have unflinching determination to help people who are vulnerable within the society .

In 'The Caucasian Chalk Circle', Grusha is an emblem of selflessness and compassion. To a certain extent, Simon Azdak and the duke occasionally show signs of determination to recompense the kindness extended to them.

There exists a dispute between Natella Abashwill, the governor's wife and thier kitchen maid Grusha Vanshnaadze. The dispute is about who is the real mother of Michael Abashwill.



This dispute arose during the time when the governor was overthrown and everybody was running for their safety. Nattela Abashwill choose material things over her son, Michael.

Grusha risks her life for the sake of Michael although she is overworked in Governor Georgi Abashwili's home. When chaos break out, the other servants duck out of danger, and warn Grusha against protecting Michael but she remains stoic. Natella Abashwili, Michael's mother leaves her son behind, but Grusha watches the baby overnight and despite her poverty he salvages the boy from the hands of the Iron-shirts, and runs away barefoot with the baby.

Grusha buys milk for Michael at an exorbitant price to try and feed the baby. She tries to make Michael suck her dry breast. She buys milk at two piasters and changes the baby's diaper. Grusha crosses a rotten bridge which overlies a precipice two thousand feet deep in order to save Michael. She overcomes a very cold reception by Aniko, the sister-in-law and advises Michael that they should make themselves as small as cockroaches. She even accepts to marry Jussup and risks her relationship with Simon Shashava. When the Iron-shirts take Michael, she pursues them barefooted. Her efforts are rewarded when Michael is given to her by Azdak the judge especially when she does not jerk the boy from the chalk circle in fear that she can tear him apart. This dispute is resolved in court and judge Azdak has to pass the ruling. A chalk circle is drawn on the floor. Michael is placed at the center. The plaintiff Nattela Abashwill and the defendant, Grusha Vanshnadze step up to the circle. Each gets the child by one hand and the real mother of the child is the one who pulls him out of the circle. Grusha lets go the child for the two times that they are told to pull, for she declares that she cannot pull him apart, having brought him up. At last Grusha is declared the true mother.

Simon Shashava's loyalty to the governor's wife is rewarded. He accompanies the mistress and risks her relationship with Grusha. Later he gets Grusha back who has retained her chastity and also takes Michael as the son.

Azdak rescues the duke despite himself. He even offers him food. He however reports himself to the authorities and instead of being apprehended he becomes a judge. When the farmers subject him to violence, the duke sends a rider to deliver a letter that restores him as a judge and he makes the most important sentence of determining Michael's mother. The fruit growers are determined to get Rosa Luxemburg and they argue out the reason for doing so and they get the land since it would be more lucrative. In a nutshell, Grusha's selflessness, Azdak's kindness and fruit growers are rewarded for their determination.

3.The Optional Set Texts (20 marks)

Answer any one of the following three questions. Either

(a) The Short Story

Ilieva Emilia and Wareng Olemb (Ed) When the Sun Goes Down and Other Stories from Africa and Beyond.

Discuss the futility of illegal immigration using illustrations from Sefi Atta's Twilight Trek.

The narrator is desperate to leave Africa and in the process is willing to do anything possible to make this wish come true. For instance:

- He gives false details on the passport.
- He gives a false name, origin and his national
- He sells marijuana to raise half his fare
- He dupes his boss despite his threats of sending a gang to rape him and slit his throat thereafter



- He has to endure much suffering to get to Gao.
- He hitches rides on highways, sleeps in villages where dogs won't stop for a piss and has to endure bouts of fever and diarrhoea.
- He must trek up the mountain to get to Tangior

The illegal migrants that the Narrators Mother talk about are so desperate to leave Africa that they can do anything to get there for instance;

- One man hides in the wheel well of an aeroplane that flew to London and ends up dying on the way and his body was deported for burial.
- Another one attempts to cross the Sahara on foot. He takes several years only to be arrested by the security forces when he is about to reach Spain and has to be repatriated back.
- A Sierra Leonan tries to scale the barbed wire several times until his skin was practically shredded
- They suffer under the hands of bearded mortem bandits, the trucks often break down, they are beaten by patrol guards when caught crossing over to Ceuta, they are taken back to a camp where they have no meals and medical attention and during daytime they are scotched by glaring sun rays
- The conditions in the camp where refugees hide are deplorable and they are compared as an open sewer.

In the same way, Sefi Atta presents the plight of those people who are determined to migrate to seek for greener pastures and shows how they get disillusioned.

- Despite the gesture of love and generosity extended to her by the narrator, she makes away with the narrator's money which he has earned through toiling very hard

The immigrants especially those who do not have legal documents are dehumanized, subjected to sexual violation, others taken advantage of by drug barons and others are subjected to humiliation especially when they are deported either dead or alive.

In a nutshell, the people who engage in illegal immigration are subjected to violence, betrayal, physical and psychological torture and finally they do not reach their destiny

The problems that migrants go through are acute. The irony of the situation is that in case they reach the refugee camps they are engaged in menial jobs such as servants, taxi-drivers, watchmen, washing dirty plates and toilet seats and other gruesome chores. The migrants betray each other and patience is quite hypocritical and insensitive.

Obazee patronises the other migrants and he does not give them room to express themselves but manipulates them but he does not offer any form of security because he is equally vulnerable to manhandling by the Gendarmes.

Or

(b) Drama

Francis Imbuga: Betrayal in the City

With illustrations from Francis Imbuga's Betrayal in the City show how corruption is dehumanizing.



BETRAYAL IN THE CITY

Dehumanizing (expectation) – to the corrupt or the one affected by the corruption instance.

Action – how dehumanizing?

Corruption may take such forms as bribery, nepotism, favouritism and stealing and kickbacks. In effect, public resources meant for improvement of lives of the majority end up in the hands of selfish few. The corrupt only think of themselves and not of the less fortunate.

(i) Positions:

- Mulili and Tumbo are rewarded with high ranking government office even though they do not qualify in order to protect Boss' interests.
- Undertake specific duties for Boss and are rewarded.

Characters

MULILI – How he rises to become an army officer.

Tumbo

Nicodemo

They do whatever to protect Boss interests in total **disregard of how it affects** other people (8-15, 20, 56-60, 44-45)

The university staff is intimidated to giving tender to Mulili.

Mulili's reaction to the old couples – order – stopping the ceremony.

Mulili's attitude – chicken heart – has no human heart.

Mulili is dehumanized – Mulili tramples on the old couple's feelings to gain the promises by Boss – He is a heartless brute – Dust to dust ...ash to ...

Dogo and Nina have been killed.

The worst of Boss' advisors is Mulili, even Tumbo doesn't like him.

Mulili is so dehumanized that he says that university students can be pushed to act in the play.

Mulili see Kibito as grant-dispensable.

Mulili's accusations dehumanize Kibito. He is being framed – Boss directs Mulili to ge Kibito; silent.

TUMBO – 37-42, 44-46, 47, 74 – How dehumanizing.

Got his influential position through corruption. He is negligent in his duty. If I was depending on empty talk – blocks. Owns blocks – he doesn't care about others. He is consistent. No feelings for others – Eat and lets eat – Not ashamed to contest of open corruption – keeps 2/3 of the money. Gives a third to Jusper and Regina.

Competition – Quarter of a million shillings. A block costs more – one hundred and fifty thousand shillings (corruption).

He confesses his inefficiency – was trained and given the wrong job.

NICODEMO – 16, 18, 24, 25, 30-31, 35, 52, 56 arises to position as a member of committee.

He is dehumanized, he plants one kilogram of opium to Mosese's car. He is so dehumanized that he does not want Mosese to act / come out of prison – opposes the pardon of prisoner.

Mosese is dehumanized – he was imprisoned because of Nicodemo – words have lost meaning.

Mosese charged – Mosese is mentally affected by the suffering due to Nicodemo. Dehumanized madness of Mosese.



Nicodemo is dehumanized that he cannot appreciate prisoners being given bread and butter. Personal tragedy. If Mosese is released – prisoners are dangerous people who must not.

(ii) Committee – protests

All members of the committee are appointed through favouritism – they do not qualify – do everything to defend Boss's interests – nominated for one reason – unflinching support of our government.

They are dehumanized – they are interested in what they get – Terms of service – paid per day – meet everyday till the visitor comes and after, for review to draw more potato directly proportioned to the potato we get.

Mulili corrupt as a member of the committee – milk tender.

Even after the death of Kibito, the committee is not touched, is worried whether the day ill be counted.

(iii) The Tender

Kibito confesses that he spent whole night bribing in order to get the milk tender. Dehumanization – Mulili realizes and makes a move. He consults Boss for revocations.

NB: If a candidate brings the point of using Boss to influence – (upt)

Mulili's perspective of tender is revoked though Boss' intention dehumanized. Ibito's perspective – corrupt – dehumanized by Kibito – belittled when tender is revoked – threats – regret from the day he came from stomach.

(c) The Novel

Witi Ihimaera: The Whale Rider

Identify and discuss the various levels of conflict in Witi Ihimaera's The Whale Rider.

3)Whale Rider

Conflict consciously brought

Contrast

Expectations

Conflict – episodes of conflicts

Show what we learn from the conflicts, the realization

The two sides of conflict must be brought out.

Introduction – MUST have a conflict / general or contextualized.

(i) Tradition Vs Modernity

Koro is the custodian of traditions.

Kahu is the picture of change

Nani flowers argues (for Kahu) in favour of change.

Contrast

Language lessons – Kahu writes a poem in Maori

Biting of the p.g Toe-Girl bites the by toe

The blue curved stone – Retrieve the curved stone – Kahu retrieves the curved stone. She determinedly cherishes to bring Koro Apirana happiness through the stone. Kahu manages the stone and brings him a fish to eat.



Rawiru

- Contrast – While Nani flower celebrates Kohu's birth, Koro is angry with Koru, he's broken the male line.
- Conflict continues in the naming of Kahutia te Rongi Biting of toe.
- Meeting house – Kohu sneaks into the Koro Apirana.
- Koro is conservative – Kahu still encroaches. She has three role models; Koro, Rawin and Porowanyi.
- Koro refuses help from the women saying the work is sacred.
- Kahu is the only one who persuades the male whole to get back to sea Pagde 102.
- Kahu has turned to be the whale. Rider – Kahutia Te Rongi
- Reconciliation – Koru has come to visit the hospitalized Nani.
- Koru – I should have known she was the one. Ever since she was a baby and bit my toe.
- Resolution – Boy or no girl, it doesn't matter.
- Alternative perspective Rawiri's page 47, 45-59, Tradition Vs Modernity
- Rawiri leaves whenyara (conservative) to New Zealand and Papua New Guinea. (contrast with Clara's perceptions He was like a big toy in great toy shop.
- Changed dressings, natures knocked down / racism – blacks are not respected in Papua New Guinea.
- Resolution – Rawiri finally returns home. Glad to see the people – Rawiri realizes that you can never get anything better out here.

(ii) Racism and Cultural Identity

- Airport, Clara's shock – has the habit of bringing home strays.
- The accident involving Benard – a mere native, Jeff's family insist on leaving the dying man in the street.
- Reremoana
- Resolution – Resolves to go back home.

(iii) Females Vs Male Gender roles

Pick one female character

- – Kahu (dolphins)
- Nane
- Mitri
- Kahu Vs bos
- Nani Vs Koro – siphoning out petrol – Muriwai.
- Muriwai 14, 15, page – Commanded the canoe.
- Contrast - Mitri confronted the chief and protested the rights of women to tack page 65
- Resolution – Acceptance that women are equally important.

(iv)Conflict of Generation / Older Vs Younger

Old generation work at an issue their way while the younger generation thinks its good to be adventurous.

Young adventurous, explorative and willing to change.

Resolution

- Coming home
- Koro Acceptance of Kahu
- Nani accepts that Rawiri has to go out of whanyara
- Older generation accept change.



GEOGRAPHY 2016

PAPER 1

No. 1.a) How does a sea breeze occur? (2 marks)

- ❖ During the day, the land heats faster than the sea
- ❖ The air over the land rises
- ❖ Cooler air from the sea blows towards the land to replace the rising air
- ❖ The cool air from the sea is called the sea breeze

b) Use the map of Africa below to answer question (b) (i). (2 marks)



(i) Name the ocean currents marked H, J, and K.

- ❖ H - Mozambique/Agulhas
- ❖ J - Benguela
- ❖ K - Guinea

(ii) State two effects of a warm ocean current on the adjacent coastlands. (2 marks)

- ❖ It warms up the adjacent land
- ❖ It increases the humidity of the adjacent land
- ❖ It may lead to rainfall on the adjacent land

NO.2. (a) Name two types of boundaries according to the plate tectonic theory. (2 marks)

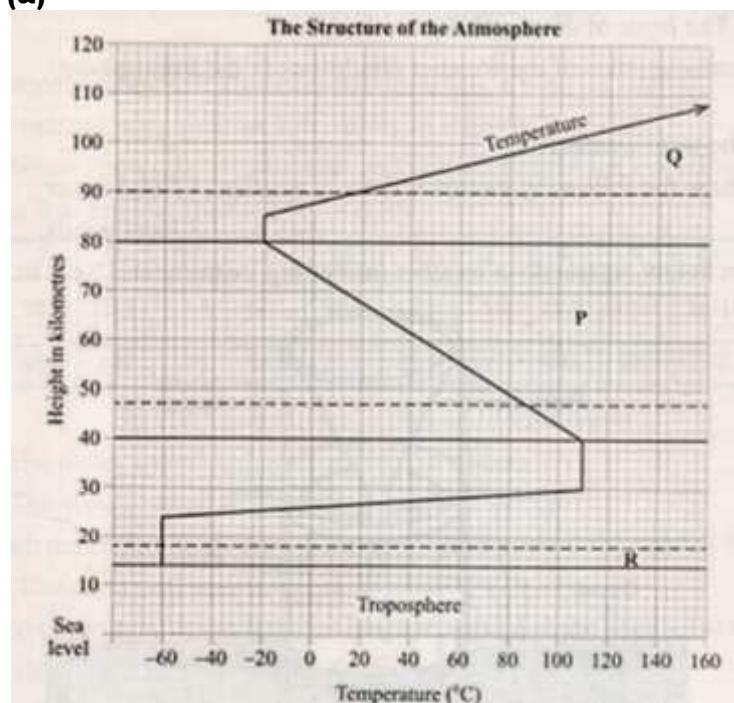
- ❖ Divergence/extension/constructive
- ❖ Convergence/compressional/destructive
- ❖ Transform /conservative.

(b) Give three effects of the movement of tectonic plates. (3 marks)

- ❖ They cause earthquakes.
- It can lead to formation of Fold Mountains.
- It can lead to formation of New oceanic crust.
- It may lead to formation of Submarine islands/volcanic islands.



No. 3.The diagram below represents the structure of the atmosphere. Use it to answer question (a)



Name: (i) the parts marked P and Q. (2 marks)

- ❖ P – Mesosphere
- ❖ Q- Thermosphere/ Ionosphere

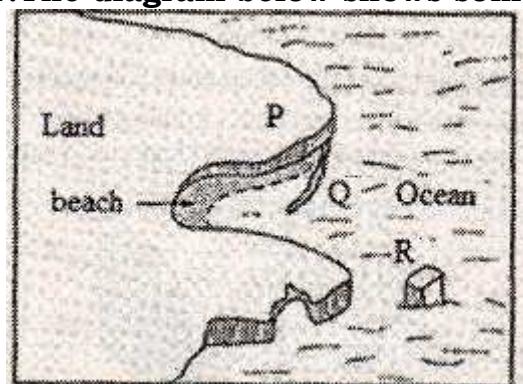
(ii) The layer of discontinuity marked R. (1 mark)

- ❖ R – Tropopause

(b) State two characteristics of the weather conditions in the troposphere. (2 marks)

- ❖ Temperatures decrease with an increase in height/normal lapse rate / the rate of decrease is 1 °C for 160 metres of height/0.65°C per 100 m/6.5 per 1000m
- ❖ Pressure falls with an increase in height.
- ❖ The speed of wind increases with an increase in height.
- ❖ It contains most of the atmospheric water vapour/clouds.

No. 4.The diagram below shows some coastal features.



(a) Name the features marked P, Q and R. (3 marks)

- ❖ P - Headland
- ❖ Q - Spit
- ❖ R – Stack



(b) State two conditions necessary for the formation of a beach. (2 marks)

- ❖ Presence of abundant supply of materials to be deposited.
- ❖ Presence of a shallow shore or continental shelf.
- ❖ A relatively weak longshore current.
- ❖ A weak backwash or strong swash or constructive waves.
- ❖ Gently sloping land at the sea shore.

No. 5. Name three major deserts in Africa. (3 marks)

- ❖ Sahara
- ❖ Kalahari
- ❖ Namib

6. Study the map of Kitale 1:50,000 (sheet 75/3) provided and answer the following questions.

(a) (i) Identify two human made features found at the grid square 2320. (2 marks)

(ii) What is the altitude of the highest point in the area covered by the map? (2 marks)

(iii) Give three types of natural vegetation found in the area covered by the map. (3 marks)

(b) (i) What is the bearing of the air photo principal point at grid square 3426 from the air photo principal point at grid square 2931 ? (2 marks)

(ii) Measure the distance of the dry weather road (C640) from the junction at point M (345142) from the junction at point N (416201) Give your answer in kilometers. (2 marks)

(c) (i) Using a scale of 1 cm to represent 40 metres, draw a cross-section from grid reference 410180 to grid reference 500180. (4 marks)

(ii) On the cross-section mark and name the following:

-) a dry weather road; (1 mark)
-) River Kaptarit (1 mark)
-) a ridge. (1 mark)

(iii) Calculate the (VE) vertical exaggeration of the section. (2 marks)

(d) Citing evidence from the map, identify five social services offered in Kitale. (5 marks)

No. 7. (a) (i) Name two types of submerged highland coasts. (2 marks)

Longitudinal / Dalmatian

- ❖ Ria
- ❖ Fiord / Fjord



**(ii) Identify two resultant features of the emerged highland coasts.
(2 marks)**

- ❖ Raised geos / blow holes
- ❖ Raised cliffs
- ❖ Raised wave cut-platforms
- ❖ Raised beaches
- ❖ Raised caves
- ❖ Raised notches
- ❖ Raised archs / stumps / stack

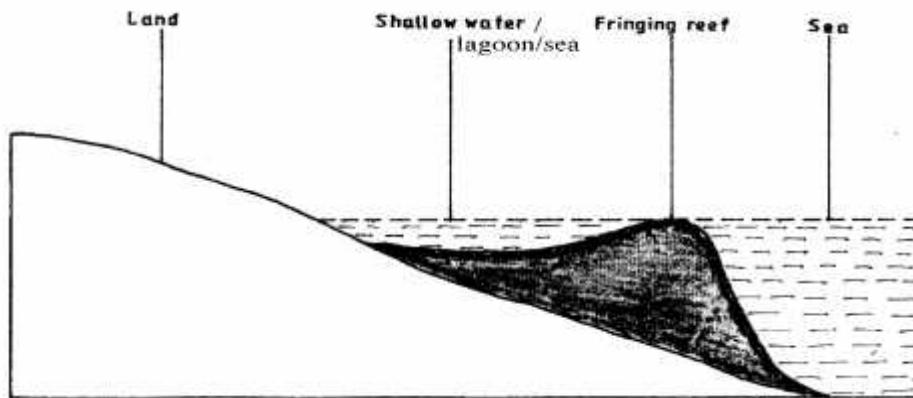
(b) State three factors influencing deposition by ocean waves.(3 marks)

- ❖ The existence of gentle sloping shore.
- ❖ Presence of shallow water along the coastline.
- ❖ The occurrence of a strong swash and weak backwash / constructive waves.
- ❖ The existence of indented coastline.
- ❖ Ample longshore drift materials to be deposited.

(c) With the aid of labelled diagrams describe the formation of the following coastal features:

(i) Fringing reef (5 marks)

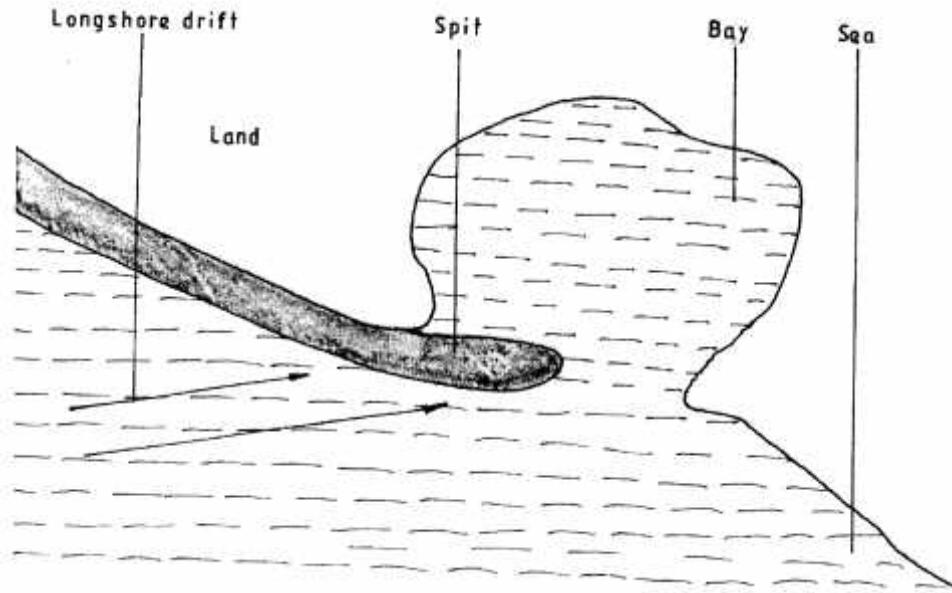
- ❖ It is formed when coral polyps start building a reef near the shore extending seawards.
- ❖ The rate of accumulation is faster seawards than towards the shore.
- ❖ The reef therefore becomes steeper seaward than towards the shore, enclosing a narrow and shallow lagoon.
- ❖ The accumulated coral materials form a fringing reef.



(ii) Spit (5 marks)

- ❖ It forms on a shallow shore at a point where the coastline bends landward
- ❖ Deposition occurs as the longshore drift is halted.
- ❖ More materials / deposits are piled up forming an elongated low lying ridge growing towards the sea.
- ❖ The elongated low lying ridge with one end attached to the coast and the other projecting into the sea is the spit.





(d) Explain the significance of oceans to human activities. (8 marks)

- ❖ Oceans provides building materials.
- ❖ Oceans modify the climate of the adjacent lands thus enhancing agricultural activities.
- ❖ Oceans are used by water vessels thereby enhancing transport/ communication.
- ❖ Oceans provide sites for recreational activities thus promoting tourism.
- ❖ Oceans are habitats for aquatic life hence providing food/ income to humans.
- ❖ Oceans harbour minerals which are extracted for economic development.
- ❖ Ocean waves/ tides are harnessed which generate electric power for industrial/ domestic use.
- ❖ Oceans provide water for cooling industrial plants.
- ❖ Oceans encourage education and research.
- ❖ Ocean provides ideal grounds for testing military weapons.

No. 8.(a) (i) What is a lake? (2 marks)

- ❖ A lake is an accumulation of water in a wide hollow or depression/it is an extensive hollow in the earth's surface which contains water

(ii) Name two crater lakes in Kenya. (2 marks)

- ❖ Challa
- ❖ Paradise
- ❖ Simbi
- ❖ Sonanchi

(b) Describe how the following lakes are formed. (page 102 q3b)

(i) Corrie lake (4 marks)

- ❖ Snow accumulates in a depression on the mountain side
- ❖ Snow gets compacted into ice forming a cirque glaciers
- ❖ Frost action /alternate freeze -thaw action enlarges the hollow
- ❖ Plucking process steepens the back wall
- ❖ Eventually a deep arm – chair shaped depression is formed
- ❖ When the corrie fills up with melt water it forms a corrie lake



(ii) Oasis (4 marks)

- ❖ A pre existing depression formed through faulting or otherwise is exposed to wind erosion
- ❖ Wind eddies remove unconsolidated materials through deflation
- ❖ Further deflation leads to depression reaching the water table
- ❖ Water oozes out of the ground and collects into the depression to form a lake known as an oasis

(iii) Lagoon (4 marks)

- ❖ Sand / silt are deposited along indented / irregular coast
- ❖ The deposits accumulate forming a spit
- ❖ The continued deposition elongates the spit eventually blocking the mouth of the bay forming a bay bar
- ❖ The bay bar separates part of the sea water from the open sea
- ❖ The enclosed sea water is the lagoon

(c) (i) Give three reasons why some lakes in Kenya have saline water.

(3 marks)

- ❖ They lack outlets to the sea
- ❖ Some have salt bearing rocks on the lake bed
- ❖ High temperature in the surrounding area leads to high evaporation
- ❖ Heavy deposition of mineral salts into the lakes by the surface runs off
- ❖ Underground seepage of water that is rich in mineral salts

(ii) Explain how each of the following has affected lakes in Kenya.

deforestation (2 marks)

- ❖ It exposes soil which is eroded and carried into the lake causing siltation
- ❖ It destroys catchment areas which reduces water fed into the lakes

• industrialization (2 marks)

- ❖ Establishment of industries has led to disposal of waste /pollution / contamination of lakes
- ❖ Establishment of industries has led to increased water use which has lowered water levels

• Water needs. (2 marks)

- ❖ When water is diverted to farms for irrigation, water levels in the lakes are lowered

No. 9. (a) (i) Name three types of faults. (3 marks)

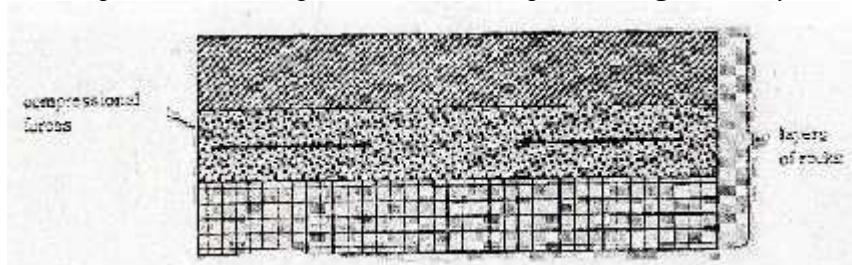
- ❖ Normal fault,
- ❖ Reverse fault,
- ❖ Tear or shear or slip or transform or wrench or strike slip fault,
- ❖ Thrust fault,
- ❖ Anticlinal fault



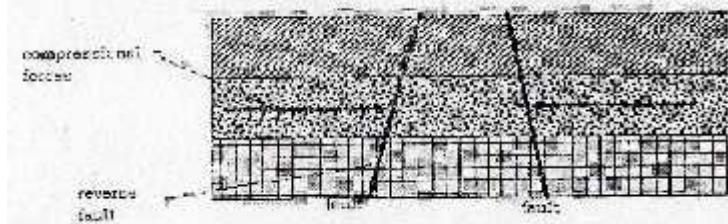
(ii) Apart from compressional forces, explain two other processes that may cause faulting. (4 marks)

- ❖ Faulting may be caused by force acting horizontally away from each other which causes tension in the crystal rocks. Due to tensional forces the rocks stretch and fracture causing faults.
- ❖ Faulting may occur where horizontal forces act parallel to each other in the opposite or same direction resulting in shearing.
- ❖ Faulting may also occur due to vertical movements which may exert a strain in the rocks making them to fracture

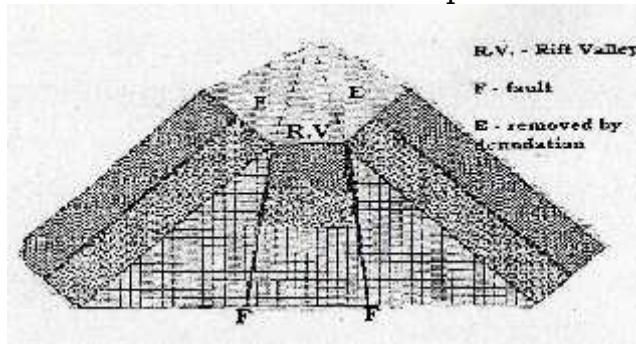
(b) With the aid of diagrams, describe how compressional forces may have led to the formation of the Great Rift Valley. (8 marks)



Two parallel lines of weakness develop and these reverse faults



Compression forces may push the other blocks towards each other. The outer blocks ride over the middle block and the middle block sinks or subsides or may remain stable. The sunken middle part forms a depression called a rift valley



(c) Explain five ways in which faulting is of significance to human activities. (10 marks)

- ❖ Faulting leads to formation of features that form beautiful scenery which attract tourists.
- ❖ Faulting leads to formation of lakes that are important fishing grounds or tourists' sites or mining sites.
- ❖ The lakes provide water for irrigation or for domestic or industrial use.
- ❖ Faulting causes displacement of rocks which exposes minerals that are mined.
- ❖ Faulting may lead to the formation of mountains or horsts which experience rainfall on the windward side that give rise to rivers which provide water for industrial or domestic or agricultural or industrial use for production of hydroelectric power.

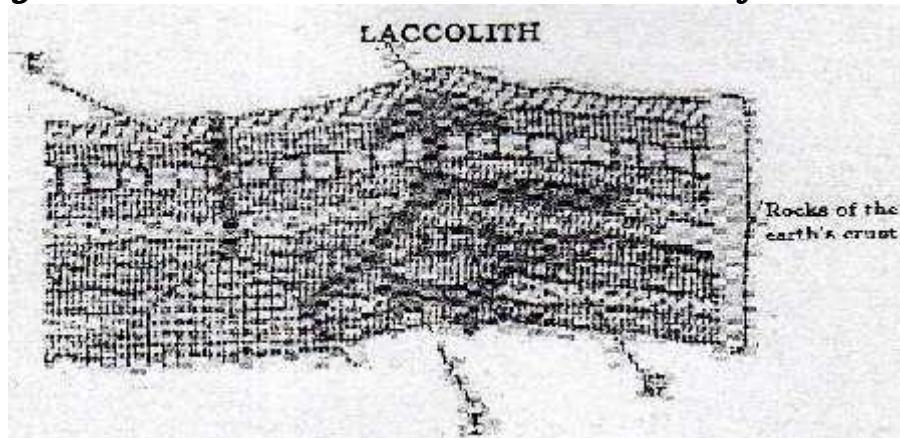


- ❖ Block mountains formed through faulting lead to formation of relief rainfall on the windward side which favours agriculture, settlements and forestry.
- ❖ Subsidence of land as a result of faulting may lead to loss of life and property.
- ❖ Springs occurring at the foot of fault scarps attract settlements.
- ❖ Faulting creates deep faults which are passages of stream jets which may be utilized for geothermal power production. Rivers flowing over fault scarps may form waterfalls which can be harnessed to produce Hydro Electric Power for industries.
- ❖ When faulting occurs across a ridge it may provide a dip which could form a mountain pass where transport and communication lines can be constructed or may hinder development of transport.

No. 10.(a) Differentiate between magma and lava. (2 marks)

- ❖ *Magma is the molten rock material which originates from the interior of earth, cools while below the earth's surface (and has large crystals) while lava is the molten rock materials that has reached the surface. (Has solidified and has small crystals).*

(b) The diagram below shows some intrusive volcanic features.



Name the features marked E, F and G (3 marks)

- ❖ E - Dyke
- ❖ F - Lapolith
- ❖ G - Sill

(c) Describe how the following features are formed and for each give an example from Kenya:

(i) A crater (3 marks)

- ❖ Eruption of lava through a central vent causes building up of a cone. The lava in the vent cools and contracts. The cool lava withdraws into the vent leaving a shallow depression on the cone. Gas explosions may blow away surface rocks causing a crater. Examples include Mt Longonot, Mt Menengai, Mt Suswa or Mt Marsabit

(ii) A geyser (5 marks)

- ❖ Rainwater percolates down through cracks in the rocks. The water gets into contact with hot igneous rocks. The water is super heated and gases/steam form. Pressure builds up in the cracks. The pressure causes steam and water to be ejected explosively as jet to the surface intermittently. The water and steam are emitted intermittently as pressure level changes. Example – Lake Bogoria



(iii) A lava plateau (4 marks)

- ❖ It is formed when magma reaches the surface of the earth through a series of vents/fissures. The lava is extremely fluid/ultra-basic. The lava spreads evenly over a large area .The lava cools slowly and solidifies. Examples - Yatta plateau, Uasin Gishu plateau and Laikipia plateau

(d) Explain four ways in which volcanic features influence human activities. (8 marks)

- ❖ Volcanic highlands or mountains are sources of rivers which provide water for domestic or agricultural or industrial use.
- ❖ Volcanic rocks weather down to form fertile volcanic soils which support agriculture.
- ❖ Volcanic rocks are important building materials in the construction industry.
- ❖ Volcanic features are tourist attractions which promote tourism.
- ❖ Volcanic mountains or highlands influence formation of relief rainfall which encourage agricultural activities.
- ❖ Volcanic highlands influence formation of relief rainfall which encourage agricultural activities.
- ❖ Volcanic highlands or mountains modify temperatures making them attractive to human settlements.
- ❖ Volcanic features such as steam jets and geysers provide suitable sites for geothermal power generation.



GEOGRAPHY PAPER 2

No. 1.(a) Name two exotic breeds of dairy cattle reared in Kenya. (2 marks)

- ❖ Fresian / Holstein
- ❖ Ayshire
- ❖ Guernsey
- ❖ Jersey
- ❖ Alderney
- ❖ Brown Swiss / Swiss Brown

(b) State three physical conditions that favour dairy farming in Denmark.

(3 marks (Page 143 2007 Q.5)

- ❖ The landscape is gently sloping which is suitable for grazing
- ❖ The climate has warm / sunny summers / moderate temperatures (10° – 17°C) that allow outdoor grazing.
- ❖ There is cool climate suitable for pasture growing
- ❖ The moderate rainfall (500–1000mm) that supports growth of grass / fodder crops
- ❖ Boulder clay soils are fertile support high pasture

No2.(a) Name the method of irrigation used in the Perkerra irrigation scheme (1 mark)

- ❖ Furrow / canal irrigation.

(b) State three factors that influenced the location of the Perkerra irrigation scheme. (3 marks (Page 150 2013 Q.7b)

- ❖ Availability of extensive land for irrigation.
- ❖ Availability of water from River Perkerra.
- ❖ The gently sloping land that allows mechanization/easy flow of water for irrigation by gravity.
- ❖ Presence of fertile loamy/alluvial soils good for the growth of a variety of crops.
- ❖ Dry conditions/semi arid/unreliable/low rainfall making it necessary to irrigate the area.
- ❖ The area is sparsely populated.

PP2 No. 3.(a) Differentiate between transport and communication. (2 marks)

- ❖ Transport is the movement of goods and people from one place to another while communication is the transmission of ideas of information from one person to another.

(b) State three causes of the decline in the use of letter writing as a means of communication in Kenya. (3 marks) (page 190 q6)

- ❖ The high rate cost of postage
- ❖ Competition from cheaper and faster means of communication
- ❖ The delay in the delivery of letters
- ❖ Loss of letters
- ❖ Tampering with letters



PP2 No. 4(a). Why is Kenya's petroleum refinery located at Mombasa?

(2 marks)

- ❖ It is easier to transport refined petroleum products than crude hence the need to process crude oil at the port of entry/ crude oil the raw material for the refinery comes by sea/it is cheaper to transport to the port of Mombasa/closeness to the source of raw material/Mombasa is the only port of entry.

(b) State three ways in which the clearing of forests has affected the natural environment in Kenya. (3 marks)

- ❖ It has led to reduced volume of water in the rivers / caused drying up of rivers.
- ❖ It has led to the destruction of the natural habitat of wildlife. It has endangered some of the wildlife species.
- ❖ It has led to changes in the rainfall pattern/ Desertification.
- ❖ It has interfered with the beauty of the environment / lowered the aesthetic value of the environment.
- ❖ It has disrupted the ecosystem
- ❖ It has accelerated soil erosion.

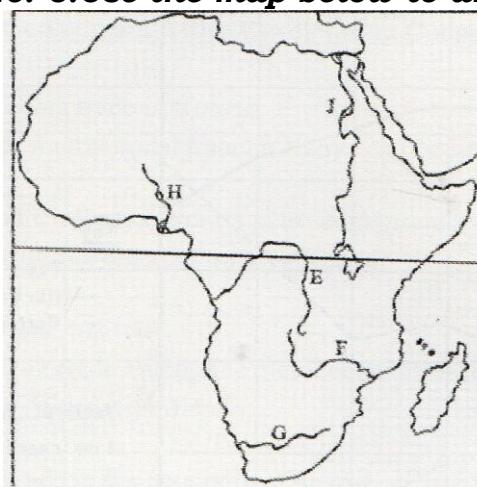
PP2 No. 5.(a) State three measures which the government of Kenya has taken to reduce infant mortality. (3 marks)

- ❖ Good nutrition
- ❖ Education
- ❖ Better health
- ❖ Advanced technology

(b) Give three negative effects of low population growth in a country. (3 marks)

- ❖ It leads to under utilization of resources,
- ❖ It leads to reduced market or goods
- ❖ It leads to reduced labour force / it is expensive to provide medical care / transport

PP2 No. 6. Use the map below to answer questions a (i) and (ii)



a) Name

(i) The rivers marked E, F and G (3 marks)

- ❖ E - R. Congo.
- ❖ F - R. Zambezi.
- ❖ G - R. Orange



(ii) The human-made lakes marked H and J. (2 marks)

- ❖ **H - Kainji**
- ❖ **J - Nasser**

(iii) Explain four measures which should be taken to improve inland water transport in Africa. (8 marks)

- ❖ The waterways should be dredged regularly to control siltation/ maintain constant depth of the rivers and lakes for easier navigation.
- ❖ Dams/barrages should be constructed to control flooding hence allowing navigation.
- ❖ Constructing canals/canalizing the rivers where waterfalls, rapids or rock outcrops exist to bypass obstacles that hinder navigation.
- ❖ Constant clearing/controlling the growth of vegetation to allow free movement of vessels.
- ❖ Using modern vessels and equipment to improve the efficiency of handling cargo/passenger service.
- ❖ Removal of rock obstacles from river beds to allow free navigation.

b) State four ways in which communication contributes to economic development in Kenya. (4 marks)

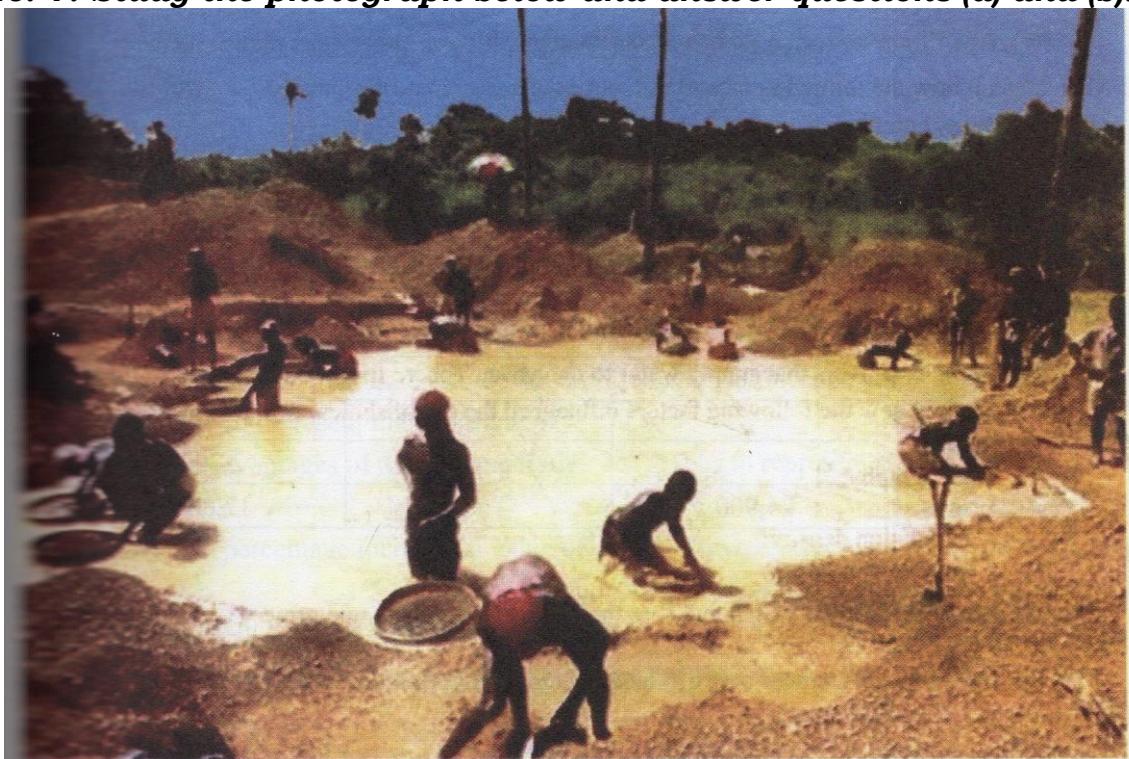
- ❖ Technological efficiency in communication makes business transactions easier/faster.
- ❖ Modern communication networks allow for the spread of ideas/information for decision making which enhances economic development.
- ❖ Communication promotes development of related industries/business opportunities.
- ❖ Communication services provide employment opportunities.
- ❖ Communication connectivity promotes mobility of labour.
- ❖ Individuals/Companies/Government earns income / derives revenue from communication services.
- ❖ Communication facilitates marketing of products thus a wider market

c) Explain four problems facing railway transport in Africa. (8 marks)

- ❖ African countries use a different railway gauges which makes it difficult to have an integrated railway transport system/transhipment of goods.
- ❖ Construction of railways requires large amounts of capital that most countries lack, either to extend or maintain the existing lines.
- ❖ Accidents/vandalism/uprooting of the railway line causes great losses/delays in transportation.
- ❖ Tropical storm waters at times wash away vital sections of the railway lines thereby disrupting transport/causes accidents.
- ❖ Railway transport faces stiff competition from the faster/flexible means of transport such as road and air transport hence under-utilization of railway facilities.
- ❖ Fuelling/maintenance of railway stations and other related overhead costs are high thus reducing profit margins.



PP2 No. 7. Study the photograph below and answer questions (a) and (b).



(a) i Name: (i) the mining methods shown in the photograph; (1 mark)
❖ Panning/alluvial mining/placer mining

(ii) two minerals that may be mined using the method shown in the photograph. (2 marks) –

- ❖ Gold,
- ❖ Diamond,
- ❖ Platinum,
- ❖ Tin

(b) (i) Using evidence from the photograph, give four indicators that show that the weather was hot when the photograph was taken. (4 marks)

- ❖ Almost all the miners have removed their shirts/bare chested.
- ❖ Some miners are wearing hats/head scarfs
- ❖ The sky is clear.
- ❖ The shadows indicate that the sun is almost overhead.
- ❖ Use of an umbrella by a person at the middle ground.
- ❖ Bodies are glistening with sweat/sweaty bodies.
- ❖ There is a reflection of the sun rays on the water surface .

(ii) Describe how minerals are obtained using the mining method shown in the photograph.(5 marks)

- ❖ A mixture of water, solid/mud and mineral particles is scooped from the water bed using a pan. Water is added if the mixture is thick/if the water is excess it is decanted. The material scooped is swirled in the pan. This separates the lighter material from the heavier particles which contain the mineral particles. The lighter material is removed/poured out. The heavier materials are sorted to display mineral particles. The mineral particles are collected from the pan.



(iii) Citing evidence from the photograph, explain two ways in which the mining method shown has affected the environment. (4 marks)

- ❖ The scooping of materials has led to water pollution as indicated by the brown colour stagnant water which may make it unfit for people to use.
- ❖ The continuous scooping and dumping of the waste has led to land dereliction as indicated by the depression and heaps of waste material.
- ❖ The method has led to destruction of vegetation as miners cleared the land to access the area with the mineral as indicated by absence of vegetation/bare ground/in the foreground/middle ground.
- ❖ The method has led to loss of biodiversity/destroyed the ecosystem as indicated by the absence of plant life where mining is taking place

(iv) Apart from the method shown in the photograph, name three other mining methods.(3 marks) :

- ❖ Opencast/stripping method,
- ❖ Deep shaft/underground method/solution.
- ❖ Adit/drift/horizon/tunnel method/slope mining,
- ❖ Drilling method.

(c) Explain how the following factors influence the occurrence of minerals:

(i) evaporation; (2 marks)

- ❖ High temperatures in arid and semi-arid areas cause evaporation of water in lakes/seas. This leads to high concentration of mineral salts in the water. Continued evaporation causes further recrystallization of the salts which may thereafter be attracted as minerals such as soda ash and common salt/deposition of salts near the surface

(ii) vulcanicity; (2 marks)

- ❖ When molten magma intrudes into rock joints minerals contained in the magma embedded in the joints called veins. Such minerals as tin and copper occur in this form/ Hot springs/geysers. Fumaroles bring minerals to the earth's surface

(iii) metamorphism (2 marks)

- ❖ High pressure and heat cause recrystallization and hardening of certain rocks causing them to change their nature to and become minerals such as diamond.

PP2 No. 8.a) (i) Name two settlement patterns. (2 marks)

- ❖ Nucleated settlement/ clustered
- ❖ Dispersed settlement / scattered
- ❖ Linear settlement
- ❖ Radial settlement



(ii) Explain four physical factors that influence settlement. (8 Marks)

- ❖ Areas that receive high reliable rainfall attract more people since they can engage in arable farming/ areas that receive low rainfall have fewer people as they are unsuitable for arable farming.
- ❖ Areas near water bodies attract dense settlements as the water is available for domestic/ industrial use / areas of scarcity water discourages settlement since it is difficult to get water hence low productivity.
- ❖ Areas with cool moderate temperature are densely settled as they can support agriculture / human life. Areas with extreme temperatures are sparsely settled as they are uncomfortable for human beings.
- ❖ Areas with fertile soils attract settlement as a wide range of crops can be grown / poor soils/ poorly drained soils are unsuitable for arable farming / are prone to water diseases.

(b) (i) Explain how the following factors have led to the growth of Thika town.

- Location; (2 marks)

- ❖ Its proximity to Nairobi has led to industrial expansion as Nairobi acts as market to its products/ supplies

- Transport; (2 marks)

- ❖ It has a railway / road connection which provides easy movement of food/people/raw materials/finished products

- Land. (2 marks)

- ❖ There is ample/flat land for development of industries/ settlement
- ❖ The cost of land is relatively cheap hence attracts investors

(ii) Apart from being a transport and communication centre, give three other functions of Thika town. (3 marks)

- ❖ It has a railway/ road connection which provides easy movement of food/people
- ❖ It is an industrial center
- ❖ It is an educational center
- ❖ It is a commercial center
- ❖ It is an administrative center
- ❖ It is recreational center
- ❖ It is a religious center.

(c) Explain three positive effects of urbanization to a country. (6 marks)

- ❖ It encourages national unity as people of different nationalities come together and interact
- ❖ It promotes links between countries as communication networks tend to focus on and are more developed in urban centres
- ❖ It provides employment opportunities through the establishment of commercial and industrial activities which attract population that provide labour.



No. 9.(a) Identify three sources of renewable energy.

(3 marks)

- ❖ Wind
- ❖ Sun
- ❖ Water
- ❖ Tides / waves
- ❖ Geothermal steam
- ❖ Biomass
- ❖ Wood/trees
- ❖ Drought animals

**(b) (i) Name three main Hydro Electric Power Stations along the River Tana.
(3 marks)**

- ❖ Masinga
- ❖ Kamburu
- ❖ Gitaru
- ❖ Kindaruma
- ❖ Kiambere

(ii) Apart from providing electric power, state four other benefits of the dams along the River Tana. (4 marks)

- ❖ The reservoirs provide water for domestic use / industrial use/irrigation.
- ❖ The dams / reservoirs are tourist attractions.
- ❖ The reservoirs are fresh water fisheries.
- ❖ The reservoirs modify local climate.
- ❖ The dams act as bridges across the river.
- ❖ The dams and reservoirs control floods downstream.

(iii) Identify two problems that affect the production of power from the stations along River Tana. (2 marks)

- ❖ Fluctuations of water levels in the reservoirs.
- ❖ Inadequate capital for maintenance / high cost of dredging/expansion.
- ❖ Silting of the reservoirs

(c) Explain four measures the Government of Kenya has taken to conserve energy. (8 marks)

- ❖ Encouraging people to use renewable sources in order to reduce the overreliance on fossil fuels,
- ❖ Developing energy saving technologies in order to reduce the high consumption of energy,
- ❖ Enforcing the legislation against indiscriminate cutting down of trees for fuel thus conserving existing resources.
- ❖ Educating the public on the careful use of energy in order to save it.
- ❖ Progress taxation on energy consumption in order to discourage the misuse of energy,
- ❖ Proper planning of road networks in urban areas to reduce traffic jams hence saving on fuel consumption,
- ❖ Encouraging the use of public transport/walking/cycling/railway in order to reduce the number of vehicles on the roads thus reducing energy consumption,
- ❖ Discouraging importation of high fuel consumption vehicles to reduce amount of fuel used.
- ❖ Encouraging afforestation/ reafforestation for continuous supply of wood fuel.



(d) Some students carried out a field study on sources of energy by sampling the households around their school.

(i) Identify two sampling techniques the students may have used during the study.(2 marks)

- ❖ *Stratified*
- ❖ *Random*
- ❖ *Systematic*

(ii) Give three advantages of sampling the households for the study.

(3 marks)

- ❖ *To save on time.*
- ❖ *To reduce bias.*
- ❖ *To allow for detailed study.*
- ❖ *To reduce cost.*



HISTORY & GOVERNMENT

PAPER 1

No. 1 .Identify one disadvantage of using anthropology as a source of information in History and Government. (1 mark)

- ❖ It is time consuming
- ❖ It is an expensive method
- ❖ Information collected may be inaccurate/ distorted
- ❖ Information collected may be biased.

No.2.Identify two communities in Kenya which belong to the Western Bantu group. (2 marks)

- ❖ The Luhya
- ❖ Kuria,
- ❖ Kisii
- ❖ Abasuba

No.3.State two similarities in the political organisation of the Ameru and Abaluhya of Kenya during the 19th Century. (2 marks)

- ❖ The clans formed the basic political unit
- ❖ Leadership was by the council of elders
- ❖ Both had age set systems
- ❖ The council of elders settled disputes
- ❖ They had warriors who defended their communities

No.4.Give one economic duty of a Kenyan citizen. (1 mark)

- ❖ Participating in development activities
- ❖ Paying taxes.
- ❖ Protecting the environment
- ❖ Fighting corruption

No.5.Identify two foreign powers that took control of the Kenyan Coast during the 16th Century.(2 marks)

- ❖ Egyptians
- ❖ Turks
- ❖ Arabs
- ❖ Persians
- ❖ The British
- ❖ Dutch
- ❖ French

No.6.Which factor influenced Seyyid Said to develop agriculture in Zanzibar during the 16th Century? (2 marks)

- ❖ Zanzibar had favourable climate for clove growing.
- ❖ Availability of labour/slave labour
- ❖ Zanzibar had a natural deep harbour which would promote trade in agricultural products.
- ❖ Zanzibar had fertile soil.



No.7.State two ways through which the construction of the Uganda railway facilitated the colonisation of Kenya. (2 marks)

- ❖ It enhanced the transportation of troops/administrators
- ❖ It opened the country to European settlers
- ❖ It led to forceful displacement/loss of land by some communities

No.8 .State the meaning of "Direct democracy".(1 mark)

- ❖ It is a government where people themselves make rules/ decisions that affect their welfare.

No.9.Give two Education Commissions appointed by the Government of Kenya to review the Education System since independence. (2 marks)

- ❖ The Kenya Education Commission/Ominde Commission of 1964.
- ❖ The National Committee on Education objectives and policies/Gachathi commission of 1976.
- ❖ The presidential working party on the Second University/Mackay Commission of 1981.
- ❖ The Kamunge Commission 1988
- ❖ David Koech Commission 1999



No. 10. Identify one reason why the government may limit one's freedom of expression in Kenya. (1 mark)

- ❖ If one's speech incites the public against the state.
- ❖ If one discloses confidential information relating to the state.
- ❖ If one spreads false information about the state / individual.

No. 11. State two features of African farming in Kenya during the colonial period. 2 marks)

- ❖ Small scale farming was practiced
- ❖ Africans mainly grew foods
- ❖ Traditional methods of farming were used.

No. 12. What was the main reason why the second Lancaster House Conference was held in 1962? (1 mark)

- ❖ To come up with a constitution for independent Kenya

No. 13. State one way through which the Harambee spirit among Kenyans promotes national unity. (1 mark)

- ❖ It encourages people to work together
- ❖ It promotes cooperation
- ❖ It promotes equity in the distribution of resources
- ❖ It enhances interaction of people
- ❖ It promotes patriotism

No. 14. Give two negative effects of over reliance on foreign aid for the country. (2 marks)

- ❖ It is given with conditions.
- ❖ It attracts high interest rates.
- ❖ It creates donor dependency syndrome/debt crisis
- ❖ It limits the choice of trading partners.
- ❖ It delays the implementation of projects.

No. 15. Give one symbol of national unity in Kenya. (1 mark)

- ❖ The National flag
- ❖ The National Anthem
- ❖ The Coat of Arms
- ❖ The Loyalty pledge
- ❖ The Presidency
- ❖ The Constitution
- ❖ The National language

**No. 16. Who is the administrative head of Parliament in Kenya?
(1 mark)**

- ❖ The Clerk

No. 17. Identify the police department responsible for maintaining law and order.(1 mark)

- ❖ The Administration police



No. 18a .Identify five causes of the Nandi resistance against British invasion in Kenya (5 marks)

- ❖ They wanted to safeguard their independence
- ❖ They were proud people who disliked interference by strangers
- ❖ Had successfully raided /fought their neighbours/intruders in the past
- ❖ They disliked the whiteman's/European skin colour/dressing.
- ❖ They did not want to lose their land.
- ❖ They fought to avert the fulfillment of Kimnyole/Orkoiyors prophecy
- ❖ They had an able leader who inspired them to fight/resist.

No. 18b .Explain five results of the Maasai collaboration with the British in the early 20th Century. (10 marks)

- ❖ Lenana was made a paramount chief of the Maasai because of his cooperation.
- ❖ They lost land which was taken up by the British for farming/ settlement.
- ❖ They were rewarded with material wealth/granted favoured status due to their cooperation.
- ❖ They lost their independence/were manipulated as their land became a British protectorate.
- ❖ It led to the division/separation between those for/against collaboration thereby weakening them further.
- ❖ They were hired as mercenaries to assist the British in subduing/ suppressing communities that were resisting establishment of colonial rule.
- ❖ It led to the eviction/displacement of the Maasai thereby causing untold suffering/loss of livelihood.
- ❖ It led to the disruption of their economic structure thereby causing loss of wealth

No. 19a.Outline three reasons of Somali resistance against the British rule in Kenya in the 19th Century. (3 marks)

- ❖ The Somali were opposed to the division of Somaliland into the British and Italian spheres of influence which separated the clans
- ❖ They were opposed to punitive expeditions sent against them by the British
- ❖ The Somali people being Muslims were opposed to being controlled by the British who were Christians
- ❖ The British attempted to stop the Somali raiding activities against their neighbours
- ❖ The Somali were against British Control of their pasture land and watering points
- ❖ The British wanted the Somali to drop their nomadic way of life



No.19b .Describe six negative effects of British colonial rule on the people of Kenya. (12 marks)

- ❖ Colonial rule led to the loss of political independence
- ❖ Creation of reserves for Africans led to the emergence of Squatters
- ❖ It led to the introduction of forced labour among the Africans
- ❖ Led to the introduction of taxation on Kenyans
- ❖ Creation of colonial boundaries split communities and affected their social cohesion.
- ❖ Africans in Kenya lost their land to Europeans settlers leading to landlessness
- ❖ Colonial rule undermined African cultural practices
- ❖ It destroyed traditional African political systems replacing them with appointed leaders
- ❖ Introduced segregation/ colour bar which created divisions among Kenyans

No.20a. Outline five grievances expressed by the Kikuyu Central Association and presented by Jomo Kenyatta to the Colonial Secretary in 1929. (5 marks)

- ❖ Land alienation.
- ❖ Taxation of Africans.
- ❖ Lack of African representation at Legco
- ❖ Lack of quality/poor education for Africans.
- ❖ Release of Harry Thuku.
- ❖ Abolition of forced labour
- ❖ Abolition of Kipande system

No.20b.Explain the role played by Thomas Joseph Mboya in the development of trade union movement in Kenya. (10 marks)

- ❖ He was instrumental in the formation of trade union movement.
- ❖ He served as a leader in trade union organizations both locally and internationally. :
- ❖ He organized protests/ demonstrations against the arrest and harassment of trade union members/workers.
- ❖ He liaised with international trade union organizations where he gained knowledge/ experience of running trade unions.
- ❖ He solicited for funds to finance the activities of trade Union movement in Kenya.
- ❖ He organized trade union courses/ seminars in various parts of the country to educate the workers/leaders.
- ❖ He agitated for better terms/conditions for workers.
- ❖ He attended courses on industrial relations abroad where he gained knowledge on labour relations
- ❖ No.21a.State three challenges that hinder government effort to eradicate illiteracy in Kenya. (3 marks)
- ❖ Traditional/cultural beliefs in some communities discourage people from schooling.
- ❖ Lack of enough schools/inadequate educational facilities has made education inaccessible in some regions/ shortage of teachers.
- ❖ High poverty levels in the society has made education unaffordable.
- ❖ Misconceptions that one can succeed without education.
- ❖ Nomadic ways of life in some communities has hampered provision of education.



- ❖ Negative attitude towards adult education programmes has resulted in low enrolment
- ❖ Insecurity in some regions

No.21b .Describe six factors that have influenced industrialisation in Kenya since independence. (12 marks)

- ❖ The availability of modern sources of energy has enabled the establishment of more industries which process different products.
- ❖ Availability of both skilled / unskilled labour from large population provides the workforce needed in industries.
- ❖ Good transport and communication has created a viable environment for industrial development as the products can be transported with ease.
- ❖ The agriculturally rich country provides raw materials required in the processing of various products.
- ❖ The existence of mineral resources has given rise to industries which process them into finished products.
- ❖ The existence of both natural and man- made forests has promoted the development for furniture industries in many parts of the country.
- ❖ Availability of water resources rich in fish has given rise to fish processing industries in the country.
- ❖ Government initiatives through creation of trade, commerce and industry

No.22a.Identify five circumstances that can make a registered voter be denied the right to vote in Kenya. (5 marks)

- ❖ When one is insane/ unsound mind
- ❖ When one presents oneself in a constituency where one is not registered
- ❖ When one is discovered to have registered twice
- ❖ When one does not have a voter's card on the voting day
- ❖ When one does not have a national identification Card on the voting day/ one has a defective National Identification Card
- ❖ When ones name does not appear in the voters register
- ❖ When one is time barred/ late

- ❖ No.22b.Describe the rights of an accused person in a court of law during trial in Kenya.(10 marks)
- ❖ The accused person is presumed innocent until proven guilty
- ❖ He/ She should be informed of the charge with sufficient detail so as to prepare a defence.
- ❖ One should be given adequate time to consult with the advocate/ witness
- ❖ One should be present when court proceedings are taking place
- ❖ One should be given a chance to plead for leniency
- ❖ One should not be forced to give evidence
- ❖ One should be allowed to be heard
- ❖ One should be allowed to appeal against the ruling
- ❖ Right to legal representation
- ❖



No.23a.Name five types of courts in Kenya (5 marks)

- ❖ The Court of Appeal
- ❖ The Chief Magistrates Court
- ❖ The Resident Magistrates Court
- ❖ The Senior Principal Magistrates Court
- ❖ Special Courts/Tribunals

No.23b.Explain the importance of separation of powers between the Legislature, Executive and Judiciary in Kenya. (10 marks)

- ❖ To make the co-ordination of government programmes and administration effective.
- ❖ To enable the government to facilitate division of labour.
- ❖ It helps prevent abuse of power/provides checks and balances.
- ❖ It promotes efficient service delivery.
- ❖ It is a constitutional requirement
- ❖ To enhance accountability
- ❖ It promotes transparency/openness in government dealings.
- ❖ It ensures that no arm of the government interferes with the other.

No.24a .Give the three categories of the Kenya Defence Forces. (3 marks)

- ❖ The Kenya Army
- ❖ The Kenya Air force
- ❖ The Kenya Navy

No.24b.Explain six challenges encountered by the Kenya Police Service in the course of discharging their duties. (12 marks)

- ❖ Lack of support/negative attitude from the members of the public who /withhold useful information
- ❖ Corruption among some officers renders them ineffective in discharging their duties
- ❖ Inadequate transport facilities hamper their movement making it difficult to respond to emergencies.
- ❖ Sophisticated weapons used by criminals threaten/endanger police officer's lives.
- ❖ Inadequate modern communication equipment makes it difficult for them to relay/pass confidential information.
- ❖ Interference by politicians/members of the public demoralizes/frustrates their efforts
- ❖ Betrayal by some officers who collude with criminals to break the law/subvert justice.
- ❖ Inadequate training of the officers renders them incompetent in discharging their duties
- ❖ Increased acts of terrorism/crime
- ❖ Poor working and living conditions eg. poor housing/low salaries.



HISTORY & GOVERNMENT PAPRT 2

No. 1. Give one type of written materials used by historians as a source of History and Government. (1 mark)

- ❖ Books/ charts/ maps/ scrolls/ paintings/ clay labels/ stone tablets
- ❖ Newspapers/ magazines
- ❖ Diaries/ biographies
- ❖ Journals/ periodicals
- ❖ Official/ government records

No. 2. Give one negative effect of the land enclosure system in Britain during the 18th Century.(1 mark)

- ❖ It displaced the poor people / landlessness
- ❖ It forced the poor to migrate to urban centres
- ❖ It increased pauperism/ poverty in Europe
- ❖ It created immigrants to other parts of the world

No. 3. Mention one type of trade.(1 mark)

- ❖ Local trade
- ❖ Regional trade
- ❖ International trade

**No. 4. Highlight two uses of copper in Africa during the 19th Century.
(2 marks)**

- ❖ Making utensils.
- ❖ Making ornaments.
- ❖ To make weapons.
- ❖ As a medium of exchange/trade item.
- ❖ It was mixed with other metals to make alloys.
- ❖ It was used for making tools
- ❖ It was used as a trade item.
- ❖ It was used to make statues

No. 5. Identify two metals used as currency in pre-colonial Africa.(2 marks)

- ❖ Iron
- ❖ Gold
- ❖ Copper
- ❖ Silver
- ❖ Bronze

No. 6. Identify two groups who participated in the Trans-Atlantic Trade.

- ❖ The Europeans
- ❖ The Africans
- ❖ The Americans.

No. 7. Give one reason that led to the decline of Meroe as an early urban centre.(1 mark)

- ❖ The rise of the Axum the Kingdom which developed East of Meroe denied Meroe access to the red sea causing decline in trade.
- ❖ The king of Axum subdued and destroyed Meroe in 350 A.D
- ❖ Desertification due to deforestation led to decline of food supply for her people.
- ❖ Deforestation caused the decline of food supply for her people.



No.8. Outline the main factor that led to the growth of the ancient town of Kilwa. (1 mark)

- ❖ It's control of the Sofala gold trade/trade in gold

No.9. Identify two reasons why early urban centres in ancient Egypt developed along the Nile Valley.

- ❖ Water from the river was used for transportation
- ❖ Water from the river was used for domestic use/ industrial use
- ❖ The Nile valley contained fertile soil for farming/ availability of food
- ❖ The Nile valley had cool temperature which encouraged settlement
- ❖ Vegetation along the river provided building materials

No.10 Identify two officials who assisted the ruler of the Shona to administer the Kingdom (2 marks)

- ❖ The head cook
- ❖ Head gate keeper/ chancellor
- ❖ The court steward/ chamberlain/ chancellor
- ❖ The Queen Mother
- ❖ The head drummer
- ❖ The head of the Army
- ❖ The Treasurers
- ❖ The Senior son in law
- ❖ The Nine principal wives of the King
- ❖ The King's sister

No.11. Mention one consequence of the French Assimilation Policy in Senegal (1 mark)

- ❖ All colonies were subjected to the same law.
- ❖ Racial discrimination was minimal in the colonies.
- ❖ It undermined African culture.
- ❖ French goods and modern ways spread in West Africa.
- ❖ Educated Africans spearheaded nationalism in Africa.
- ❖ Africans were represented by deputies in the National Assembly

No.12.Name two principal organs of the United Nations (2 marks)

- ❖ The General Assembly
- ❖ The Security Council
- ❖ The Economic and Social Council
- ❖ The Secretariat
- ❖ The Trusteeship Council
- ❖ The International Court of Justice

No.13. Give one economic problem experienced by the British colonialists in Nigeria

- ❖ They lacked adequate funds
- ❖ Poor transport / communication undermined their work
- ❖ They lacked adequate skilled labour



No. 14. State two objectives of the African National Congress in South Africa. (2 marks)

- ❖ To unite all black people to win majority rule in South Africa.
- ❖ To encourage a united anti-racial activities/oppose apartheid.
- ❖ To remove all forms of injustices.
- ❖ To win a vote/franchise for all the people of South Africa

No. 15. Identify one financial institution established by the African Union (1 mark)

- ❖ The African Monetary Fund
- ❖ The African Central Bank
- ❖ The African Investment Bank

No. 16. Identify the country that was blamed for the outbreak of the First World War. (1 mark)

- ❖ Germany

No. 17 .Mention two ways in which Non-Aligned members safeguarded their National Security. (2 marks)

- ❖ By keeping off from conflicts of non-member countries
- ❖ By maintaining their sovereignty/independence
- ❖ By maintaining their economic independence
- ❖ By not identifying with either Communism or Capitalism
- ❖ By taking independent decisions/actions in international fora
- ❖ By maintaining their cultural identity
- ❖ By not joining trade alliances

No. 18a. Give three disadvantages of hunting as an economic activity by early human beings.(3 marks)

- ❖ It was difficult to locate/spot the animals
- ❖ Animals were a threat/dangerous to humans;
- ❖ It required many people;
- ❖ Hunting was time consuming;
- ❖ It was tiresome/cumbersome;
- ❖ Animals ran faster than man

No. 18b. Describe six results of iron working technology on African communities before the 19th Century. (12 marks)

- ❖ The use of iron tools made cultivation of the land easier/faster as they were more efficient.
- ❖ Iron tools were used to clear forests thereby enabling people to migrate/settle in new areas.
- ❖ Iron weapons were used to fight other communities thereby increasing warfare/ conflicts.
- ❖ It led to the rise of professional smiths who were accorded high status in the community
- ❖ The demand for iron tools enhanced trade between communities.
- ❖ Communities were able to protect themselves better using iron weapons.
- ❖ Powerful states emerged as iron weapons were used to conquer/ annex weaker communities/territories



- ❖ Iron implements were used as a medium of exchange thereby facilitating trade transactions.
- ❖ The use of iron tools/ implements led to increased food production, since more land was brought under cultivation
- ❖ Led to development of towns e.g Meroe.

No. 19a. (a) Outline three challenges faced by factory workers in Europe during the Industrial Revolution. (3 marks)

- ❖ They were paid low wages/ salaries
- ❖ They worked for long hours
- ❖ They were exposed to accidents
- ❖ Accidents victims were laid off without compensation.
- ❖ Inadequate housing made them live in slums.
- ❖ They suffered from diseases due to poor sanitation/pollution

No. 19b. Describe six factors that have encouraged industrialisation in South Africa. (12 marks)

- ❖ The availability of many sources of energy to provide the required power of industrialization.
- ❖ The existence of varied mineral resources to sustain the process of industrialization.
- ❖ The presence of well developed transport network a infrastructure to facilitate the movement of raw materials and finished industrial goods to the market.
- ❖ The availability of both internal and external markets for their manufactured goods.
- ❖ The availability of both skilled and unskilled manpower required for industrialization.
- ❖ The availability of capital generated from South African trade in other goods has enabled her to set up industries.
- ❖ The government's sound industrial policies which encouraged both local and foreign investors to boost industrialization.
- ❖ The high quality of goods has led to increased demand for South African manufactured goods.
- ❖ The political stability in the country since the end of the apartheid era has created a conducive environment for industrial development.

No.20a . (a) Outline five economic activities of the Asante during the 19th Century. 5 marks)

- ❖ They grew crops for food/trade;
- ❖ They carried out trade among themselves/other groups.
- ❖ They were involved in mining;
- ❖ They practiced Art and crafts/basketry/weaving
- ❖ They practiced iron working/black smithing;
- ❖ They did hunting/gathering;
- ❖ They practiced pottery making



No.20.(b) Outline the social organization of the Buganda Kingdom during the pre-colonial period. (5 marks)

- ❖ They were organized into clans which had their own traditions/customs.
- ❖ They worshipped many gods with Katonda as their supreme God / polytheism
- ❖ The people highly regarded the Kabaka whom they considered to be semi-divine.
- ❖ The people believed in life after death since they worshipped the spirits of the dead.
- ❖ The umbilical cord/jaw bones of the Kabaka were preserved for future remembrance.
- ❖ The people performed sacrifices during the time of misfortune/fortune.
- ❖ They had symbols of royalty in form of royal drums/spears/crowns which were kept at the Kabaka's palace
- ❖ They had religious shrines which were scattered all over the Kingdom.
- ❖ They were polygamous / married many wives in order to strengthen social relations

No.21.(a) Give five reasons that encouraged nationalists in Mozambique to use armed struggle to attain independence. (5 marks)

- ❖ Portugal refused to listen to the grievances of the Africans.
- ❖ The nationalists were trained in fighting skills.
- ❖ The liberation committee of the Organization of African Unity/Tanzania and other (O.A.U) members supported the nationalists with finance and weapons.
- ❖ The nationalists were supported and encouraged by communist countries.
- ❖ The success of MauMau freedom fighters in Kenya inspired them.
- ❖ The country was forested and conducive for guerilla warfare.
- ❖ The United Nations (UN) denounced colonialism thus boosting the morale of the nationalists.

No.21.(b) Explain the challenges faced by the Nationalists in Mozambique. (10 marks)

- ❖ They lacked basic needs such as food, clothes and medicine.
- ❖ Ideological differences led to the formation of rival guerrilla movements such as MANU, COREMO and FRELIMO.
- ❖ The nationalist were demoralised due to the assassination of their leader Eduardo Mondlane.
- ❖ The Portuguese government ruthlessly suppressed the nationalist movement.
- ❖ The South African apartheid government assisted the Portuguese to fight the nationalists.
- ❖ Portugal outlawed political movements
- ❖ The Christian church in Mozambique condemned the nationalist movement

22.(a) Outline five aims of the Organisation of African Unity (OAU). 5 marks)

- ❖ To promote unity among African states.
- ❖ To end all forms of colonialism in Africa.
- ❖ To promote human rights in African countries in line with the United Nations' Charter.
- ❖ To promote social, economic and political cooperation in Africa in order to uplift the peoples standards of living.
- ❖ To uphold the policy of non-alignment in international affairs.



- ❖ To uphold the policy of non-interference in the internal affairs of member states.
- ❖ To recognize/respect the territorial/ sovereignty of member states.
- ❖ To promote peaceful settlement of disputes among member states.

No.22b.b) Discuss the difference between the Organisation of African Unity (OAU) and the African Union (AU). (10 marks)

- ❖ The structure of the African Union is more elaborate than that of the Organisation of African Unity/ The African Union has more organs than the Organization of African Unity.
- ❖ African Union unlike the Organisation of African Unity has the mandate to intervene in the internal affairs of member states who violate human rights.
- ❖ African Union is viewed as an organisation of African peoples while Organisation of African Unity was an organisation of African executives.
- ❖ African Union has an ambitious economic development agenda for Africa Orgnisation of African Unity was mainly concerned with political issues of the continent.
- ❖ African Union has an accountability mechanism/the African Peer Review Mechanism while the Organisation of African Unity lacked it.
- ❖ The Organisation of African Unity was formed by independent African countries to fight colonialism where as African Union focuses on the challenges facing African countries today.
- ❖ The African Union has established the court of Justice to handle cases involving victims of human rights violation within the member states while Organisation of African Unity lacked this agency.
- ❖ The African Union unlike the Organisation of African Unity has established a close working relationship with other countries of the world through Information Communication Technology to enhance globalization.
- ❖ The African Union has proposed the creation of a standing African army whereas the Organization of African Unity did not think of it.

23a .(a) Highlight the role played by the United States of America (USA) in ending the second World War. (3 marks)

- ❖ The U.S.A provided modern military equipment to the allied forces.
- ❖ She gave financial support to the allied forces.
- ❖ She provided military personnel to the allied powers.
- ❖ U.S.A blockaded the Panama Canal against the central powers.
- ❖ She dropped atomic bombs at Horishoma and Nagasaki which forced Japan to surrender.



No.23b .Describe six causes of the cold war after 1945 (12 marks)

- ❖ The disagreements between the Soviet Union and the United States of America over reduction of arms led to arms race.
- ❖ The occupation of Eastern Europe by Soviet Union caused fear among U.S.A and its allies in Western Europe/Iron curtain policy by the USSR.
- ❖ The ideological differences pursued by the U.S.A and U.S.S.R created mistrust/suspicion among them leading to hostility.
- ❖ The domination of the United Nations by the United States of America and her allies was checked by U.S.S.R through the use of her veto power thus increasing the tension.
- ❖ The involvement of both United States of America and U.S.S.R in European conflicts in the late 1940s created tension among them.
- ❖ America's Marshal Plan to revive European economies after the war made U.S.S.R to counteract by forming a similar one/COMECON thus enhancing tension.
- ❖ Formation of military alliances/N.A.T.O by United States of America and her allies led to U.S.S.R and her allies to form a similar alliance/Warsaw pact thus intensifying the rivalry.
- ❖ Construction of the Berlin wall by U.S.S.R in Germany to block Westerners after the Second World War

No.24a.State three requirements one has to fulfil in order to contest as a presidential candidate in the United states of America (USA) (3 marks)

- ❖ Be at least 35 years old.
- ❖ Be an American citizen by birth.
- ❖ Must have been a resident of the country for 14 years

No.24b .(b) Explain the functions of the United States Congress. (12 marks)

- ❖ It acts as a check on the executive arm of the government by examining administrative work.
- ❖ It approves taxation measures and makes sure that the government expenditure is properly used and accounted for.
- ❖ Making laws
- ❖ Amend laws.
- ❖ Senate approves treaties with foreign countries
- ❖ It can appoint a commission of inquiry to investigate any problem.
- ❖ Senior civil servants are appointed by the president with the approval of the senate.
- ❖ Congress closely monitors the conduct of the president, vice president and other senior public officials.
- ❖ Congress is a representative body elected by the people and it reflects the aspiration and interest of the American people.



HOME SCIENCE

PAPER 1

No. 1. Suggest four uses of carrots in cookery. (2 marks)

- ❖ In garnishing when used to add colour, decorate or to improve appearance
- ❖ In vegetable salad when used as an accompaniment
- ❖ To enhance colour in food when cooked with other food
- ❖ To make soups as a starter course e.g. carrot soup
- ❖ To enhance the nutritive value of the food
- ❖ As an appetizer when eaten raw at the beginning of a meal
- ❖ To add flavour when cooked with other foods
- ❖ To make nutritional drink i.e. carrot drink.
- ❖ To exercise the teeth and jaw when eaten raw
- ❖ To clean food particles after a meal especially in packed meals

No. 2. Differentiate between macro and micronutrients. (2 marks)

Macro nutrients are large units of nutrients. These are the protein, fats and carbohydrates

Micro-nutrients are small units of nutrients. These are the vitamins, minerals and fatty acids. They are both needed for healthy body function. They are important for sperm count to be high. Without these there would be no more future children. Micro nutrients are smaller than Macro nutrients, but they are chemically more complex.

- **Micronutrients** are nutrients required by humans and other living things throughout life in small quantities to orchestrate a whole range of physiological functions, but which the organism itself cannot produce. For people, they include dietary minerals in amounts generally less than 100 micrograms/day - as opposed to macrominerals which are required in larger quantities. The **microminerals** or **trace elements** include:
iron, cobalt, chromium, copper^[2], iodine, manganese, selenium, zinc and molybdenum. Micronutrients also include vitamins, which are organic compounds required as nutrients in tiny amounts by an organism.

No. 3. Give two reasons why butter is suitable for creaming in cake making. (2 marks)

- ❖ It has high creaming power that is capacity to incorporate air during creaming as it has sufficient plasticity to trap air bubbles.
- ❖ It has good shorting power to shorten the gluten strands in the moistened flour readily breaking them hence making the mixture short and tender.
- ❖ It has good flavour.
- ❖ It is easy to cream- Light at room temperature
- ❖ As animal fat it contains vitamin A and D.

No. 4. Give four reasons for blanching vegetables. (2 marks)

- ❖ stops the action of enzymes.
- ❖ kills bacteria.
- ❖ retains nutrients.
- ❖ retains colour.
- ❖ reduces bulk



No.5. Give four reasons for blanching vegetables

- ❖ stops the action of enzymes.
- ❖ kills bacteria.
- ❖ retains nutrients.
- ❖ retains colour.
- ❖ reduces bulk.

No.6. Give two reasons for covering food while cooking. (2 marks)

- ❖ To prevent loss of volatile nutrients
- ❖ To retain heat/to cook faster
- ❖ To prevent foreign material from entering the pan/pot
- ❖ To prevent loss of flavour.
- ❖ To prevent evaporation of water.
- ❖ To ensure even cooking.

No.7. State two problems that may occur on the feet as a result of wearing tight fitting shoes. (2 marks)

- ❖ Corns
- ❖ Blisters
- ❖ Ingrown toe nails
- ❖ Bent toes/incorrectly arranged toes
- ❖ Bunions
- ❖ Poor blood circulation

PP1 No.8. List four items in a First Aid kit that can be used to manage a sprain. (2 marks)

- ❖ Bandages
- ❖ Razor blade / pair of scissors
- ❖ Clip / safety pins / adhesive tape
- ❖ Ointment
- ❖ Pain killers

No.9. Name two waterborne diseases caused by poor sanitation. (1 mark)

- ❖ Cholera
- ❖ Typhoid
- ❖ Gastroenteritis
- ❖ Amoebic dysentery

No.10. State two remedies for morning sickness during pregnancy. (2 marks)

- ❖ Take a cup of tea and some snacks e.g. biscuits in bed before getting up.
- ❖ Try and avoid greasy or fatty foods.
- ❖ Consult the doctor if the problems persist after the third month

No.11. State two limitations of dry cleaning in laundry works (2 marks)

- ❖ It is expensive
- ❖ Solvents are volatile
- ❖ Solvents are highly inflammable
- ❖ Solvents are poisonous
- ❖ It requires skill.



No.12. State two functions of a pressing cloth. (2 marks)

- ❖ To remove creases
- ❖ To enhance the appearance
- ❖ To kill germs

No.13. Give two reasons for rinsing clothes.(2 marks)

- ❖ To remove dirt and soap
- ❖ Freshen

No.14. Give two methods of removing dust from surfaces in a home.

(2 marks)

- ❖ sweeping
- ❖ dusting
- ❖ brushing
- ❖ suction
- ❖ dispersal

No.15. State the function of each of the following parts of a sewing machine.marks)

(i)spool pin

- ❖ To hold the reel of thread while sewing and winding the bobbin

(ii)feed dog

- ❖ To move fabric while sewing.

No.16. Outline two reasons for blending fibres.(2 marks)

- ❖ To improve on the quality of fibers like making them stronger.
- ❖ To stop static electricity e.g. when cotton is blended with man made fabric like rayon the static electricity is never generated.

No.17. Give two reasons for interfacing a garment. (2 marks)

- ❖ To give body or shape
- ❖ Stiffening to add firmness
- ❖ Giving a crisp tailored look to the area where applied
- ❖ Obtaining a good knife edge
- ❖ Increasing crease resistance
- ❖ Prevent stretching or sagging
- ❖ Reinforcement as for button and buttonholes area

No.18. The size of a French seam is determined by: (2 marks)

- ❖ Weight of fabric
- ❖ Effect desired
- ❖ Use of the garment

No.19. Differentiate between trimmings and trimming as used in clothing construction. (2 marks)

- ❖ Trimmings are sewing notions used for decorating garments such as laces and bias binding while
- ❖ Trimming is the action of cutting off excessive fabric on seams or edges of fabric.



No.20.List four stitches used to finish a hem

- ❖ Hemming stitches
- ❖ Whipping stitches
- ❖ Slip hemming stitches
- ❖ Herring bone
- ❖ Shell hemming

No.21.Give the meaning of “counterfeit”

- ❖ It is an imitation of what is a genuine item with an intention to deceive/defraud.

No.22a.You are planning to host your sister's graduation party at home. Without the use of chlorine, outline the procedure you would use to make muddy contaminated water safe for drinking and store ready for use.(6mks)

- ❖ Leave the water to stand for sometime for mud to settle at the bottom of the container and then decant
- ❖ filter using a filter paper/home filter/clean cloth
- ❖ Boil the water.
- ❖ Put the boiled water in a clean container
- ❖ Cover with clean lid/cover

No.22b.Describe the procedure you would follow when laundering a coloured cotton handkerchief. (6 marks)

- ❖ wash in warm soapy water using friction method
- ❖ rinse in clean warm water
- ❖ finally rinse in cold water, add vinegar
- ❖ dry in the shade
- ❖ iron while slightly damp using a hot iron Air and fold appropriately

No.22c).Outline the steps you would follow to thoroughly clean the dressing mirror. (8 marks)

Do not use commercial cleaners.

- ❖ Collect all the equipment and materials required
- ❖ Remove dust using a dry) cloth wipes /rubs the mirror using a cloth wrung out of warm soapy water.
- ❖ Rinse using a cloth wrung out of clean warm water.
- ❖ Dry using a clean dry cloth/newspaper/sponge
- ❖ Buff mirror using a soft clean dry non-fluffy/ lintless cloth / newspaper.
- ❖ Clean equipment used and store appropriately.

No.23ai.State two principles of food preservation (2 marks)

- ❖ Application of heat.
- ❖ Removal of water / moisture / dehydration.
- ❖ Exclusion of air / oxygen.
- ❖ Reduction of temperature.
- ❖ Application of preservatives / chemicals

No.23aii .Explain two disadvantages of preserving food, (2 marks)

- ❖ May lead to destruction of some nutrients.
- ❖ Food may change in taste/flavour and colour.
- ❖ May lead to food poisoning if poorly preserved.
- ❖ Some foods are rendered unsuitable to some groups of people.



No.23b.Explain four reasons why it would not be advisable to buy a refrigerator on hire purchase. (8 marks)

- ❖ The final cost paid increases from the original as one has to pay the interest charged.
- ❖ It may wear out before the final payments are made.
- ❖ If one is unable to pay the monthly interest one will lose the refrigerator and the money already paid.
- ❖ Payments are not negotiable as when buying at cash.
- ❖ One misses joy of using the refrigerator fully until the whole amount is paid.

No.23c.Giving a reason in each case, state four rules to observe when making short crust pastry. (8 marks)

- ❖ All ingredients must be weighed accurately to come up with a quality product
- ❖ The mixture should be aerated as much as possible to allow proper raising of the product
- ❖ Pastry should be kept as cool as possible to avoid the fat melting
- ❖ The pastry should be handled as little as possible to avoid hardening the product
- ❖ The pastry should be rolled on a light floured surface to avoid sticking
- ❖ Pastry should be rolled with light to and fro movement to avoid extracting the trapped air
- ❖ The pastry should be baked in a fairly hot oven so that the water is quickly turned to steam to puff up the pastry
- ❖ All measured liquids should be added at once to give an even texture.

No.24a.Highlight four pieces of information found on a receipt of goods sold.(4mks)

- ❖ Date
- ❖ Client's name
- ❖ Payment of
- ❖ Paid By
- ❖ Received By
- ❖ Amount
- ❖ Cash/ Cheque

No.24b.Outline the procedure of caring for a household duster after use. (6 marks)

- ❖ Shake outside after use/remove any unwanted material.
- ❖ Soak /in cold water.
- ❖ Wash thoroughly in warm soapy water
- ❖ Rinse in warm water and finally in cold water to refreshen the fabric
- ❖ Dry in the open air
- ❖ Store in a dry well ventilated place

PP1 No.24ci. (i)Give the systematic order of placing bedding items when preparing a bed. (7 marks)

- ❖ A firm mattress
- ❖ Under blanket
- ❖ Sheets made of washable cotton material.
- ❖ Blankets to keep warm.
- ❖ Mosquito netting



**(iii) State one function of any three of the bedding items mentioned in (i).
(3 marks)**

- ❖ Waterproof sheet to protect the mattress or pad
- ❖ Mosquito netting to protect it from insect bites
- ❖ Blankets to keep warm in cool weather

PP1 No.25a.Explain three factors to consider when caring for a white nylon shirt.(6 marks)

- ❖ Avoid exposure to direct sunlight as it will yellow.
- ❖ Avoid rubbing as it piles.
- ❖ Avoid high temperature as it destroys the fibre/melts/burns/scorch.
- ❖ Do not bleach as it will turn yellow.
- ❖ Wash separately from coloured garments to avoid discolouration

PP1 No.25b.Explain four qualities of a well made cuff. (8 marks)

- ❖ The type of seam is appropriate to the type of fabric, the position of the seam, the projected care of the garment, quality, and design.
- ❖ Stitch length is appropriate to the fabric and to the expected stress at the stitched location.
- ❖ Gathers are uniform and evenly distributed and stitched so as not to form pleats. Gathers are pressed flat only in the seam allowance
- ❖ The fashion fabric and the underlining fabric relate well—the garment is neither over-supported nor under-supported for the desired design effect.
- ❖ The interfacing complements and reinforces the fashion fabric without overpowering it.
- ❖ Interlinings are of lightweight or open weave fabrics with insulating properties.
- ❖ The lining is on the same grain as the fashion fabric
- ❖ Functional applied pockets are positioned at a location convenient for use.
- ❖ The width of the binding is even.
- ❖ Facings lie smoothly with no ripples or puckers.
- ❖ The width of the band is even unless otherwise designed.
- ❖ Under stitching holds the facing (neckline, collar, cuff, pocket) in place.

PP1 No.25c.Outline the steps to follow when mending a gaping seam on an apron. (6 marks)

- ❖ Mend before washing.
- ❖ Remove any loose threads in the areas to be mended.
- ❖ Hold with pins the old stitches line adding some extra ungaped portion if possible to prevent any further gaping.
- ❖ Press the seam.
- ❖ Tack the seam using temporary stitches.
- ❖ Remove the pins.
- ❖ Make permanent stitches
- ❖ Remove the temporary stitches
- ❖ Press the seam.



**KISWAHILI
INSHA (102/1) KUANDIKA**

INSHA

Lazima

Wewe ni katibu wa kamati inayochunguza jinsi ya kupambana na tatizo sugu la dawa za kulevyo. Andika ripoti ukitoa mapendekezo ya kamati.

2. "Utalii una faida nyingi kuliko madhara nchini Kenya." Jadili.

3. Andika insha inayobainisha maana ya methali: Chombo cha kuzama hakina usukani.

4.unga kisa kitakachomalizika kwa:

"Niligugumia ile chupa ya maji kwa pupa. Sikuamini kuwa kiu yangu ingekatika. Baada ya kumaliza kunywa maji yote, ndipo nilipotambua kwa kweli kuwa maji ni uhai



102/2 LUGHA**UFAHAMU**

Soma kifungu kifuatacho kisha ujibu maswali

Ulimwengu unatakiwa kuzua mbinu za kulitatu tatizo la ufukara amba ni kikwazo kikuu cha juhudzi za maendeleo. Ufukara unayakabili mataifa mengi yanayoendelea na kuyatosa kwenye shida nyingi huku mataifa ya magharibi yakizidi kupiga hatua kubwa za kimaendeleo. Tofauti iliyopo kati ya mataifa yanayoendelea na yaliyoendelea inaendeiea kuongezeka kila siku.

Miongoni mwa sababu zinazochangia katika ufukara huu ni pamoja na ujisadi, uongozi mbaya, turathi za kikoloni na uchumi unaotegemea kilimo ambacho hutegemea mvua isiyoweza kutabirika. Vilevile, mataifa yanayoendelea yana idadi kubwa ya watu inayoupiku uwezo wa mataifa husika. Pamoja na haya, mataifa haya hayana uwezo wa kuwakomboa raia wake kutoka katika lindi la umaskini huu unaokithiri. Ukosefu wa elimu na nafasi adimu za kazi huchangia pia katika tatizo hili. Ni wazi kuwa ufukara una athari hasi kote ulimwenguni. Aghalabu, ufukara huchipuza matendo mabaya. Ni rahisi kuwashawishi wananchi maskini kushiriki katika uhalifu iii kujinasua kutoka kwenye lindi la kimaskini. Udhafu huu huweza kuzaa mbegu ya kuatika maovu ya kila aina ukiwemo ugaidi. Mataifa yaliyoendelea yanatakiwa kuyaburai madeni yanayoyadai mataifa yanayoendelea kama njia moja ya kupambana na ufukara. Mataifa haya maskini hutumia asilimia kubwa ya mapato ya kitaifa kuyalipia madeni haya. Hali hii imeyafanya mataifa haya kushindwa kujikwamua kutoka kwenye minyororo ya ufukara. Njia nyingine ya kuyasaidia mataifa haya ni kukubali kutoa ruzuku za kimaendeleo badala ya mikopo kwa nchi husika.

Mataifa yanayoendelea nayo yanatakiwa kuchukua hatua katika kuwanusuru raia wake kutoka kwenye dhiki hii. Ni sharti yaibuke na mikakati kabambe ya kupambana na ufukara. Itakuwa na faida kubwa iwapo mataifa haya yataunda sera zinazotambua ufukara kama tatizo kuu linalozikabili na kuweka mikakati ya kuwaokoa raia wake kutoka kwenye tatizo hili. Pamoja na mikakati hii ni kuzalisha nafasi za kazi, kuimarisha miundo msingi, kuendeleza elimu inayolenga kutatua matatizo maalumu katika jamii na kupanua viwanda. Kuna pia haja ya viongozi kuwa waangalifu ili mfumo wa soko huru amba unaendelezwa na mataifa yaliyoendelea usiishie kuwa chanzo cha kufa kwa viwanda asilia. Maamuzi yote ya sera za kiuchumi sharti yauzlngatie uhalisia wa maisha ya raia wa mataifa haya.

(a) Eleza athari za madeni kwa nchi zinazoendelea.(alama 2)

- ❖ Asilimia kubwa ya patu la mataifa yanayoendelea huishia kulipa madeni haya.
- ❖ Hivyo inakuwa vigumu kwa mataifa hayo hujikwamua kutokana na umaskini.

(b) Kwa nini umaskini unatawala mataifa yanayoendelea? (alama 4)

- ❖ Ujisadi, uongozi mbaya, turathi za kikoloni, uchumi kutegemea kilimo chenye mvua isiyotabirika, idadi kubwa ya watu, nafasi adimu za kazi, madeni na ukosefu wa elimu



(c) Mwandishi anatoa mapendekezo yapi kwa mataifa yanayoendelea katika kutatua tatizo la ufukara?(alama 4)

- ❖ Kuibuka na mikakati bora ya kupambana na umaskini.
- ❖ Sera zinazotambua kuwa raia wake wengi ni maskini.
- ❖ Kuzalisha nafasi za ajira kuimarisha miundo msingi.
- ❖ Kuendeleza elimu inayolenga kutatua matatizo maalum
- ❖ Kupanua viwanda.
- ❖ Kuhakikisha kuwa mfumo wa soko huu hauishii kusababisha kufungwa kwa viwanda.

**(d) Mfumo wa soko huru una mathara gani kwa mataifa yanayoendelea?
(alama 2)**

- ❖ Unaweza kuwa chanzo cha kufa kwa viwanda asilia.

**(e) Taja visawe vya maneno yafuatayo kama yalivyotumika katika kifungu.
(alama 3)**

(i) Turathi za kikoloni

- ❖ Masilio ya kikoioni/ukoloni mambo Ieo / athari za ukoloni.

(ii) Kuatika

- ❖ Kuzalisha/kuwa
- ❖ chanzo/kuanzisha/kuleta/kusababisha/kupanda.

(iii) Kuyaburai

- ❖ Kuyasarnehe/kuyaondoa/kuyasahau/kuyapuuza/kuyafutilia mbali



MUHTASARI**2016****MUHTASARI (alama 15)**

Soma kifungu kifuatacho kisha ujibu maswali.

Taifa huundwa na watu wanaoishi katika nchi moja na wanaojitambua kisiasa kama watu walio na mwelekeo, maono na hatima sawa. Utaifa hujengwa kwenye misingi ya mapenzi kwa nchi, Utambuzi wa cheo, eneo, hadhi, rangi na hata makabila wanakotoka raia wa taifa moja si chanzo cha kuwatanganisha. Nchi moja huweza kuundwa na watu walio na tofauti chungu nzima zikiwemo tofauti za kikabila, kitabaka na kimawazo. Hata hivyo, watu hao huwa na folsafa na imani sawa kama taifa inayoashiriwa hasa na wimbo wa taifa. Hata hivyo haya yotc hayawezi kuwafikia katika kiwango cha kuunda taifa. Uzalendo ndio mhimili mkuu wa uitaifa. Uzalendo ni mapenzi aliyo nayo mtu kwa nchi yake. Mapenzi haya humwongoza mtu katika mawazo yake, itikadi yake, matendo yake, matamanio yake na mkabala wake kuhusu nchi na hatima ya nchi yake.

Mzalendo hawezi kushiriki katika matendo yanayoweza kuiletea nchi yake maangamizo kwa vyovyyote vile. Mzalendo huongozwa na mwenge wa wema.

Mzalendo hawezi kushiriki kwenye shughuli zozote zinazohujumu mshikamano wa kitaifa. Yeye hatawaliwi na ubinafsi wa kutaka kufaidi nafsi yake naya jamii yake finyu. Matendo yake yote huongozwa na ari ya kuiboresha nchi yake.

Anayeipenda nchi yake hujiepusha na ulafi wa kujilimbikizia mali. Yuko radhi kuhasirika mradi taifa lake linufaike.

Utaifa ni mche aali unaopaliliwa kwa uzalendo, kuepuka uchu wa nafsi na taasubi hasi zikuwepo za kikabila na ubinafsi. Hali hii inapofikiwa, hatima ya taifa na mustakabali wa raia wake huwa wenyewe matumaini makubwa.

(a) Kwa maneno 40 - 50 dondo sifa kuu za uitaifa.(alama 6, 1 ya mtiririko)

- ❖ Kuwepo kwa hatima sawa
- ❖ Kuwepo kwa maono sawa
- ❖ Kuwepo kwa falsafa/imani/itikadi sawa.
- ❖ Kuwepo kwa mwelekeo mmoja.
- ❖ Umejengwa kwa hisia za mapenzi kwa nchi.

(b) Ni nini misingi ya kutathmini mzalendo? (maneno 60 - 70) (alama 9, 1 ya mtiririko)

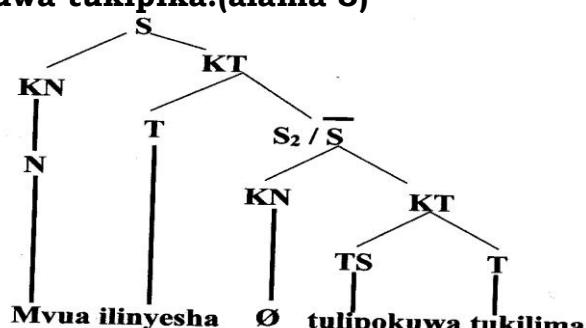
- ❖ Hawezi kushiriki kwenye shughuji zozote zinazohujumu mshikamano wa kitaifa.
- ❖ Hawezi kutawaliwa na ubinafsi
- ❖ Hujiepusha na ulafi wa kujilimbikizia mali.
- ❖ Hawezi kutenda mambo ya kuiletea nchi yakemaangamizo.
- ❖ Yuko radhi kuhasirika kwa manufaa ya taifa lake.
- ❖ Matendo yake huongozwa na mwenge wa wema.
- ❖ Matendo yake huongozwa na ari kuiboresha nchi yake.



3. MATUMIZI YA LUGHA

3. MATUMIZI YA LUGHA (alama 40)

- (a) Tumia nomino yoyote katika ngeli ya 1-1 kutunga sentensi. (alama 1)**
- ❖ Mfano wa nomino ni kama: chumvi, sukari, mvua, chai, asali, furaha, huzuni, petrol nk. Mfano wa sentensi: Chumvi imemwagika.
- (b) (i) Nini maana ya silabi (alama 2)**
- ❖ Ni sauti moja au zaidi zinazotamkiwa kama fungu moja la sauti.
 - ❖ Silabi ni kipashio cha utamkaji ambacho hutumiwa kwa pamoja kama fungu moja la sauti.
 - ❖ Tamko, pigo, tamshi.
- (ii) Tunga neno lenye muundo huu wa silabi:**
Irabu + konsonanti + konsonanti + irabu
- ❖ afya, anza, ibia, enda, unga, uzuwa, igwa, ugwa.
- (c) Tunga sentensi hii upya kwa kufuata maagizo: Wasichana wanaingia darasani kwa haraka (andika kinume chake) (alama 2)**
- ❖ Wasichana wanatoka darasani polepole/taratibu/ asteaste/ halahala/ ala ala.
- (d) Tambua kiambishi awaii na tamati kati neno: Alalaye (alama 2)**
- ❖ A - awali
 - ❖ a - ye - tamati
- (e) Ainisha vivumishi katika sentensi hii: mzee mwenyewe ni mkongwe na amepewa zawadi kwa shamba lake lilitoa mazao mengi. (alama 4)**
- ❖ Mwenyewe - kivumishi cha pekee Mkengwe - kivumishi cha sifa Lake - kivumishi kimilikishi Mengi - kivumishi cha idadi
- (f) Askari wasipopiga doria wala kushikiana na raia hawatakuwa wametuhakikishia usalama. (yakinisha sentensi hii) (alama 2)**
- ❖ Askari wakipiga/ wanapopiga/ wapigapo/ watakapopiga doria na kushirikiana na raia watakuwa wametuhakishia usalama.
- (g) "Shughuli yetu itakamilika kesho", mama alimwambia mwanaye Juma. (Andika katika usemi wa taarifa). (alama 2)**
- ❖ Mama alimwambia mwanawe/ mwanaye Juma kuwa shughuli yao ingekamilika siku ambayo ingefuata.
- (h) Changamua sentensi ifuatayo kwa kielelezo cha matawi. Mpria ulichezwa tulipokuwa tukipika.(alama 3)**



(i) Dhihirisha matumizi matatu tofauti ya kimaana yatakayotokea ketenzi "ona" kikinyambuliwa katika kirai hiki "ona ndoto". (alama 3)

- ❖ Onea ndoto
- ❖ Onewa ndoto
- ❖ Oneshwa ndoto
- ❖ Onesha ndoto
- ❖ Onoana ndoto

(j) Eleza matumizi ya hali za "ka" na "hu" katika sentensi zifuatazo:

(ii) Balozi huja hapa kila mara. (alama 1)

- ❖ Hali ya mazoca kila mara kila siku mara kwa mara

(iii) Mpishi alipika, akapakuwa na akagawa chakula. (alama 1)

- ❖ vitendo vinafuatana Mfulultzo wa vitendo Mfuatano wa vitendo Kufululizwa kwa vitendo

(k) Eleza maana mbili zinazojitokeza katika sentensi: Tuiitwa na baba.

Mtendaji ni baba

- ❖ Mtu mwingine alituita mimi pamoja na baba. Sisi pamoja na baba
- ❖ Mimi na mtu mwingine tuliiwtwa na baba Mimi na watu wengine tuliiwtwa na baba.

(I) Akifisha: Shangazi alimwambia mwanawe njoo nikupcleke kwenu jioni mtoto aliuliza kwetu wapi?(alama 4)

- ❖ Shangazi alimwambia mwanavve, "Njoo nikupeleke kwenu jioni." "Mtoto aiiuliza, "Kwetu wapi?"

(m) Eleza matumizi mawili ya kiambishi -ji-.(alama 2)

- ❖ Mwanzoni mwa baadhi ya nomino katika ngeli ya LI-YA.
- ❖ Kujirejeiea/kircjeshi cha mtenda/ kujitendea.
- ❖ Kuonyesha uzoefu
- ❖ Kuonyesha ukubwa Kuonesha udogo/udunishaji.

(n) Tunga sentensi hii upya kwa kutumia visawe vyta maneno yaliopigwa mstari. Kiambaza kilimuumiza ghulamu alipokuwa akipanda. (alama 3)

- ❖ Ukuta ulimuumiza mvulana alipokuwa akiuparaga

(o) Tumia kitenzi "Fa" katika sentensi kuonyesha mazoea. (alama 2)

- ❖ Hufa/hufisha/afaye/wafao

(p) Ainisha vihusishi katika sentensi ifuatayo: Babu alifika mapema kuliko wote halafu akaondoka.(alama 2)

- ❖ Kuliko - kulinganishi/kiwango Halafu - wakati

(q) Tumia kitenzi "tafakaru" kama nomino katika sentensi. (alama 1)

- ❖ Kutafakari kwake kulimnufaisha.
- ❖ Utafakari huo utamwezesha kupiga hatua kimaendeleo.
- ❖ Tafakari zao ndizo zimewafikisha walipo.



- (r) Andika upya sentensi ifuatayo kwa kutumia viwakilishi badala ya nomino zilizopigwa mstari. Mwanamziki ataembelea mji. (alama 1)
- ❖ Yeye/yule/huyu/huyo atatembelea mji

ISIMU JAMII (alama 10)

Kwa kutoa mifano maridhawa, eleza kaida zozote tano ambazo matumizi ya lugha hutegemea katika jamii.

- ❖ Mazingira/ mahali
- ❖ Jinsia/uana
- ❖ Cheo/hadhi
- ❖ Umri
- ❖ Mada
- ❖ Muktagha
- ❖ Wakati/misimu
- ❖ Malezi
- ❖ Taaluma/kazi/shughuli
- ❖ Mila/desturi/u'amaduni
- ❖ Hadhira.
- ❖ Njia ya mawasiliano I mani/dini/itikadi
- ❖ Tajriba/uzoefu/ujuzi
- ❖ Elimu(kiwango cha elimu)
- ❖ Hali/hisia
- ❖ Lugha azijuazo mtu
- ❖ Wahusika
- ❖ Uhusiano
- ❖ Madhumuni/lengo/nia
- ❖ Tabaka
- ❖ Falsafa/mtazamo



102/3 FASIHI**SEHEMU B: RIWAYA**

K. Walibora: Kidagaa Kimemwozea

Jibu swali la 2 an la 3

**2. Fafanua mjukumu ya elimu na dini katika jamii kwa mujibu wa riwaya:
Kidagaa Kimemwozea. (Alama 20)**

- ❖ Elimu inasaidia kuelezea hisia za mtu kupitia maandishi. Mfano - Amani ameandika mswada kuonyesha msimamo wake katika masuala tofauti Elimu iliyositisizwa ni elimu ya kujielewa. Elimu ya kujua mtu atoka wapi na anaelekea wapi kwa mujibu wa Amani. Elimu imesawiriwa kuwa muhimu licha ya utajiri na kutosheka maishani. Baada ya muda mrefu, Amani anarudi chuoni na kupata shahada ya kwanza katika Fasihi na Falsafa. Elimu ni njia ya kujipatia heshima na umaarufu. Nasaba Bora alimheshimu ndugu yake kwa uwezo wake katika lugha. Hakupenda wakati ambapo inamlazimu kusoma hotuba kwa kiingereza asichokielewa
- ❖ Wasio na elimu wanabaki kutaabika. Mfano Chwechwe Makweche baada ya kuacha masomo katika darasa la saba na kuwa mchezaji shupavu, analemewa na maisha baada ya kuvunjika pfupaja la mguu.
- ❖ Elimu imetumiwa kama chombo cha kuwakweza baadhi ya raia katika madaraka - kama Majisifu anapata kazi kutokana na elimu yake.
- ❖ Elimu pia imetumiwa kama chombo cha mapinduzi kwa kutetea haki za wanyonge. Mfano - Madhubuti anapomaliza masomo yak Urusi anaungana na Amani kuleta mabadiliko Sokomoko.
- ❖ Imani katika dini inajitokeza ambapo kila linapojitokeza jambo mbaya watu hukimbilia dini.
- ❖ Kwa upande mwingine dini imebainishwa kama chombo cha kuadilisha. Mfano: babake Nasaba Bora na Majisifu aliwalea kwa mwongozo wa bibilia huku akiwasihisi waishi kwa umoja na upendo.
- ❖ Dini pia huweza kutumiwa kama hifadhi ya maovu. Kwa mujibu wa Majisifu maovu mengi kama vile mauaji hufanywa katika jina la Mungu kutokana na unafiki. Dini ina jukumu la kuwapoza wanaomboleza. - Dini imetekeleza jukumu la kuunganisha familia pamoja mfano: Babake Nasaba Bora alihakikisha familia yake imeunganishwa na dini.

3. "Wasemo husema, atamtaye hachoki."

- ❖ Haya ni maneno ya msirmulizi yanamhusu:

(a) Fafanua muktadha wa dondo hili. (Alama 4)

- ❖ Majuhuni aliyejitalidhi kumfurahisha mpenziwe Michelle aliyekuwa amekataa kuolewa naye mpaka ajenge jumba la kifahari. Licha ya jitihada zake Majununi, Michelle alikataa kuolewa na Majununi na baadaye Maajununi akaamua kutooa kamwe.

(b) Kauli hii ina tnaana gani kwa mujibu wa muktadha huu. (Alama 2)

- ❖ Majununi hakufa moyo katika harakati za kutaka kumwoa Michelle. Alijitalidhi kutimiza matakwa ya mpeni wake kwa kujenga nyumba nyingine.



**(c) Jadili umuhimu wa kinachotafutwa katika riwaya ya Kidagaa
Kimemwozea. (Alama 14)**

- ❖ Imani anatafuta haki ya kunyimwa malezi ya wazazi wake waliouliwa kinyama. Imani anatafuta haki ya familia yake ilitiyonyanganywa shamba lao.
- ❖ Amani anatafuta haki ya Ami yake Yusufu.
- ❖ DJ anatafuta haki baada ya kushambuliwa na jibwa lake Nasaba Bora.
- ❖ Amani anatafuta haki ya mswada uiokataliwa na wachapishaji na baadaye kuchapishwa kwa jina la mtu mwingine.
- ❖ Chwechwe Makueche anatafuta haki ya kuumia michezoni bila kufidiwa.
- ❖ Watoto wa Majisifu wanalilia haki ya kuishi kama binadamu wengine licha ya ulemavu wao. Amani anatafuta haki ya kudhulumiwa na mtemi Nasaba Bora kwa kizingizio kuwa alikuwa na uhusiano wa kimapenzi na Mkewe Bi Zuhura. Amani atafuta haki ya kujua waliokuwa wazazi wa kitoto Uhuru baada ya yeye kulazimishwa kukilea licha ya kuwa hakuwa babake. Amani na Imani wanatafuta haki ya kufungwa kwa kizingizio kuwa walimwuuua mtoto Uhuru. Wanafunzi wa mwalimu Majisifu wanatafuta haki ya kufunzwa vyema baada ya Mwalimu wao kutohudhuria shule kwa muda mrefu. Yusufu anatafuta haki baada ya kusingiziwa kumwuuua Chichiri Hamadi.
- ❖ Raia wa Sokomoko wanatafuta haki dhidi ya Nasaba Bora anayewapokonya ardhi, mali, mabiruti na wake wao.
- ❖ Wafungwa wanatafuta haki kwa kukosa kufikishwa mahakamani.
- ❖ Waandishi wengi chipukizi kama Amani wanatafuta haki ya kazi zao baada ya kuibiwa miswada yao na akina Majisifu.

TAMTHILIA

SEHEMU C: TAMTBILIA

T. Arege: Mstahiki Meya

Jibu swali la 4 aula 54. "Anwani Mstahiki Meya ni kinaya." Jadili ukweli wa kauli hii kwa kurejelea tamthilia. (Alama 20) Anwani Mstahiki Meya ni kinaya kw vile anayeitwa Mstahiki anatakiwa kuwa mtu wa kuheshimiwa. Kama kiongozi heshima hutokana na uongozi bora unaowafanya raia kuonea fahari uongozi wa kiongizi wao. Hata hivyo, Mstahiki Meya hakustahiki kuitwa kiongozi kwa sababu zifuatazo:

- ❖ Wafanyakazi wa mji wanaendelea kufanya kazi kwa muda mrefu bila mshahara. Hospitali hazina dawa na wagonjwa wanakusa kutokana na magonjwa yanayoweza kutibiwa kwa urahisi,
- ❖ Kuna njaa kiasi kwamba wafanya kazi wake wanakula mabaki ya chakula kutoka nyumbani mwake na kuugua.
- ❖ Anapanga na Bili jinsi wataipunja baraza kupitia kesi ya mwenye kandarasi anayedai haki yake.
- ❖ Anadanganya kuwa ameagiza dawa kutoka ng'ambo huku akijua fika kuwa hajaagiza.
- ❖ Anawatenga wanaodhamiria kumsaidia kuongoza vizuri kama vile Siki na Diwani III.
- ❖ Anaharibu aasasi za serikali kama vile hospitali huku mkewe akienda ng'ambo kujifungua.
- ❖ Anawaita viongozi wa wafanya kazi ofisini mwake akijua kuwa hakuwa na mpango wa kushughulikia malalamiko yao.



- ❖ *Badala ya kusulu hisha matatizo yanayokumba mji wa Cheneo kwa majadiliano, anaamua kutumia vyombo vya utawala kunyamazisha upinzani.*
- ❖ *Ananyakua ardhi ya umma na kujigawia pamoja na marafiki zake hasa Bili.*
- ❖ *Anaidhinisha kutotozwa kodi kwa madiwani huku wafanya kazi wa kawaida wakilazimishwa kufanya kazi kwa miezi mingi bila mshahara kutokanan na nakisi ya kifedha.*
- ❖ *Anashiriki katika wizi wa fimbo ya Meya ishara ya mamlaka ya cheo chake.*
- ❖ *Anaingilia mambo yasiyo na maana yoyote kama vile ukubwa wa mayai aliyopikiwa badala ya kushughulikia matatizo katika Cheneo kwa busara ifaayo.*
- ❖ *Anakiri kudanganywa na Bili na kuwategemea madiwani ambao hawakuwa na ujuzi wa kutosha.*
- ❖ *Anawahonga madiwani ili wamuunge mkono badala ya kuwatambua kama wawakilishi wa wananchi watakaompa ukweli wa mambo ili kuongoza anavyostahili.*
- ❖ *Anamhonga mhubiri ili aendelee kumwombea yeye badala ya kubadili uongozi wake unaoendelea kuzorotesha hali mjini Cheneo.*
- ❖ *Anaendelea kumlipa Bili kwa huduma isiyo na manufaa yoyote. Bili alijua kuwa alikuwa akimdanganya Meya na mambo yanapoharibika anatoroka pasipo kwaheri.*
- ❖ *Anapogundua alidanganywa mambo yalikuwa yameharibika kiasi cha kutobadilika.*
- ❖ *Anahakikisha kuwa masiahi ya kiafya ya wenyе mamlaka yameshughulikiwa huku raia wake wakugua na kufa kwa ukosefu wa huduma hospitalini.*
- ❖ *Anautambua urafiki wa kusifiwa zaidi ya utaaiamu. Diwani III na Siki hawakutambuliwa kwa vile katika kumwmbia Meya ukweli walionekanan kama maadui wake,*
- ❖ *Anakosa kufikiria na kufanya maamuzi huru na kutokana na haya anadanganywa na waliojali masilahi yao kama Bili na Diwani ! na Diwani II.*



5. "... dawa ya adui ni kummegea unachokula."

(a) Eleza muktadha wa dondo hili. (Alama 4)

❖ Anayesema maneno haya ni Bili akimwambia Mstahiki Meya. Wamo ofistni muake Mstahki Meya. Walikuwa wakizugumza kuhusu mwanakandarasi aliyejkuwa ameshtaki Baraza akidai pesa zake.

(b) Jadili jinsi dawa inayorejelewa inavyozorotesha hali katika mji wa Cheneo. (Alama 16)

- ❖ Dawa inayorejelewa ni ufisadi. Ufisadi umezorotesha hali katika Cheneo kwa njia mbalimbali kama:
- ❖ Meya anaidhinisha kuongezewa mishahara kwa madiwani ili wamuunge mkono. Hazina ya baraza inamomonyoka zaidi. Madiwani hawampi ushauri wa kweli na uongozi unaanguka.
- ❖ Meya anamgawia Bili viwanja vinne. Bili anaishia kumpa ushauri wa kuporosha. Meya anaifisidi hazina ya baraza kwa kumpeleka Bili na familia yake kwa burudani.
- ❖ Meya anaunda kamati nyingi ili kuwahonga madiwani wanaomuunga mkono. Anaishia kushauriwa kufanya maamuzi yasiyo ya busara, anakataa kuwasikiliza wafanya kazi, mji umejaa urundo, wageni wanakosa kufika na uongozi wa Meya unaanguka.
- ❖ Meya anamlipa Bili kwa huduma ambayo kwa ukweli hajatoa. Huu unakuwa mzigo kwa hazina ya baraza.
- ❖ Meya anaidhinisha Diwani I na Diwani II kulipwa 'overtime' na hali hawajafanya lolote. Anaishia kumpa Bili upenyu wa kushauri wauze fimbo ya Meya.
- ❖ Meya anaidhinisha kutotozwa kodi kwa madiwani kwa kutaka wamuunge mkono. Hili linalinyima baraza pato na kuzidisha nakisi ya fedha.
- ❖ Meya anamhonga mhubiri kwa sadaka ili aendelee kumwombea. Mhubiri anashindwa kumkosoa Meya, uongozi unaanguka.
- ❖ Bili anamshauri Meya amwambie mwanakandarasi alishtaki baraza ili apewe fidia kwa kukatizwa kwa kandarasi. Meya anapata fungu lake pia.
- ❖ Raia wanachukua hongo kutoka kwa viongozi. Wanawachagua na kuendeleza uongozi mbaya. Meya anamwambia Siki kuwa hata akitaka uongozi mara nne, tano na sita atapewa kwani ana akili na uwezo wa ushawishi.
- ❖ Ufisadi unamfanya Meya kumshirikisha Bili katika maamuzi muhimu ya Baraza, na hali Bili si mfanya kazi wa Baraza. Bili anaishia kumporosha Meya.
- ❖ Ufisadi unamfanya Diwani I (Bwana Usalama) kufanikisha wizi wa fimbo ya Meya. Anatoka nayo kasha anatangaza kwamba kilitokea rabsha ikaibwa.
- ❖ Ufisadi unamfanya Meya, Diwani 1, Diwani II na Bili kutotoa siri kuhusu nyama ya kuiba fimbo ya Meya linapata hasara.



SEHEMU D: USHAIRI Jibu swali la 6 aula 7

6. Soma shairi lifuatalo kisha ujibu maswali.

Kilio cha Lugha

Ni wimbo najiimbia, njiliwaze

*Sina wa kusaidia, **nasongwa** sina nafasi*

Kiwa kwetu naumia, kwengine si mahususi

Lugha ya mtu mweusi, Kiswahili chalilia

Wataalamu ni nani, mulipo mwaninyanyasa

Hamna nami imani, wala kupanga siasa,

Mwasema sayansini, siku ningalitosa,

Mwanambia nikotosa, kuiva sjafika.

Ela muelewe sana, Maamuma na Imamu,

Mulipokuwa vijana, kwenu nilikuwa timamu,

Sasa mumesoma sana, mwaniiona ni haramu,

Mujue kuwa dawamu, utumwa mwauridhia.

Mzaliwapo mwalia, 'maa', maneno ya kwanza,

Lugha munayokulia, ya mama zetu ya kwanza,

Wa lugha muwedoria, muweze na kuikuza,

Sio kujipendelekeza, uzungu kuigiza.

Majira ya ukoloni, ukombozi kusambaza,

Lugha mulithamini, Kiswahili kufukiza,

Hata kule risavuni, kizungu hanikuwaza,

Sasa mbona mwanibeza, mbali mwanitupilia?

Sayansi sio asili, msamiatiwe sinoa,

Sayansi yataka mbali, msamiati ni wa hao

Nitakuwa Kiswahili, kiomba majina yao

Lugha kujikuza kwa, huomba linalofaa.

Enyi viongozi wetu ipangeni nadharia,

Kujenga siasa yetu, tuzidi kuwa huria

*Lugha hata 'mbusha watu, tuche **kuriaria**,*

Sifa ni kwa chake mtu, cha mwenzi hutoringia.

Utajiri wangu hasa, nikiwatajia wote,

Msamiati huwa, ni wa Afrika yote,

Na methali za kuasa, nahau na ngeli zote,

Na nisemwapo popote, ujumbe hukamilika.

Afrika ndipo petu, pa wabantu halisi,

Baba na mama ni Bantu, shina la wangu ukuwasi,

*Warabu na wengi wetu, sio wangu **Adinasi***

Kwao 'meomba kiasi, ili kujizidisha.

Mfumo mpya hongera, wa elimu humu Kenya,

Lugha takuwa imara, ukabila tutafinya,

Kiswahili ni ibara, kila mtu kiimanya,

Methali imetuonya, mtumwa si mwasilia



*Tamati lugha yalia, yabaguliwa bayana,
Kukua imeridhia, msamiati kufana,
Wengine wataijulia, kwa marefu na mapana,
Lugha yenu ya maana, mwaipuuza yalia.*

(a) Shairi hili ni la aina gani? Toa sababu. (Alama 2)

- ❖ Tarbia - mishororo mine katika kila mshororo.

(b) Kwa kutoa hoja ime, eleza kwa nini shairi hili likaitwa kilio cha lugha. (Alama 4)

- ❖ Kiswahili chapuuzwa kuwa hakijakomma
- ❖ Waliosoma hawakienzi Kiswahili wakifikiria hawana haja na lugha hii.
- ❖ Viongozi hawakienzi Kiswahili katika kujenga siasa.
- ❖ Kiswahili hakipewi nafasi.
- ❖ Waafrika hawaoni utajiri wa Kiswahili kuwa na msamiati kutoka aarika nzima.

(c) Andika ubeti wa tatu kwa lugha ya nathari. (Alama 4)

- ❖ Kila mmoja aelevwe
- ❖ Mlipokuwa vijana mlikitumia Kiswahili.
- ❖ Baada ya kusoma mmeanza kukidharau
- ❖ Kwa kufanya hivi mjue mwafurahia utumwa.

(d) Eleza toni ya shairi hili. (Alama 2)

- ❖ Toni ya huzuni - lugha ya mtu mweusi chalia.

(e) Tambua uhuru wa kishairi uliotumiwa kwa kurejelea mifano milatu. (Alama 3)

- ❖ Inkisari - kiwa - nikiwa
- ❖ Mazida - muelewe - mwelewe
- ❖ Tabdila - mulithamini - mlithamini.
- ❖ Kuboronga lugha - hamna name imani - hamna imani name.
- ❖ Utuhodzi - risaruni.

(f) Bainisha nafsineni katika shairi. (Alama 2)

Hafsheni

- ❖ Mtetezi wa lugha ya Kiswahili anayelalamikia kupuuzwa kwa Kiswahili.
- ❖ Aliyezinduka na kutambua umuhimu wa Kiswahili barni Afrika.

(g) Eleza maana ya maneno yafuatayo kwa mujibu wa shairi. (Alama 3)

(i) nasongwa

- ❖ Nasagwa – naumia

(ii) kuriaria

- ❖ kuzurura, kurandaranda

(iii) adinasi

- ❖ binadamu



7. Soma shairi lifuatalo kisha ujibu maswali.

T. Arege: Barabara

Barabara bado ni ndefu

Nami tayari nimechoka tiki

Natamani kuketi

Ninyooshe misuli

Nituliza akili.

Lakini

Azma yanisukuma

Mbele ikinihimiza kuendelea

Baada ya miinuko na **kuruha**

Sasa naona unyoofu wake

Unyoofu ambaa unatisha zaidi.

Punde natumbukia katika shimo

Nahitaji siha zaidi ili kupanda tena

Ghafla nakumbuka ilivyosema

lie sauti zamani kidogo

"Kuwa tayari kupanda na kushuka

Ingawa nimechoka

Jambo moja li dhahiri

Lazima nifuate barabara

Ingawa machweo yaingia

Nizame na kuibuka

Nipande na kushuka.

Jambo moja nakukumbukia:

Mungu Je, nimuwombe tena?

Hadi lini? Labda amechoshwa na ombaomba zangu

Nashangaa tena!

Kitu kimoja nakiamini

Lazima niendelee kijitahidi kwa kila hatua mpya

*Nijikokote kuiandama hii **barabara yenye ukungu***

Nikinaswa na kujinasua

Yumkini nitafika mwisho wake

Ingawa wangu mwisho haitauwahi kabla.

(a) Eleza toni ya shairi hili. (Aiamma 2)

- ❖ Toni ya mahimaini - lazima niendelee kujitahidi kwa kila hatua.
- ❖ Toni ya uchovu - Nami tayari nimechoka tiki.

(b) Mshairi ana maana gani anaposema "Kuwa tayari kupanda na kushuka" katika ubeti wa tatu? (Alama 2)

- ❖ Kuwa tayari kukabiliana na uzuru na ugumu wa maisha



(c) Fafanua tamathali tano za usemi zilizotumiwa katika shairi hili ukizitolea mifano mwafaka. (Alama 10)

- ❖ Taswira - picha inayojitokeza unaposoma kazi ya fasihi n.k. wa miinuko na kuruba.
- ❖ Taswira kinzani - Nizame na kuibuika
- ❖ Nipande na kushuka.
- ❖ Taashira - Barabara kuimarisha maisha.
- ❖ Mswali balagha - hadi lini?
- ❖ Uzungumzi nafsi - mizame na kuibuka, -Nipanda na kushuka.

(d) Eleza ujumbe unaojitokeza katika ubeti wa tano wa shairi hili. (Alama 2)

- ❖ Msemaji ameshangaa kuwa amekuwa akiomba kwa muda na anatilia shaka iwapo Mungu amechoshwa na maombi yake.

(e) Eleza maana ya: (Alama 2)

(i) kuruba

- ❖ Hali ya kuwa na vikwazo na magumu ya maisha.

(ii) barabara yenyeye ukungu

- ❖ Mkondo wa maisha ambapo anayokubaliana nayo mja si wazi. Kila hisia huibua mambo mapya.

8.SEHEMU E: FASIHI SIMULIZI

2016

(a)Kwa kutumia mifano mwafaka eleza majukumu matano ya nyimbo katika jamii.(Alama 10)

- ❖ Nyimbo huhifadhi historia ya jamii. Mfano nyimbo za siasa, nyimbo za sifa, nyimbo za vita.
- ❖ Huhifadhi na kuitisha utamaduni k.v mbolezi hubeba utamaduni wa jamii kuhusu kifo.
- ❖ Huliwaza kv. Mboiozi Kuonyesha ustadi/ubora wa jamii.
- Huhamasisha
- Hudimisha
- ❖ Kukuza utangamano
- Ni njia ya kutakwa hisia
- ❖ Huadilisha.
- ❖ Kukashifu tabia hasi
- ❖ Kusifu tabia chanya
- ❖ Hukuza uzalendo kuimarisha ubunifu.



(b) Ili kuweza kufanikisha uwasilishaji wa utanzu wa nyimbo kwa hadhira eleza mambo anayohitaji mwimbaji. (Alama 10)

- ❖ *Kuwa na sauti ya kurutia*
- ❖ *Kuihusisha hadhira*
- ❖ *Kuieiewa hadhira*
- ❖ *Kuelewa utamaduni wa hadhira*
- ❖ *Kutumia viziada lugha*
- ❖ *Kuwa mkakamavu*
- ❖ *Aelewe lugha ya hadhira*
- ❖ *Aue mbunifu*
- ❖ *Ahusishe masuala ibuka yanayoathiri jamii ili kupitisha maadili yafaayo.*
- ❖ *Awe na kumbukumbu nzuri.*
- ❖ *Avae maleba*
- ❖ *Abadilishetoni kulingana na ujumbe*
- ❖ *Kutumia ala kwa njia mwafaka ili kukuza mvuto wa utungo wake.*



HADITHI FUPI

K. Walibora na S. A. Mohamed:

Damu Nyeusi na Hadithi Nyingine 1.

Lazima

Jadili maudhui ya elimu kwa mujibu wa "Kanda la Usufi", "Shaka ya Mambo" na "Tazama na Mauti", (Alama 20)

- ❖ Shule imesawiriwa kama mahali pa kuadilisha wanafunzi.
- ❖ Kuhakikisha kuwa wanafunzi wamo katika hali nzuri ya kiafya ili kuendeieia katika masomo -mfano - desturi ya shule ya Askofu Timotheo kuwachunguza wasichana wote kama wana mimba.
- ❖ Matokeo ya vitendo vya wanafunzi yanadhihirika katika hadithi tofauti. Katika Kanda la Usufi, Sela na Masazu hawafanyi vyema kwenye mtihani
- ❖ Katika Tazamana na Mauti, ukosefu wa hamu ya masomo unamfanya Lucy asifanye vyema kwenye mtihani.
- ❖ Wazazi hukatata-m-aa watoto wao wanapoenda kinyume na matarajio yao.
- ❖ Elimu pia humpa binadamu uhuru kujipangia mustakabadhi wake.
- ❖ Masazu anapata kazi ya kijungu jiko huku Sela akitamani kumchukua mtoto wake ajilele kwa vile hakuwa na la kufanya Masazu anapoenda kazini
- ❖ Katika Kanda la Usufi imeelezwa kuwa wasichana walitarajiwa kuendeleza shughuli zao kwa utulivu na ustaarabu huku wakizingatia maadili ya hali ya juu. Elimu pia inatarajiwa kuwapa wanafunzi nafasi ya kukuza vipaji vyao na kuingilia ili kuelewana zaidi.
- ❖ Jukumu la mwanafunzi katika masomo limejitokeleza Bi Margaret mwalimu mkuu wa shule ya Askofu Timotheo anapowahutubia wanafunzi na kusisitiza uwajibikaji katika vitendo vyao.
- ❖ Katika Tazamana na Mauti Lucy anaamini kuwa jiji hili lina raha kamili bila karaha.
- ❖ Anategemea mzungu atakayemwoa na kumpeleka London na baadaya kufika London akaanza kutegemea kifo cha Bw. Crusoe ambacho kingempa urithi na raha aliyotaka maishani
- ❖ Hili linadhihirika wakati mzee Butali anapomwuliza mwalimu kwa nini wazazi huwapeleka watoto shuleni.
- ❖ Ukosefu wa elimu umeonyeshwa kama mojawapo ya njia zinazowapa vijana mitazamo finyu kuhusu maisha.
- ❖ Esther katika Shaka ya Mambo alijua alichokuwa akitafuta.
- ❖ Kwa upande mwingine mustakabali wa Lucy ulitegemea wengine.
- ❖ Alikuwa amepanga ni kwa muda gani angeendelea kufanya kazi jinsi atakavyopanga wakati wake baada ya kuijunga na chuo kikuu na anachotaka kusomea.



MATHEMATICS

PAPER 1

P1 Q1.

Without using a calculator evaluate, $\frac{2(5+3)-9 \div 3+5}{-3 \times 5 + (-2) \times 4}$ (3 mks)

Answer

$$\frac{-2(5+3-9+3+5)}{-3 \times 5 + (-2) \times 4} = \frac{-14}{7} = -2$$

P1 Q 2**Simplify**

$$\frac{p^2 + 2pq + q^2}{p^3 - pq^2 + p^2q - q^3}$$

Answer

$$\frac{(p+q)(p+q)}{p(p^2-q^2) + q(p^2-q^2)}$$

$$= \frac{(p+q)(p+q)}{(p+q)(p+q)(p-q)}$$

$$= \frac{1}{p+q}$$

P1 Q 3

The external length, width and height of an open rectangular container are 41 cm, 21 cm and 15.5cm respectively. The thickness of the material making the container is 5mm. If the container has 8 litres of water, calculate the internal height above the water level. (4 mks)

Answer

Internal Dimensions: 40, 20 and 15

$$\text{Volume unoccupied} = 40 \times 20 \times 15 - 8000$$

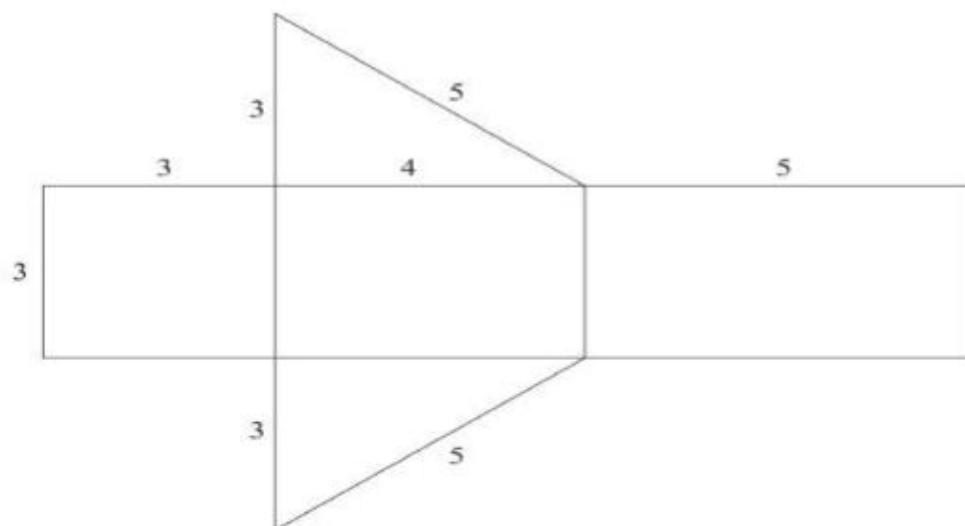
$$= 4000$$

$$\text{Height above water level} = \frac{4000}{40 \times 20} = 5\text{cm}$$



P1 Q4

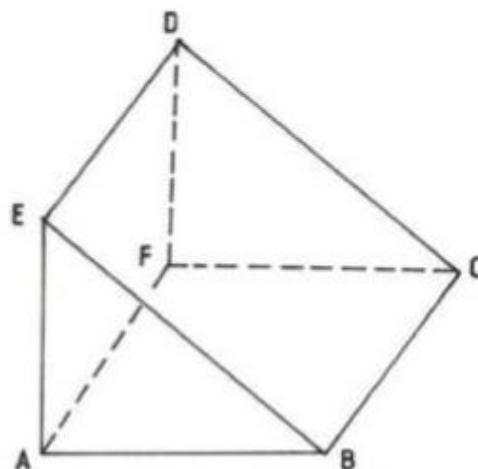
The figure below shows a net of a solid. (measurements are in centimetres).



Below is a part of the sketch of the solid whose net is shown above. Complete the sketch of the solid, showing the hidden edges with broken lines.
(3 marks)



Answer



P1 Q 5

Given that $\mathbf{OA} = 2\mathbf{i} + 3\mathbf{j}$ and $\mathbf{OB} = 3\mathbf{i} - 2\mathbf{j}$. Find the magnitude of \mathbf{AB} to one decimal place (3 marks)

Answer

$$\left(\begin{smallmatrix} 3 \\ -2 \end{smallmatrix} \right) - \left(\begin{smallmatrix} 2 \\ 3 \end{smallmatrix} \right)$$

$$= \left(\begin{smallmatrix} 1 \\ -5 \end{smallmatrix} \right)$$

$$\text{magnitude} = \sqrt{1^2 + (-5)^2}$$

$$= \sqrt{26} \simeq 5.1$$

P1 Q6

A bus travelling at an average speed of 63km/h left a station at 8.15 a.m. A car later left the same station at 9.00 a.m. and caught up with the bus at 10.45 a.m. Find the average speed of the car.

Answer

Distance covered by bus

$$= 63 \times (10.45 - 8.15)$$

$$= 63 \times 2.5$$

$$= 157.5$$

Speed of car

$$= \frac{157.5}{1.75}$$

$$= 90 \text{ km/h}$$

P1 Q7

Given that x is an acute angle and $\cos x = \frac{2\sqrt{5}}{5}$, find without using mathematical tables or a calculator, $\tan(90 - x)^\circ$. (2 marks)

Answer

$$l^2 = 5^2 - (2\sqrt{5})^2 = 5$$

$$l = \sqrt{5}$$

$$\therefore \tan(90 - x)^\circ = \frac{2\sqrt{5}}{\sqrt{5}} \quad \text{or} \quad 2$$



P1 Q 8

Without using mathematical tables or a calculator, evaluate

$$27^{\frac{2}{3}} \times \left(\frac{81}{16}\right)^{-\frac{1}{4}}.$$

Answer

$$27^{\frac{2}{3}} \times \left(\frac{81}{16}\right)^{-\frac{1}{4}} = (3^3)^{\frac{2}{3}} \times \left(\frac{3^4}{2^4}\right)^{-\frac{1}{4}}$$

$$= 3^2 \times \left(\frac{3}{2}\right)^{-1}$$

$$= 3^2 \times \frac{2}{3}$$

$$= 6$$

P1 Q 9

A minor arc of a circle subtends an angle of 105° at the centre of the circle. If the radius of the circle is 8.4 cm, find the length of the major arc. (Take $\pi = \frac{22}{7}$)

(3 marks)

Answer

$$\text{Angle for major arc} = 360 - 105 \\ = 255^\circ$$

$$\text{Length of arc} = \frac{255}{360} \times 2 \times 8.4 \times \frac{22}{7} \\ = 37.4 \text{ cm}$$

P1 Q10

**The gradient of the tangent to the curve $y = ax^3 + bx$ at the point (1,1) is -5.
Calculate the values of a and b** (4 marks)

Answer

$$\frac{dy}{dx} = 3ax^2 + b$$

$$3a + b = -5$$

$$a + b = 1$$

$$a = -3$$

$$b = 4$$



P1 Q11

A line with gradient of -3 passes through the points (3, k) and (k,8). Find the value of k and hence express the equation of the line in the form of $ax + by = c$, where a, b, and c are constants.

Answer

$$\begin{aligned}\frac{k-8}{3-k} &= -3 \\ 3-k &= 1 \\ k-8 &= -9 + 3k \\ 2k &= 1 \\ K &= \frac{1}{2} \\ \frac{y-8}{x-\frac{1}{2}} &= -3 \\ y-8 &= -3(x-\frac{1}{2}) \\ y-8 &= -3x + \frac{3}{2} \\ 2y-16 &= 6x + 3 \\ 6x + 2y &= 19\end{aligned}$$

P1 Q 12

Points L and M are equidistant from another point K. The bearing of L from K is 330° . The bearing of M from K is 220° . Calculate the bearing of M from L (3 marks)

Answer

$$\begin{aligned}\angle LKM &= 110^\circ \\ \angle KLM &= 35^\circ \text{ OR } \angle KML = 35^\circ \\ \text{Bearing is } &185^\circ\end{aligned}$$

P1 Q 13

In this question, mathematical tables should not be used.

A Kenyan bank buys and sells foreign currencies as shown below

Buying (In Kenya shillings)	Selling In Kenya Shillings
1 Hong Kong dollar	9.74
12.03	12.11

1 South African rand	
12.03	12.11

A tourist arrived in Kenya with 105 000 Hong Kong dollars and changed the whole amount to Kenyan shillings. While in Kenya, she spent Kshs 403 897 and changed the balance to South African rand before leaving for South Africa. Calculate the amount, in South African rand that she received. (3 marks)

Answer

$$\begin{aligned}105000 \times 9.74 &= \text{sh } 1022700 \\ 1022700 - 403879 &= \underline{\underline{618821}} \\ &= \frac{12.11}{12.11} \\ &= 51100 \text{ rands}\end{aligned}$$



P1 Q 14

A small cone of height 8 cm is cut off from a bigger cone to leave a frustum of height 16cm. If the volume of the smaller cone is 160cm³, find the volume of the frustum (3marks)

Answer

$$\text{L.S.F.} = 8: 24 = 1: 3$$

$$\text{V.S.F} = 1: 27$$

$$\text{Volume of frustum} = 160 \times 27 - 160$$

$$= 4160 \text{ cm}^3$$

PP1 Q 15

The production of milk, in litres, of 14 cows on a certain day was recorded as follows: 22, 26, 15, 19, 20, 16, 27, 15, 19, 22, 21, 20, 22 and 28.

Determine:

- (a) the mode; (1 mark)**

Answer

Mode

$$= 22$$

- (b) the median. (2 marks)**

Answer

Median

15, 15, 16, 19, 19, 20, 20, 21, 22, 22, 22, 26, 27, 28

$$\text{median} = \frac{20 + 21}{2}$$

$$= 20.5$$

P1 Q 16

Given that $\log 4=0.6021$ and $\log 6=0.7782$, without using mathematical tables or a calculator, evaluate $\log 0.096$. (3mks)

Answer

$$\begin{aligned}\log 0.096 &= \log(4^2 \times 6 \times 10^{-3}) \\ &= 2(\log 4) + \log 6 - 3 \\ &= 2(0.6021) + 0.7782 - 3 \\ &= -2.9824 \text{ or} \\ &= (-1.0176)\end{aligned}$$

P1 Q 17

$$(a) \text{Solve the equation, } \frac{x+3}{24} = \frac{1}{x-1} \quad (4 \text{ marks})$$

Answer

$$X = 5 \text{ or } -6$$



(b) The length of a floor of a rectangular hall is 9 m more than its width. The area of a floor is 136 m².

(i) Calculate the perimeter of the floor. (4 marks)

Answer

50 m

(ii) A rectangular carpet is placed on the hall leaving an area of 64 m². If the length of the carpet is twice its width, determine the width of the carpet. (2 marks)

Answer

6 m

PP No. 18.

Three business partners: Asha, Nangila and Cherop contributed Ksh 60 000, Ksh 85 000 and Ksh 105 000 respectively. They agreed to put 25% of the profit back into business each year. They also agreed to put aside 40% of the remaining profit to cater for taxes and insurance. The rest of the profit would then be shared among the partners in the ratio of their contributions.

At the end of the first year, business realized a gross profit of Ksh 225 000

(a) Calculate the amount of money Cherop received more than Asha at the end of the first year. (5 marks)

Answer

% Profit for taxes and insurance

$$= \frac{40}{100} \times \frac{75}{100}$$

Amount shared

$$= \frac{100 - (25 + 30)}{100} \times 225000$$

$$= \frac{45}{100} \times 225000$$

$$= 101250$$

Amount Cherop received more than Asha: Ratio of contribution

60000: 85000: 105000

12 : 17 : 21

$$\frac{21 - 12}{50} \times 101250$$

$$= 18225$$

(b) Nangila further invested Ksh 25 000 into the business at the beginning of the second year. Given that the gross profit at the end of the second year increased in the ratio 10:9, calculate Nangila's share of the profit at the end of the second year. (5 marks)



Answer

Profit during 2nd year:

$$225000 \times \frac{10}{9} \\ = 250000$$

Nangila's new ratio:

$$= \frac{110000}{275000} = \frac{2}{5}$$

∴ Nangila's New Share of Profit

$$= \frac{2}{5} \times 112500 \\ = 45000$$

P1 Q19

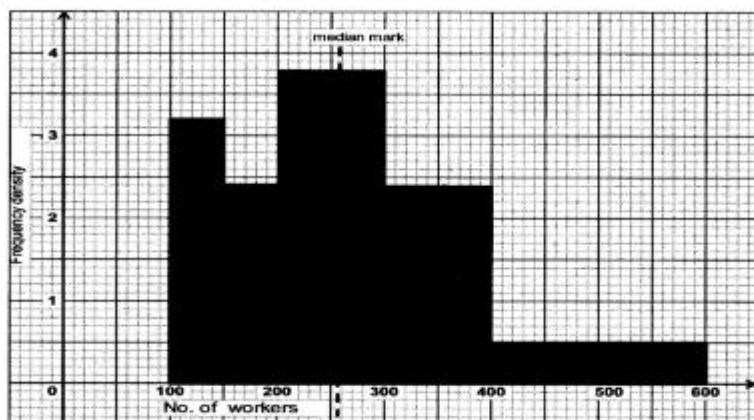
The frequency table below shows the daily wages paid to casual workers by a certain company

Wages in shillings	100-150	150-200	200-300	300-400	400-600
No. of workers	160	120	380	240	100

- a) Draw a histogram to represent the above information. (5 marks)

Answer

Frequency (f)	160	120	380	240	100
Class width(c)	50	50	100	100	200
Freq. density(f/c)	3.2	2.4	3.8	2.4	0.5



(b)(i)State the class in which the median wage lies. (1 mark)**Answer**

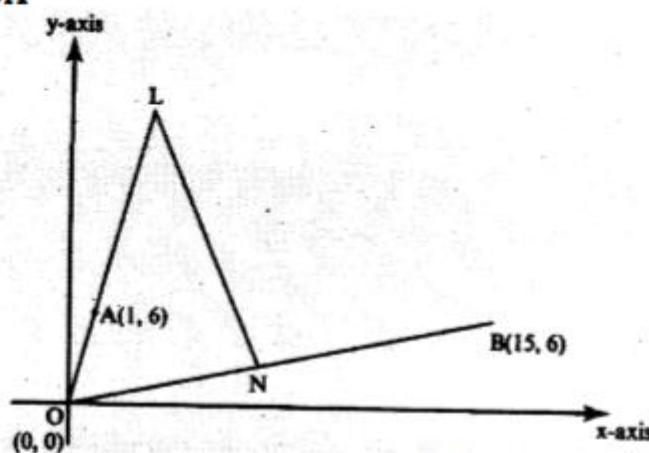
median class: 200 – 300

(ii)Draw a vertical line, in the histogram, showing where the median wage lies. (1 mark!)**Answer**

Shown by dotted line (257.895)

(c)Using the histogram, determine the number of workers who earn sh 450 or less per day. (3 mark;**Answer**Number of workers who earn Sh. 450 or less per day = $900 + 50 \times 0.5 = 925$ **P1 Q 20**

In the diagram below, the coordinates of points A and B are (1,6) and (15,6) respectively). Point N is on OB such that $3\vec{ON} = 2\vec{OB}$. Line OA is produced to L such that $\vec{OL} = 3\vec{OA}$

**a)Find vector LN (3 marks)****Answer**

$$\vec{OL} = 3 \begin{pmatrix} 1 \\ 6 \end{pmatrix}$$

$$= \begin{pmatrix} 3 \\ 18 \end{pmatrix}$$

$$\vec{ON} = \frac{2}{3} \begin{pmatrix} 15 \\ 6 \end{pmatrix}$$

$$= \begin{pmatrix} 10 \\ 4 \end{pmatrix}$$

$$\vec{LN} = \vec{ON} - \vec{OL}$$

$$= \begin{pmatrix} 10 \\ 4 \end{pmatrix} - \begin{pmatrix} 3 \\ 18 \end{pmatrix}$$

$$= \begin{pmatrix} 7 \\ -14 \end{pmatrix}$$



(b) Given that a point M is on LN such that LM: MN = 3: 4, find the coordinates of (2 marks)

Answer

$$\begin{aligned} OM &= OL + \frac{3}{7} LN \\ &= \begin{pmatrix} 3 \\ 18 \end{pmatrix} + \frac{3}{7} \begin{pmatrix} 7 \\ -14 \end{pmatrix} \\ &= \begin{pmatrix} 3 \\ 18 \end{pmatrix} + \begin{pmatrix} 3 \\ -6 \end{pmatrix} \\ &= \begin{pmatrix} 6 \\ 12 \end{pmatrix} \\ &= M(6,12) \end{aligned}$$

(c) If line OM is produced to T such that OM: MT = 6:1

(i) Find the position vector of T (1 mark)

Answer

$$\begin{aligned} OT &= \frac{7}{6} OM \\ &= \frac{7}{6} \begin{pmatrix} 6 \\ 12 \end{pmatrix} \\ &= \begin{pmatrix} 7 \\ 14 \end{pmatrix} \end{aligned}$$

(ii) Show that points L, T and B are collinear (4 marks)

Answer

$$\begin{aligned} LT &= \begin{pmatrix} 7 \\ 14 \end{pmatrix} - \begin{pmatrix} 3 \\ 18 \end{pmatrix} \\ &= \begin{pmatrix} 4 \\ -4 \end{pmatrix} \\ LB &= \begin{pmatrix} 15 \\ 6 \end{pmatrix} - \begin{pmatrix} 3 \\ 18 \end{pmatrix} \\ &= \begin{pmatrix} 12 \\ -12 \end{pmatrix} \end{aligned}$$

$$LB = 3LT$$

L is the common point.



P1 Q 21

(a) The ratio of Juma's and Akinyi's earnings was 5 : 3. Juma's earnings rose to Ksh 8400 after an increase of 12%. Calculate the percentage increase in Akinyi's earnings given that the sum of their new earnings was Ksh 14 100. (6 marks)

Answer

Juma's earnings before increase:

$$112\% \rightarrow 8400$$

$$100\% \rightarrow 8400 \times \frac{100}{112} \\ = 7500$$

Akinyi's earnings before increase:

$$\frac{3}{5} \times 7500 = 4500$$

Increase in Akinyi's earnings

$$14100 - 8400 - 4500 \\ = 1200$$

% increase in Akinyi's earnings

$$\frac{1200}{4500} \times 100 \\ = 26\frac{2}{3}$$

(b) Juma and Akinyi contributed all the new earnings to buy maize at Ksh 1175 per bag. The maize was then sold at Ksh 1 762.50 per bag. The two shared all the money from the sales of the maize in the ratio of their contributions. Calculate the amount that Akinyi got. (4 marks)

Answer

No. of bags bought

$$\frac{14100}{1175} \\ = 12 \text{ bags}$$

$$\text{Profit} = (1762.50 - 1175) \times 12 = 7050$$

Ratio 5700:8400 = 19:28

$$\text{Profit for Akinyi: } = 7050 \times \frac{19}{47} = 2850$$

Total earning for Akinyi:

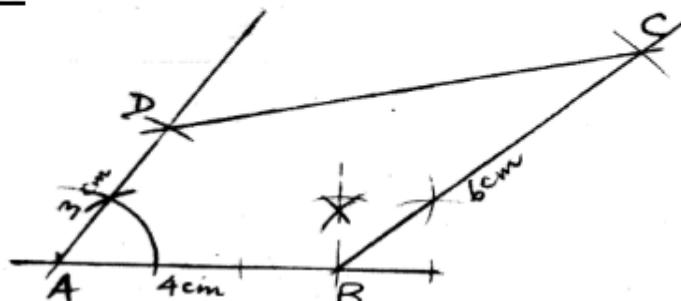
$$5700 + 2850 \\ = 8550$$



P1 Q 22

Using a pair of compasses and ruler only, construct a quadrilateral ABCD in which AB = 4 cm, BC = 6 cm, AD = 3 cm, angle ABC = 135° and angle DAB = 60°. Measure the size of angle BCD. (4 marks)

Answer



Construction of 135° angle between lines AB = 4 cm and BC = 6 cm

Construction of 60° angle between lines AB = 4 cm and AD = 3 cm

Completion of quadrilateral ABCD

$$\angle BCD = 31^\circ \pm 1^\circ$$

P1 Q 23

The equation of a curve is $y = 2x^3 + 3x^2$.

(a) Find:

(i) The x-intercept of the curve; (2 marks)

Answer

x - intercepts

when $y = 0$

$$x^2(2x + 3) = 0$$

$$x = 0 \text{ and } x = -\frac{3}{2}$$

(ii) The y- intercept of the curve; (1 mark)

Answer

y - intercept

when $x = 0, y = 0$



(b)(i) Determine the stationary points of the curve.(3 marks)**Answer**

stationary points of curve

$$\frac{dy}{dx} = 6x^2 + 6x$$

stationery points when $\frac{dy}{dx} = 0$

i.e. $6x^2 + 6x = 0$

$6x(x + 1) = 0$

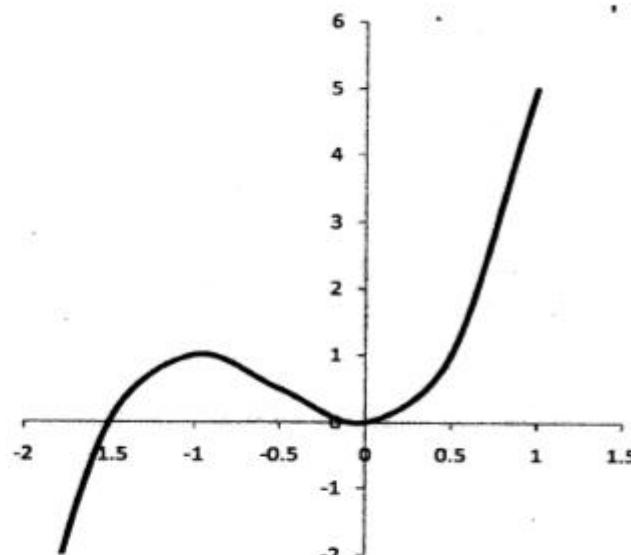
$x = 0 \text{ or } x = -1$

 \therefore stationary points are:

$(0,0)$ and $(-1,1)$

(ii) For each points in (b) (i) above, determine whether it is a maximum or minimum, (3 marks)**Answer**

x	-2	$-1\frac{1}{2}$	-1	$-\frac{1}{2}$	0	$\frac{1}{2}$	1
$\frac{dy}{dx}$	12	$4\frac{1}{2}$	0	$-1\frac{1}{2}$	0	$4\frac{1}{2}$	12

minimum point $(0,0)$ maximum point $(-1,1)$ **(c) Sketch the curve. (2 marks)****Answer**points plotted at $(-1\frac{1}{2}, 0)$, $(-1, 1)$ and $(0, 0)$

smooth curve

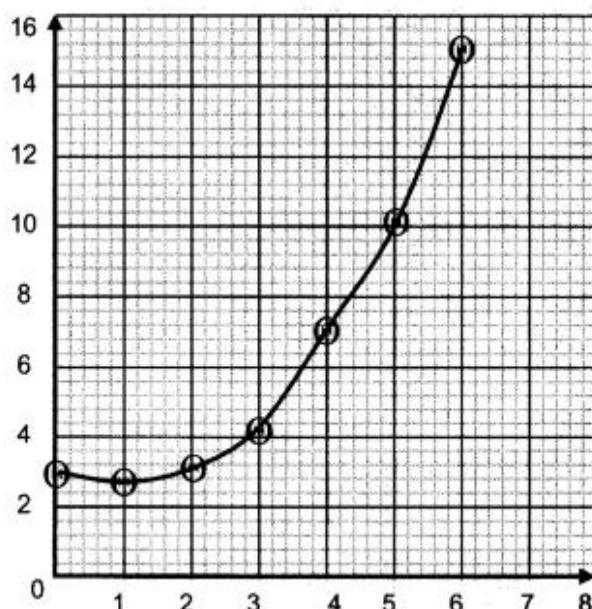


P1 Q 24

(a) On the grid provided, draw a graph of the function $y = \frac{1}{2}x^2 - x + 3$ for $0 \leq x \leq 6$
 (grid was provided) (3 marks)

Answer

x	0	1	2	3	4	5	6
$y = \frac{1}{2}x^2 - x + 3$	3	2½	3	4½	7	10½	15



PAPER 2**P2 Q 1**

Simplify $\frac{4}{\sqrt{5} + \sqrt{2}} - \frac{3}{\sqrt{5} - \sqrt{2}}$ (3 marks)

Answer

$$\begin{aligned} & \frac{4}{\sqrt{5} + \sqrt{2}} - \frac{3}{\sqrt{5} - \sqrt{2}} \\ &= \frac{4(\sqrt{5} - \sqrt{2}) - 3\sqrt{5} + \sqrt{2}}{(\sqrt{5} + \sqrt{2})(\sqrt{5} - \sqrt{2})} \\ &= \frac{4\sqrt{5} - 4\sqrt{2} - 3\sqrt{5} - 3\sqrt{2}}{3} \\ &= \frac{\sqrt{5} - 7\sqrt{2}}{3} \end{aligned}$$

P2 Q 2

By correcting each number to one significant figure, approximate the value of 788×0.006 . Hence calculate the percentage error arising from this approximation. (3 marks)

Answer

Writing each number to one significant figure: $788 \approx 800$ and $0.006 = 0.006$

Thus, $800 \times 0.006 = 4.8$

$$\% \text{ error} = \frac{4.8 - (788 \times 0.006)}{788 \times 0.006} \times 100 \%$$

$$= \frac{0.072}{4.728} \times 100\%$$

$$= 1.523\% \text{ or } (1.52284264\%)$$

P2 Q 3

The area of triangle FGH is 21 cm^2 . The triangle FGH is transformed using the matrix

$\begin{pmatrix} 4 & 5 \\ 1 & 2 \end{pmatrix}$ Calculate the area of the image of triangle FGH (2 Marks)

Answer

$$\begin{aligned} \text{Image area} & [(4 \times 2) - (5 \times 1)] \times 21 \\ & 63 \text{ sq. units} \end{aligned}$$



P2 Q 4**Make s the subject of the formula.**

$$w = 3\sqrt{\frac{s+t}{s}}$$

Answer

$$w^3 = \frac{s+t}{s}$$

$$w^3 s = s + t$$

$$w^3 s - s = t$$

$$s = \frac{t}{w^3 - 1}$$

P2 Q 5**Solve the equation $2\log x - \log(x-2) = 2\log 3$** **(3mks)****Answer**

$$\log\left(\frac{x^2}{(x-2)}\right) = \log 3^2$$

$$\frac{x^2}{x-2} = 9$$

$$x^2 - 9x + 18 = 0$$

$$(x-6)(x-3) = 0$$

$$x = 6 \text{ or } x = 3$$

P2 Q 6

Kago deposited Ksh 30 000 in a financial institution that paid simple interest at the rate of 12% per annum. Nekesa deposited the same amount of money as Kago in another financial institution that paid compound interest. After 5 years, they had equal amounts of money in the financial institutions.

Determine the compound interest rate per annum, to 1 decimal place, for Nekesa's deposit. (4 marks)

Answer

$$\begin{aligned} \text{Amount for Kago} \\ &= 30000 + \frac{12}{100} \times 30000 \times 5 \\ &= 48000 \end{aligned}$$

Compound interest rate for Nekesa

$$30000\left(1 + \frac{r}{100}\right)^5 = 48000$$

$$\left(1 + \frac{r}{100}\right)^5 = \frac{48000}{30000} = 1.6$$

$$1 + \frac{r}{100} = \sqrt[5]{1.6}$$

$$\begin{aligned} r &= 100(1.098560543 - 1) \\ &= 9.9\% \end{aligned}$$



P2 Q7

The masses in kilograms of 20 bags of maize were; 90, 94, 96, 98, 99, 102, 105, 91, 102, 99, 105, 94, 99, 90, 94, 99, 98, 96, 102 and 105.

Using an assumed mean of 96kg, calculate the mean mass, per bag, of the maize.
(3 marks)

Answer

Differences from assumed mean

$$\begin{aligned}-6 - 2 + 0 + 2 + 3 + 6 + 9 - 5 + 6 + 3 + 9 \\ -2 + 3 - 6 - 2 + 3 + 2 + 0 + 6 + 9 = 38\end{aligned}$$

$$\begin{aligned}\therefore \text{mean} &= 96 + \frac{38}{20} \\ &= 97.9\end{aligned}$$

P2 Q 8

The first term of an arithmetic sequence is - 7 and the common difference is 3.

(a) List the first six terms of the sequence; (1 mark)

Answer

First 6 terms

-7, -4, -1, 2, 5, 8

(b) Determine the sum of the first 50 terms of the sequence. (2 marks)

Answer

Sum of 1st 50 terms

$$S_{50} = \frac{50}{2} \{2 \times -7 + 49 \times 3\}$$

$$= 3325$$

P2 Q 9

A bag contains 2 white balls and 3 black balls. A second bag contains 3 white balls and 2 black balls. The balls are identical except for the colours.

Two balls are drawn at random, one after the other from the first bag and placed in the second bag. Calculate the probability that the 2 balls are both white. (2 marks)

Answer

$$P(ww) = \frac{2}{5} \times \frac{1}{4} = \frac{1}{10}$$

$$P(bb) = \frac{2}{7} \times \frac{1}{6} = \frac{1}{21}$$

P2 Q. 10

An arc 11 cm long, subtends an angle of 70° at the centre of a circle.

Calculate the length, correct to one decimal place, of a chord that subtends an angle of 90° at the centre of the same circle. (4 marks)

Answer

Length 12.7 cm



P2 Q 11

Given that $q \mathbf{i} + \frac{1}{3} \mathbf{j} + \frac{2}{3} \mathbf{k}$ is a unit vector, find q (2 marks)

Answer

$$q^2 + \left(\frac{1}{3}\right)^2 + \left(\frac{2}{3}\right)^2 = 1^2$$

$$q^2 = 1 - \frac{5}{9} = \frac{4}{9}$$

$$q = \pm \frac{2}{3}$$

P2 Q 12

(a) Expand the expression $(1 + \frac{1}{2}x)^5$ in ascending powers of x , leaving the coefficients as fractions in their simplest form (2 marks)

Answer

$$\begin{aligned} & 1.1^5 (\frac{1}{2}x)^0 + 5.1^4 (\frac{1}{2}x)^1 + 10.1^3 (\frac{1}{2}x)^2 + 10.1^2 (\frac{1}{2}x)^3 + 5.1 (\frac{1}{2}x)^4 + 1.1^0 (\frac{1}{2}x)^5 \\ &= 1 + \frac{5}{2}x + \frac{5}{2}x^2 + \frac{5}{4}x^3 + \frac{5}{16}x^4 + \frac{1}{32}x^5 \end{aligned}$$

(b) Use the first three terms of the expansion in (a) above to estimate the value of $(1 \frac{1}{20})^5$ (2 marks)

Answer

$$\begin{aligned} (1 \frac{1}{20})^5 &= 1 + \frac{5}{2} \times \frac{1}{10} + \frac{5}{2} \times \frac{1}{100} \\ &= 1 + \frac{5}{20} + \frac{5}{200} \\ &= 1 \frac{11}{40} \end{aligned}$$



P2 Q 13

A circle whose equation is $(x-1)^2 + (y-k)^2 = 10$ passes through the point {2, 5}, Find the coordinates of the two possible centres of the circle,

Answer

$$(2-1)^2 + (5-k)^2 = 10$$

$$k^2 - 10k + 16 = 0$$

$$(k-2)(k-8) = 0$$

$$k = 2 \text{ or } k = 8$$

Centre at (1,2) or (1,8)

P2 Q 14

Water and milk are mixed such that the ratio of the volume of water to that of milk is 4: 1. Taking the density of water as 1 g/cm³ and that of milk as 1.2g/cm³, find the mass in grams of 2.5 litres of the mixture. (3 marks)

Answer

$$\text{Vol. of water} = \frac{4}{5} \times 2500 = 2000 \text{ cm}^3$$

$$\text{Vol. of milk} = \frac{1}{5} \times 2500 = 500 \text{ cm}^3$$

$$\begin{aligned}\text{The mass of the mixture} &= 2000 \times 1g + 500 \times 1.2g \\ &= 2600g\end{aligned}$$

PP2 No. 15]

A school decided to buy at least 32 bags of maize and beans. The number of bags of maize were to be more than 20 and the number of bags of beans were to be at least 6. A bag of maize costs Ksh 2500 and a bag of beans costs Ksh 3500. The school had Ksh 100 000 to purchase the maize and beans. Write down all the inequalities that satisfy the above information. (4 marks)

Answer

$$x+y \geq 32, x > 20, y \geq 6, 5x + 7y \leq 200$$

P2 Q 16

Find in radians, the values of x in the interval $0^\circ \leq x \leq 2\pi^\circ$ for which $2 \cos^2 x - \sin x = 1$. (Leave the answers in terms of π) (4mks)

Answer

$$2(1 - \sin^2 x) - \sin x = 1$$

$$2\sin^2 x + \sin x - 1 = 0$$

$$2\sin^2 x + 2\sin x - \sin x - 1 = 0$$

$$(2\sin x - 1)(\sin x + 1) = 0$$

$$\sin x = \frac{1}{2} \text{ or } \sin x = -1$$

$$x = \frac{1}{6}\pi^\circ, \frac{5}{6}\pi^\circ, \frac{3}{2}\pi^\circ$$



(b) Calculate the mid-ordinates for 5 strips between $x = 1$ and $x = 6$, and hence use the mid-ordinate rule to approximate the area under the curve between $x = 1$, $x = 6$ and the x-axis. (3 marks)

Answer

$$y_1 = \frac{1}{2} \times 1.5^2 - 1.5 + 3 = 2.625$$

$$y_2 = \frac{1}{2} \times 2.5^2 - 2.5 + 3 = 3.625$$

$$y_3 = \frac{1}{2} \times 3.5^2 - 3.5 + 3 = 5.625$$

$$y_4 = \frac{1}{2} \times 4.5^2 - 4.5 + 3 = 8.625$$

$$y_5 = \frac{1}{2} \times 5.5^2 - 5.5 + 3 = 12.625$$

Approximate area

$$= 1(2.625 + 3.625 + 5.625 + 8.625 + 12.625)$$

= 33.125 sq. units

(c) Assuming that the area determined by integration to be the actual area, calculate the percentage error in using the mid-ordinate rule. (4 marks)

Answer

$$\text{Area} = \int_{1}^{6} \left(\frac{1}{2}x^2 - x + 3 \right) dx = \left[\frac{x^3}{6} - \frac{x^2}{2} + 3x \right]_1^6$$

$$= \left[\frac{6^3}{6} - \frac{6^2}{2} + 3 \times 6 \right] - \left[\frac{1^3}{6} - \frac{1^2}{2} + 3 \right] = 33.5$$

$$\% \text{ error} = \frac{33.5 - 33.125}{33.5} \times 100$$

$$= 0.625\%$$

P2 Q 17

A garden measures 10 m long and 8 m wide. A path of uniform width is made all round the garden. The total area of the garden and the path is 168 m².

(a) Find the width of the path.

(4 marks)

Answer

Let width of the path be x

$$\text{Area} = (10 + 2x)(8 + 2x) = 168$$

$$\Leftrightarrow 80 + 20x + 16x + 4x^2 = 168$$

$$4x^2 + 36x - 88 = 0$$

$$\Leftrightarrow x^2 + 9x - 22 = 0$$

$$(x - 2)(x + 11) = 0$$

$$x = 2 \text{ or } -11$$

Width of path = 2m



(b) The path is to be covered with square concrete slabs. Each corner of the path is covered with a slab whose side is equal to the width of the path. The rest of the path is covered with slabs of side 50 cm. The cost of making each corner slab is sh 600 while the cost of making each smaller slab is sh 50. Calculate:

(i) the number of the smaller slabs used.

(3 marks)

Answer

Area covered by small slabs

$$= \frac{14}{68} \times 12 - (10 \times 8 + 4(2 \times 2))$$

$$\text{No. of slabs} = \frac{72}{0.5 \times 0.5}$$
$$= 288$$

(ii) the total cost of the slabs used to cover the whole path.

(3 marks)

Answer

Cost of slabs

$$\text{Large} = 600 \times 4$$
$$= 2400$$

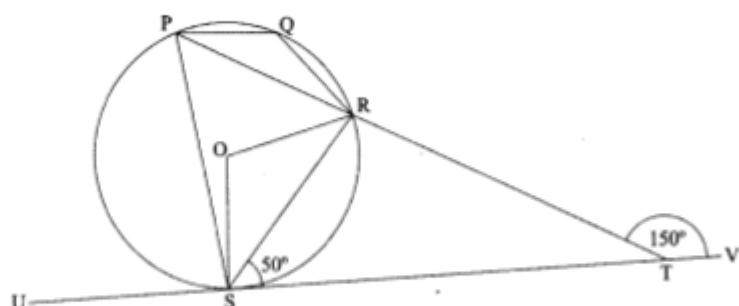
$$\text{Small} = 50 \times 288$$
$$= 14400$$

$$\text{Total cost} = 2400 + 14400$$
$$= \text{sh} 16,800$$



P2 Q 18

In the figure below, P, Q, R and S are points on the circle centre O. PRT and USTV are straight lines. Line USTV is a tangent to the circle at S, $\angle RST = 50^\circ$ and $\angle RTV = 150^\circ$.



a) Calculate the size of:

- (i) $\angle ORS$; (2 marks)

Answer

$$\angle OSR = 90 - 50 = 40$$

$$\therefore ORS = 40$$

- (ii) $\angle USP$; (1 mark)

Answer

$$\angle RTS = 30^\circ \text{ and } \angle RPS = 50^\circ$$

$$\therefore \angle USP = 30^\circ + 50^\circ = 80^\circ$$

- (iii) $\angle PQR$. (2 marks)

Answer

$$\angle PQR = 180^\circ - 50^\circ = 130^\circ$$

(b) Given that RT = 7 cm and ST = 9 cm, calculate to 3 significant figures:

- (i) the length of line PR; (2 marks)

Answer

$$PT \times TR = TS^2$$

$$(7 + x)(7) = 9^2$$

$$7x = 81 - 49 = 32$$

$$x = \frac{32}{7} = 4.57$$

- (ii) the radius of the circle. (3 marks)

Answer

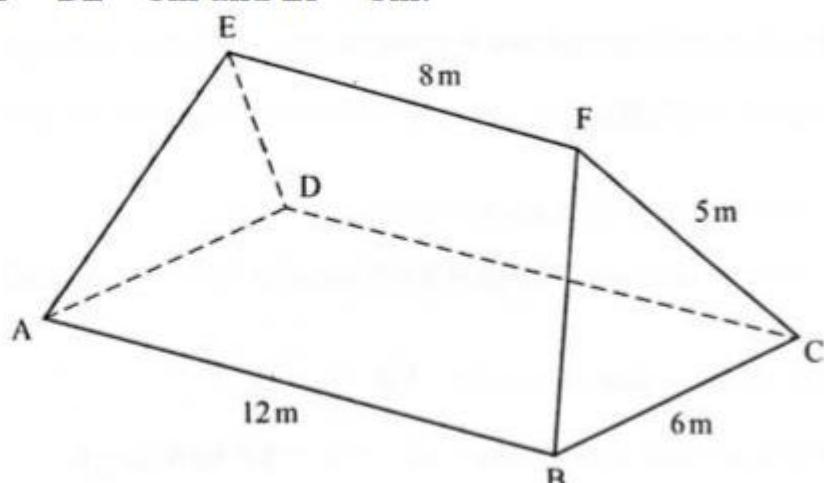
$$\angle ORP = 40^\circ$$

$$\cos 40^\circ = \frac{\frac{1}{2} \times 4.57}{r}$$

$$r = \frac{\frac{1}{2} \times 4.57}{\cos 40} = 2.98$$

P2 Q 19

The figure ABCDEF below represents a roof of a house. AB = DC = 12 m, BC = AD = 6 m, AE = BF = CF = DE = 5m and EF = 8m.



- (a) Calculate, correct to 2 decimal places, the perpendicular distance of EF from the plane ABCD. (3 marks)

Answer

(a) = distance of EF from place ABCD

slant height from F to BC

$$= \sqrt{5^2 - 3^2}$$

$$= 4$$

\therefore = distance of EF from plane ABCD

$$= \sqrt{4^2 - 2^2}$$

$$= \sqrt{12} = 3.46 \text{ m}$$

- (b) Calculate the angle between:

- (i) the planes ADE and ABCD; (2 marks)

Answer

(i) angle between planes

ADE and ABCD

$$= \tan^{-1} \frac{\sqrt{12}}{2}$$

$$= 60^\circ$$



(ii) the line AE and the plane ABCD, correct to 1 decimal place; (2 marks)

Answer

angle between line AE
and plane ABCD

$$= \sin^{-1} \frac{\sqrt{12}}{5}$$

$$= 43.9^\circ$$

(iii) the planes ABFE and DCFE, correct to 1 decimal place. (3 marks)

Answer

angle between planes

ABFE and DCFE

$$= 2 \operatorname{ctan}^{-1} \frac{3}{\sqrt{12}} \text{ m}$$

$$= 81.8^\circ$$

P2 Q 20

A water vendor has a tank of capacity 18 900 litres. The tank is being filled with water from two pipes A and B which are closed immediately when the tank is full. Water flows at the rate of 150 000 cm³/minute through pipe A and 120 000 cm³/minute through pipe B.

a) If the tank is empty and the two pipes are opened at the same time, calculate the time it takes to fill the tank (3 marks)

Answer

Total rate of flow in litres

$$= 120 + 150 = 270 \text{ l/min}$$

$$\begin{array}{r} 18900 \\ \hline 270 \\ \hline 70 \text{ min (1 hr 10 min)} \end{array}$$

b) On a certain day the vendor opened the two pipes A and B to fill the empty tank. After 25 minutes he opened the outlet tap to supply water to his customers at an average rate of 20 litres per minute.

i) Calculate the time it took to fill the tank on that day (4 marks)

Answer

Part of tank filled after 25 min

$$= 270 \times 25$$

$$= 6750$$

Time taken to fill remaining part

$$\frac{18900 - 6750}{270 - 20}$$

$$= 48.6 \text{ min}$$

Total time to fill tank

$$= 25 + 48.6 = 73.6 \text{ min}$$



ii) The vendor supplied a total of 542 jerricans, each containing 25 litres of water, on that day. If the water that remained in the tank was 6300 litres, calculate, in litres, the amount of water that was wasted (3 marks)

Answer

$$\begin{aligned} \text{Total inflow into tank} \\ &= 270 \times 73.6 \\ &\approx 19872 \\ \text{Water wasted} &= 19872 - (542 \times 25 + 6300) \\ &\approx 22 \text{ l} \end{aligned}$$

P2 Q 21

A tourist took 1h 20minutes to travel by an aircraft from town T(3°S, 35°E) to town U(9°N, 35°E).

(Take the radius of the earth to be 6370km and ($\pi = \frac{22}{7}$)

(a) Find the average speed of the aircraft.(3 marks)

Answer

$$\begin{aligned} \text{distance from T to U} \\ &= 2 \times 6370 \times \frac{22}{7} \times \frac{12}{360} \\ \text{speed} &= \frac{2 \times 6370 \times \frac{22}{7} \times \frac{12}{360}}{1\frac{1}{3}} \\ &= 1001 \text{ km/h} \end{aligned}$$

(b)After staying at town U for 30 minutes, the tourist took a second aircraft to town V(9°N, 5°E). The average speed of the second aircraft was 90% that of the first aircraft. Determine the time, to the nearest minute, the aircraft took to travel from U to V. (3 marks)

Answer

$$\begin{aligned} \text{time} &= \frac{2 \times 6370 \times \frac{22}{7} \times \frac{30}{360} \cos 9^\circ}{1001 \times \frac{90}{100}} \\ &= 3.658104965 \text{ h} \\ &\approx 3 \text{ h } 39 \text{ min} \end{aligned}$$



(c) When the journey started at town T, the local time was 0700h. Find the local time at V when the tourist arrived. (4 marks)

Answer

$$\begin{aligned}\text{Arrival time at U} \\ 0700 + 1\text{h } 20\text{ min} \\ = 0820 \text{ h}\end{aligned}$$

$$\begin{aligned}\text{Departure time at U} \\ 0820 + 30 \text{ min} \\ = 0850 \text{ h}\end{aligned}$$

$$\begin{aligned}\text{Time difference between U and V} \\ \frac{35 - 5}{360} \times 24 \\ = 2\text{h}\end{aligned}$$

$$\begin{aligned}\text{Arrival time at V (local time)} \\ 0850\text{h} + 3\text{h } 39\text{min} - 2\text{h} \\ = 1029\text{h}\end{aligned}$$

P2 Q 22

The gradient function of a curve is given by the expression $2x + 1$. If the curve passes through the point (-4, 6);

(a) Find:

(i) The equation of the curve (3 marks)

Answer

$$\begin{aligned}y &= \frac{2x^2}{2} + x + c \\ \text{at } x = -4, y &= 6 \\ 6 &= (-4)^2 - 4 + c \\ c &= -6 \\ y &= x^2 + x - 6\end{aligned}$$

(ii) The values of x, at which the curve cuts the x- axis (3 marks)

Answer

$$\begin{aligned}x^2 + x - 6 &= 0 \\ (x - 2)(x + 3) &= 0 \\ x = 2 \text{ or } x &= -3\end{aligned}$$

(b) Determine the area enclosed by the curve and the x- axis (4 marks)

Answer

$$\begin{aligned}\int_{-3}^2 (x^2 + x - 6) dx &= \left[\frac{x^3}{3} + \frac{x^2}{2} - 6x \right]_2^3 \\ \left[\frac{8}{3} + \frac{4}{2} - 12 \right] - \left[\frac{-27}{3} + \frac{9}{2} + 18 \right] \\ -7\frac{1}{3} - 13\frac{1}{2} &= -20\frac{5}{6} \\ \text{Area} &= 20\frac{5}{6}\end{aligned}$$



P2 Q 23

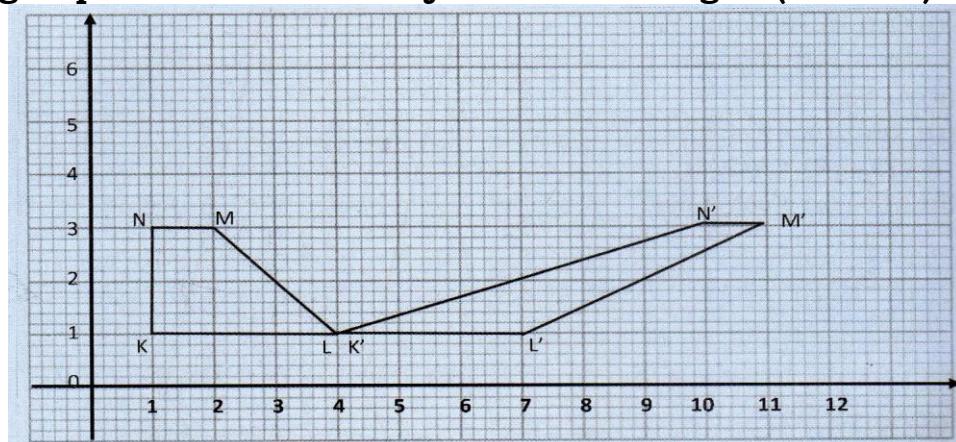
A quadrilateral with vertices at $K(1, 1)$, $L(4, 1)$, $M(2, 3)$ and $N(1, 3)$ is transformed by a matrix $T = \begin{pmatrix} 1 & 3 \\ 0 & 1 \end{pmatrix}$ to a quadrilateral $K'L'M'N'$

(a) Determine the coordinates of the image. (3 marks)

Answer

$$K'(4, 1) (7, 1), M'(11, 3) N'(10, 3)$$

(b) On the grid provided draw the object and the image. (2 marks)



(c)(i) Describe fully the transformation which maps $KLMN$ onto $K'L'M'N'$. (2 marks)

Answer

Shear parallel to x -axis of shear factor 3 with the x -axis as the invariant line

(ii) Determine the area of the image. (1 mark)

Answer

$$\text{Area of image} = \text{Area of object} = 4 \text{ sq units}$$

(d) Find a matrix which maps $K'L'M'N'$ onto $KLMN$. (2 marks)

Answer

$$\begin{pmatrix} 1 & -3 \\ 0 & 1 \end{pmatrix}$$

P2 Q 24

The first, fifth and seventh terms of an arithmetic progression (AP) correspond to the first three consecutive terms of a decreasing Geometric Progression (GP). The first term of each progression is 64, and the common difference of the AP is d and the common ratio of the G.P is r .

a) (i) Write two equations involving d and r (2marks)

Answer

$$\begin{aligned} 64 + 4d &= 64r \\ 64 + 6d &= 64r^2 \end{aligned}$$



(ii) Find the values of d and r**Answer**

From (i)

$$d = 16r - 16$$

$$64r^2 = 64 + 6(16r - 16)$$

$$64r^2 = 64 + 96r - 96$$

$$2r^2 - 3r + 1 = 0$$

$$(2r - 1)(r - 1) = 0$$

$$r = \frac{1}{2} \text{ or } r = 1$$

For decreasing GP, $r = \frac{1}{2}$ Substituting $r = \frac{1}{2}$ in (i)

$$64 \times \frac{1}{2} = 64 + 4d$$

$$d = -8$$

b) Find the sum of the first 10 term of;**(i) the A.P****Answer**

A.P

$$S_{10} = \frac{10}{2} \{ 2 \times 64 + 9 \times -8 \} = 280$$

(ii) the G.P**Answer**

G.P

$$S_{10} = \frac{64 \left(1 - \frac{1}{2^{10}} \right)}{1 - \frac{1}{2}} = \frac{64 \left(\frac{1023}{1024} \right)}{\frac{1}{2}} = 127.875$$



PHYSICS

PAPER 1

No. 1. State what mechanics as a branch of physics deals with. (1 mark)

- ❖ Study of motion of bodies under the influence of forces or motion and forces

No. 2. Figure 1 shows the change in volume of water in a measuring cylinder when an irregular solid is immersed in it.

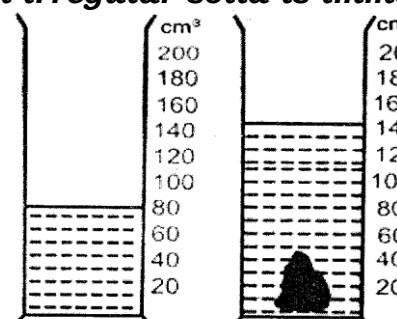


Fig 1.

Given that the mass of the solid is 567 g, determine the density of the solid in g cm^{-3} (Give your answer correct to 2 decimal places) (3 marks)

$$\text{Volume} = 68 \text{ cm}^3$$

$$\text{Mass} = 567 \text{ g}$$

$$\text{Density} = \frac{m}{V} = \frac{567}{68}$$

$$= 8.34 \text{ g/cm}^3$$

No. 3. When a drop of oleic acid of known volume is dropped on the surface of water in a large trough, it spreads out to form a large circular patch. State one assumption made when the size of the molecule of oleic acid is estimated by determining the area of the patch. (1 mark)

- ❖ Drop spreads out until the patch is one molecule thick

No. 4]. Figure 2(a) and 2(b) shows capillary tubes inserted in water and mercury respectively.

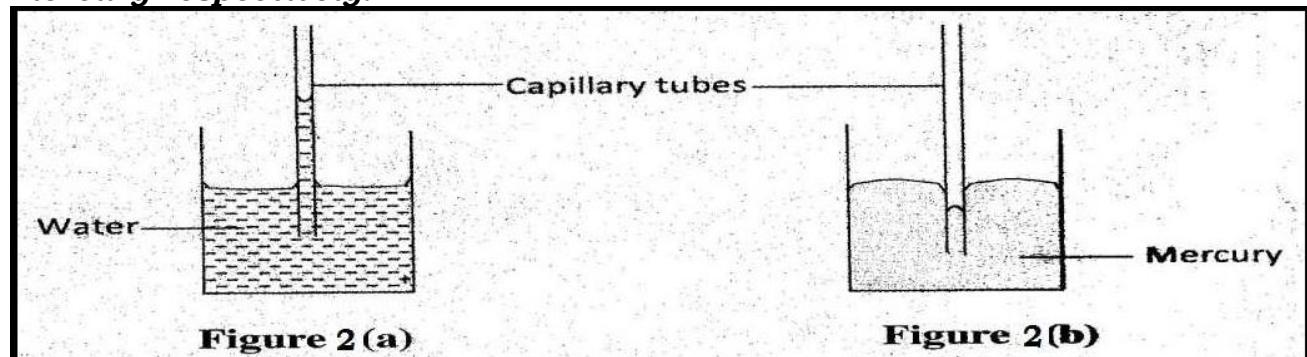


Figure 2 (a)

Figure 2 (b)

It is observed that in water the meniscus in the capillary tube is higher than the meniscus in the beaker, while in the mercury the meniscus in the capillary tube is lower than the meniscus in the beaker. Explain this observation (2mks)

- ❖ In (a), the adhesive force between water and capillary tube is stronger than the cohesive force between the water molecules while in (b) the cohesive forces between mercury and the tube is higher than the adhesive force between mercury and the tube.



No. 5. Fig. 3 shows a hot water bath with metal rods inserted through one of its sides. Some wax is fixed at the end of each rod. Use this information to answer question 12.

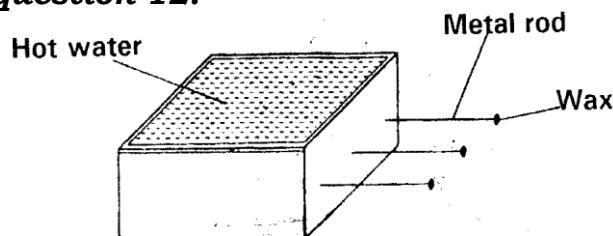


Figure 3

What property of metals could be tested using this set-up? (1mk)

- ❖ Thermal conductivity

No. 6. Figure 2 shows a uniform light bar resting horizontally on corks floating on water in two beakers A and B.

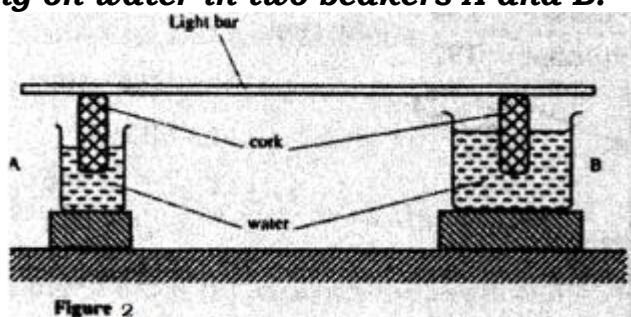


Figure 2

Explain why the bar tilts towards side A when equal amount of heat is supplied to each beaker (2 marks)

- ❖ Since the quantity of water A is smaller, the heat supplied produces a greater change of temperature in A. This causes a greater expansion of water in A, causing the cork to sink further

No. 7. Figure 5 shows an aluminium tube tightly stuck in a steel tube.

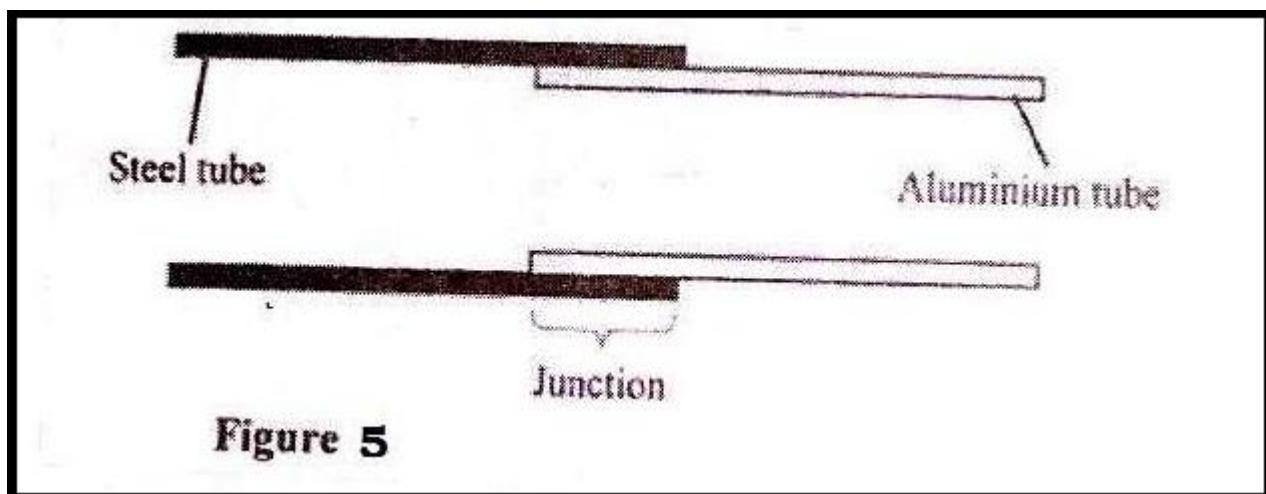


Figure 5

Explain how the two tubes can be separated by applying a temperature change at the same junction given that aluminum expands more than steel for the same temperature rise. (2 marks)

- ❖ By cooling
- ❖ Aluminium contracts more than steel for the same temperature range



No. 8.(a) An aeroplane is moving horizontally through still air at a uniform speed. It is observed that when the speed of the plane is increased, its height above the ground increases. State the reason for this observation. (1 mark)

- ❖ Increase in the speed of the plane decreases the pressure of air above it while the pressure below it remains high. This leads to a resultant upward force

(b)Figure 6 shows parts A, B and C of a glass tube.

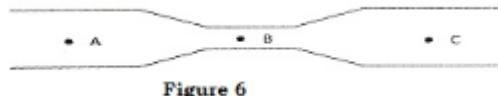


Figure 6

State with a reason the part of the tube in which the pressure will be lowest when air is blown through the tube from A towards C. (2 marks)

- ❖ Point B
- ❖ The velocity is high at this point hence pressure decreases

No. 9. The three springs shown in figure 5 are identical and have negligible weight. The extension produced on the system of springs is 20 cm.

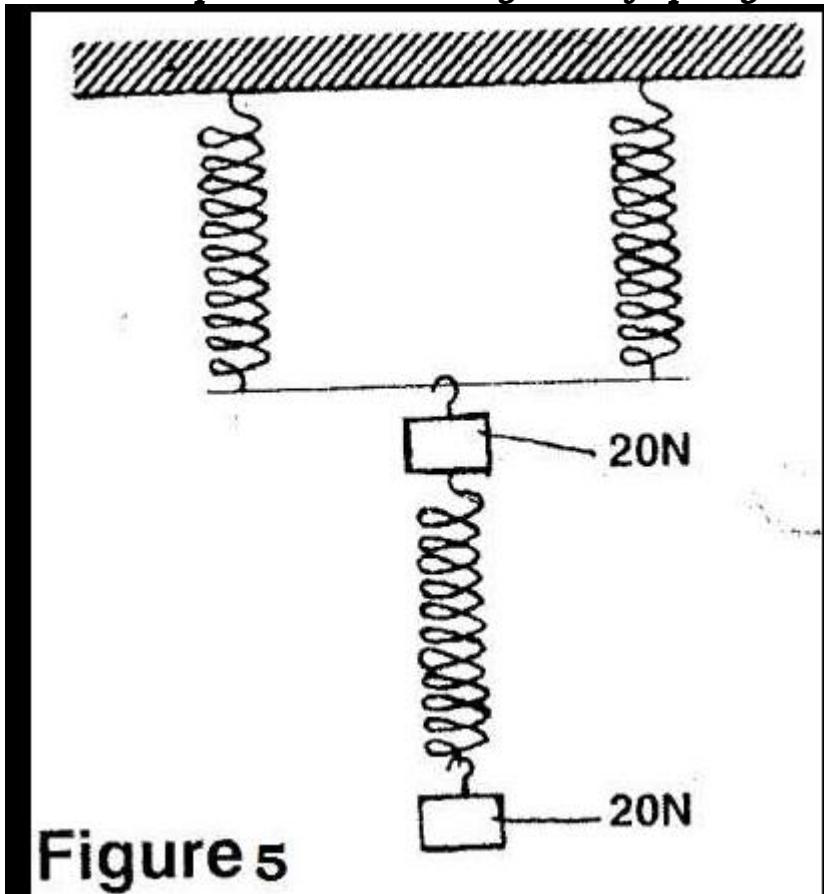


Figure 5

Determine the constant of each spring

(2 mks)

Parallel

$$F = 2k e$$

$$40 = 2 \times k e$$

$$E_1 = \frac{40}{2k} = \frac{20}{k}$$

$$\begin{aligned} \text{Single} &= f = k e_2 \\ &20 = k e_2 \\ &E_2 = 20/k \end{aligned}$$

$$E_T = e_1 + e_2$$

$$20 = 20/k + 20/k$$



$$20k = 40$$

$$K = \frac{40}{20} = 2N/cm$$

OR Extension of each spring = 10

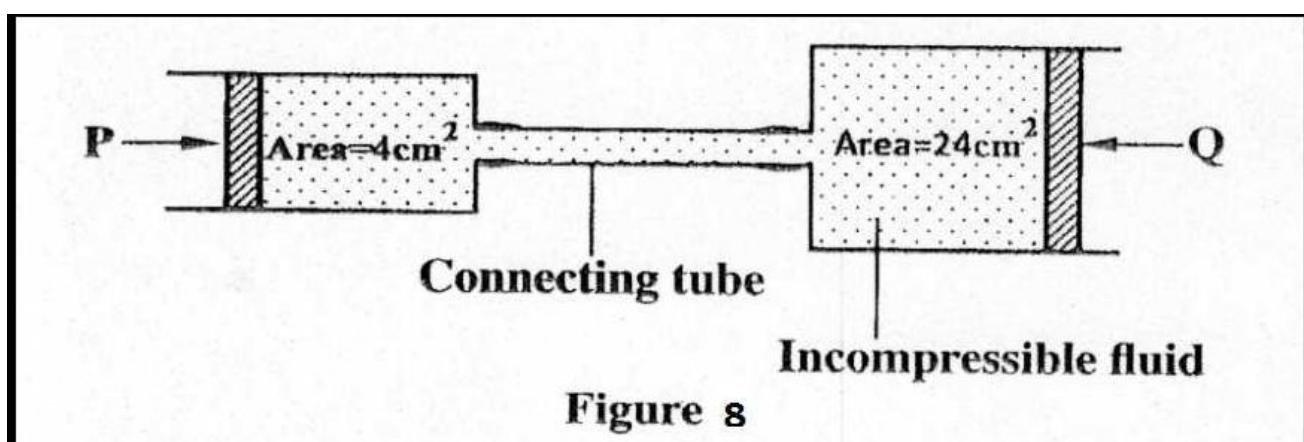
$$K = \frac{20N}{10\text{ cm}}$$

$$= 2N/cm$$

Or

$$\text{Extension of each spring} = 10, k = \frac{20N}{10\text{ cm}} = 2N/cm$$

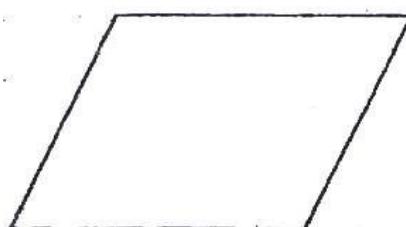
No. 10. Figure 8 shows two cylinders of different cross-sectional areas connected with a tube. The cylinders contain an incompressible fluid and are fitted with pistons of cross-sectional areas 4 cm^2 and 24 cm^2 .



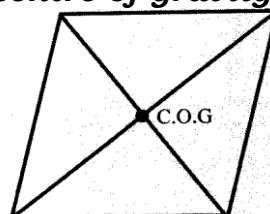
Opposing forces P and Q are applied to the pistons such that the pistons do not move. If the pressure on the smaller piston is 5 N cm^{-2} , Determine force Q . (2 marks)

- ❖ Pressure at P = Pressure at Q
- ❖ But force = $P \times A$
- ❖ At Q , force = $24\text{ cm}^2 \times 5\text{ N cm}^{-2} = 120\text{ N}$

No. 11. Figure 9 shows a uniform cardboard in the shape of parallelogram



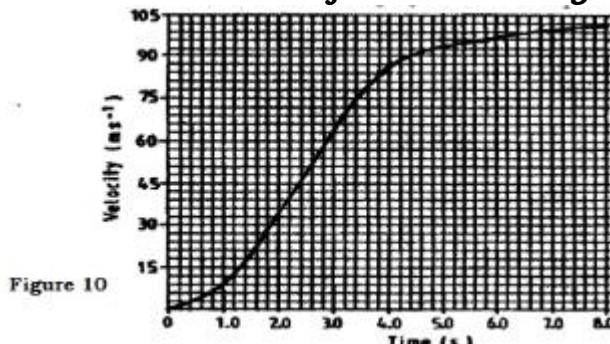
Locate the centre of gravity of the cardboard (1 mks)



No. 12. State why it is easier to separate water into drops than to separate a solid into smaller pieces(1 mark)

- ❖ There are weaker intermolecular forces in liquids than in solids

No. 13. The graph in figure 10 shows the velocity of a car in the first 8 seconds as it accelerates from rest along a straight line.



Determine the distance traveled 3.0 seconds after the start

- ❖ Distance = area under curve between 0 and 3. 0 second;
- ❖ = $120 \times 3 \times 0.2 = 72\text{M}$: Trapezium Rule (3 trapezia)
- ❖ Mid – ordinate = 70.5

No. 14.a) Explain why it is advisable to use a pressure cooker for cooking at high altitudes (2 mks)

- ❖ At high altitudes pressure is low so boiling point is low
- ❖ A pressure cooker increases pressure inside it which raises the boiling point hence faster cooking

b) Water of mass 3.0kg initially at 20°C is heated in an electric kettle rated 3.0KW. The water is heated until it boils at 100°C. (Take specific heat capacity of water 4200jkg⁻¹K⁻¹. Heat capacity of the kettle = 450JK⁻¹, Specific latent heat of vaporization of water = 2.3mjkg⁻¹)

Determine

(i) The heat absorbed by the water. (1 mk)

$$\begin{aligned} Q &= Mc\Delta\theta \text{ or } Mc\theta \text{ or } Mc\Delta T \\ &= 3 \times 4200 \times 80 = 1008000\text{J} \end{aligned}$$

ii) Heat absorbed by the electric kettle (2 mks)

$$\begin{aligned} Q &= c\theta / c\Delta\theta / c\Delta T = 450 \times 80 \\ &= 36000\text{J} \end{aligned}$$

iii) The time taken for the water to boil (2 mks)

$$\begin{aligned} PL &= Mc\Delta\theta / c\Delta\theta \\ 3000t &= 1008000 + 36000 \\ 3000t &= 1044000 \\ t &= 348 \text{ seconds} \end{aligned}$$

iv) How much longer it will take to boil away all the water.(2 mk)

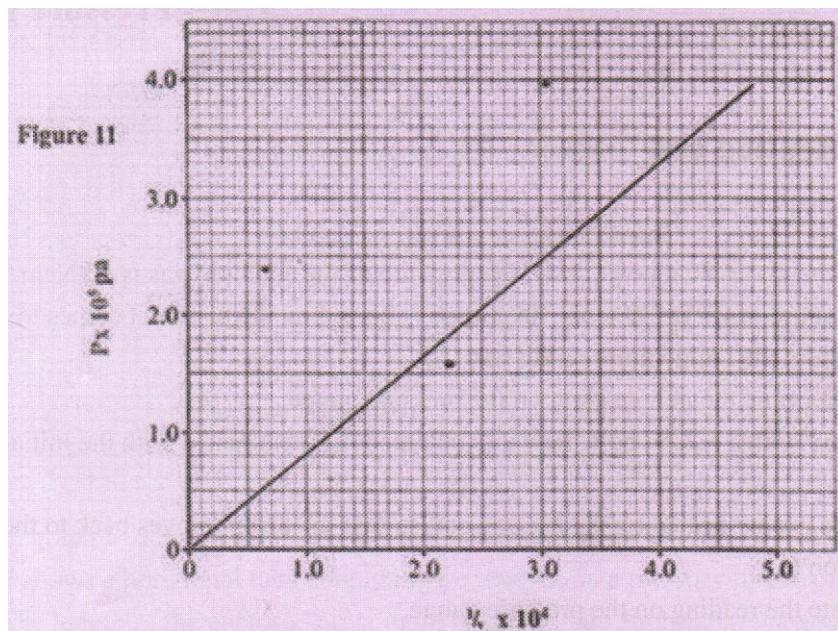
$$\begin{array}{ll} Mlv = Pt & \text{OR} \quad Mlv = Pt \\ 3 \times 2.3 \times 10^6 = 3000t & 3 \times 2.3 \times 10^{-3} = 3000t \\ t = 2300\text{s} & t = 2.3 \times 10^{-6}\text{s} \\ (38.3 \text{ minutes}) & \end{array}$$



No.15.(a) State what is meant by an ideal gas (1 mark)

- ❖ A gas that obeys the gas laws perfectly

(b) The pressure acting on a gas in a container was changed steadily while the temperature of the gas maintained constant. The value of volume V of the gas was measured for various values of pressure. The graph in figure 11 shows the relation between the pressure, p and the reciprocal of volume $\frac{1}{V}$.



(i) Suggest how the temperature of the gas could be kept constant

- ❖ By changing pressure very slowly or by allowing gas to go to original temperature after each change

(ii) Given that the relation between the pressure P_1 and the volume, V_1 of the gas is given by $PV = k$, where k is a constant, use the graph to determine the value of k .

k is slope of graph

$$K = \frac{(2.9 - 0) \times 10^5}{(3.5 - 0) \times 10^6}$$

$$K = 0.083 \text{ Nm}$$

(iii) What physical quantity does k represent? (4 mark)

- ❖ Work done on the gas

(iv) State one precaution you would take when performing such an experiment(1 mark)

- ❖ Use dry gas
- ❖ Make very small changes in pressure



(c) A gas occupies a volume of 4000 litres at a temperature of 37°C and normal atmospheric pressure. Determine the new volume of the gas if it is heated at constant pressure to a temperature of 67°C (normal atmospheric pressure $P = 1.01 \times 10^5 \text{ Pa}$)

Since pressure is constant

$$V_1 = V_2$$

$$T_1 = T_2$$

$$T_1 = 273 + 37 = 310\text{K}$$

$$T_2 = 273 + 67 = 340\text{K}$$

$$\frac{4000}{310} = \frac{V_2}{340}$$

$$V_2 = 4387 \text{ litres}$$

No. 16.(a) Define the term velocity ratio of a machine. (1mk)

❖ It is the ratio of distance moved by effort to distance moved by load

(b) Fig. 12 shows part of a hydraulic press. The plunger is the position where effort is applied while the Ram piston is the position where load is applied. The plunger has cross-section area, $a \text{ m}^2$ while the Ram piston has cross-section area, $A \text{ m}^2$.

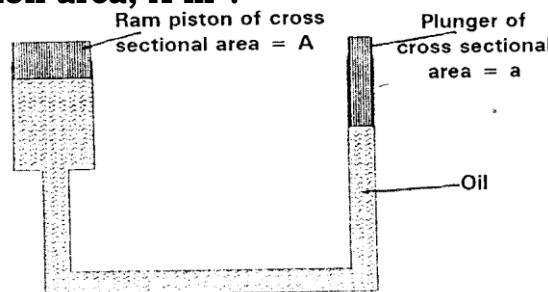


Figure 12

When the plunger moves down a distance d the Ram piston moves up a distance D .

Derive an impression for the velocity ratio (VR) in terms of A and a (4 marks)

$$P \times A \times d = P \times a \times D \text{ or vol of oil at plunger = at RAM}$$

$$A \times D = a \times d \quad a \times d = A \times D$$

$$\frac{d}{D} = \frac{A}{a} \quad \frac{d}{D} = \frac{A}{a}$$

$$VR = \frac{A}{a} \quad VR = \frac{A}{a}$$

c) A machine of velocity ratio 45, overcomes a load of $4.5 \times 10^3 \text{ N}$ when an effort of 135 N is applied. Determine:

(i) The mechanical advantage of the machine; (2mks)

$$\begin{aligned} MA &= \frac{\text{load}}{\text{Effort}} \\ &= \frac{4.5 \times 10^3}{135} \\ &= 33.3 (33 \frac{1}{3}) \end{aligned}$$

(ii) Efficiency of the machine; (2mks)

$$\begin{aligned} \text{Efficiency} &= \frac{MA}{VR} \times 100\% \quad \text{OR efficiency} = \frac{MA}{VR} = 33.3 \\ &= \frac{33.3 \times 100\%}{45} \\ &= 74\% \end{aligned}$$



(iii) The percentage of the work that goes to waste. (1mk)

$$\begin{aligned}\% \text{ work wasted} &= 100\% - 74\% \\ &= 26\%\end{aligned}$$

No. 17.(a) When a bus goes round a bend on a flat road, it experiences a centripetal force.

State what provides the centripetal force. (1 mark)

- ❖ Frictional force

(b) State the purpose of banking roads at bends. (1 mark)

- ❖ Increases the centripetal force acting on the bus
- ❖ Provide more centripetal force
- ❖ Prevent skidding force, overturning or rolling
- ❖ Enable high speed or critical yield

(c) A student whirls a stone of mass 0.2 kg tied to a string of length 0.4 m in a vertical plane at a constant speed of 2 revolutions per second. (Take acceleration due to gravity g as 10 ms⁻²)

(i) State two forces acting on the stone when it is at the highest point.(2 marks)

- ❖ The weight/ force of gravity
- ❖ The tension on the string

(ii) Determine the:

(I) Angular velocity of the stone (3 marks)

$$\begin{aligned}\omega &= 2\pi f = 2 \times 3.142 \times 2 \\ &= 12.568 \text{ rad/s}\end{aligned}$$

(II) Tension in the string when the stone is at the highest point; (3 marks)

$$\begin{aligned}T &= mw^2r - mg \\ &= 0.2 \times 12.568^2 \times 0.4 - 0.2 \times 10 \\ &= 12.6364 - 2 \\ &= 10.636 \text{ N}\end{aligned}$$

No. 18.(a) State Newton's first law of motion (1 mark)

- ❖ A body at rest or motion at uniform velocity tends to stay in that state unless acted on by an unbalanced force/ compelled by some external force to act otherwise.

(b) A wooden block resting on a horizontal bench is given an initial velocity, u, so that it slides on the bench surface for a distance d, before coming to a stop. The values of d were measured and recorded for various values of initial velocity. Figure 10 shows the graph of u² against d.



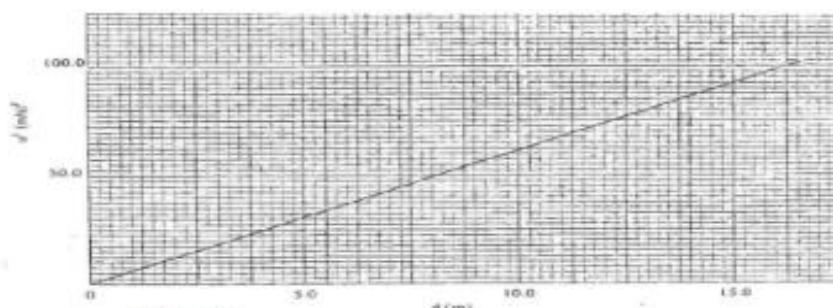


Figure 13

(i) Determine the slope, S of the graph**(3 marks)**

$$S = \frac{\Delta u}{\Delta d} \text{ or}$$

$$\frac{98.75 - 0}{16 - 0} (m/s)^2$$

$$= 6.17 ms^{-2}$$

(ii) Given that $u^2 = 20 kd$, where k is a constant for the bench surface, determine the value of k from the graph (2 marks)

$$20k = s = 6.09 \text{ depend on (i)}$$

$$K = \frac{6.172}{20} = 0.3086$$

(iii) State how the value of k would be affected by a change in the roughness of the bench surface (1 mark)

- ❖ Increase in roughness increases k and vice versa
- ❖ Uniform speed in a straight line – uniform velocity

(c) A car of mass 800 kg starts from rest and accelerates at 1.2 ms^{-2} . Determine its momentum after it has moved 400 m from the starting point (4 marks)

Applying equation

$$V^2 - u^2 = 2as$$

$$V^2 - 0 = 2 \times 1.2 \times 400$$

$$\text{Momentum } p = mv$$

$$P = \sqrt{800 \times 2 \times 1.2 \times 400}$$

$$= 24787.07 = 24790 \text{ Kgm s}^{-1}$$



PHYSICS PAPER 2

No. 1. Figure 1 shows a ray of light incident on a mirror at an angle of 45° . Another mirror is placed at an angle of 45° to the first one as shown.

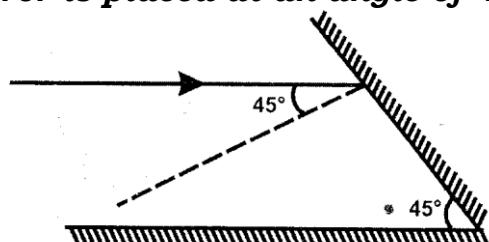


Figure 1

Sketch the path of the ray until it emerges.

(2 marks)

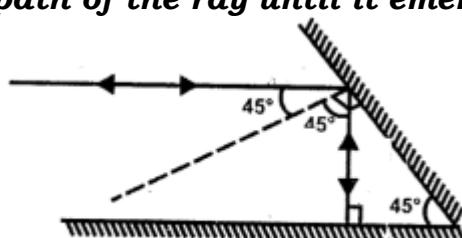
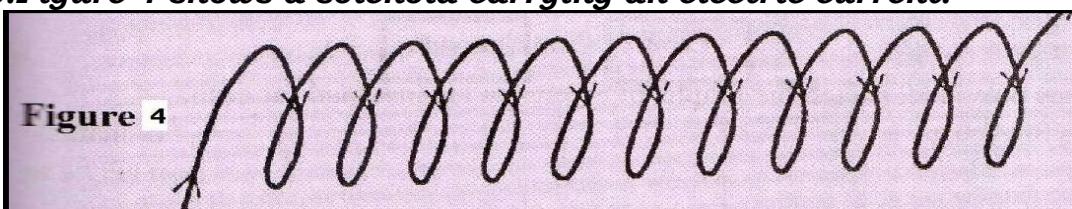


Figure 1

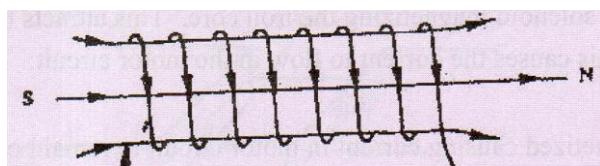
No. 2. An un-magnetized steel rod is clamped facing North-South direction and then hammered repeatedly for some time. When tested, it is found to be magnetized. Explain this observation. (2mks)

- ❖ The mechanical disturbance due to hammering aligns the domain with the earth's magnetic field causing magnetization

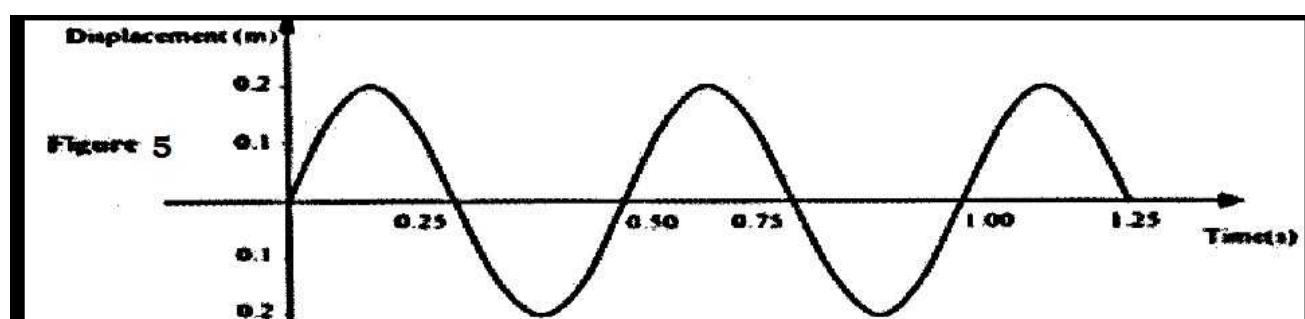
No. 3. Figure 4 shows a solenoid carrying an electric current.



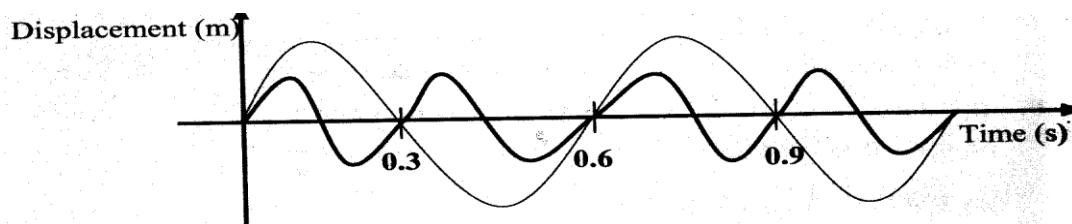
Sketch the magnetic field pattern inside and at the ends of the solenoid (1 mrk)



No. 4. Figure 5, shows how the displacement of a point varies with time as a wave passes it.



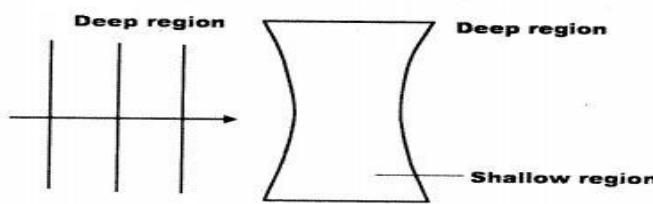
On the same diagram, draw a wave which passes the point with half the amplitude and twice the frequency of the one shown.



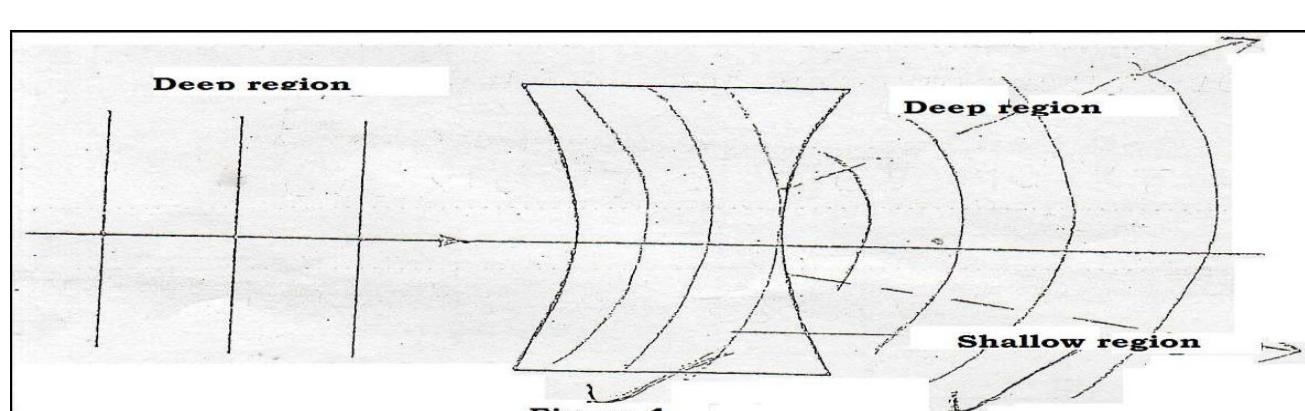
No. 5. State the reason why a convex mirror is preferred over a plane mirror for use as a driving mirror. (1 mark)

- ❖ It has a wide field of view / wide angle of view / wider range of view

No. 6. Figure 4 shows straight waves incident on a diverging lens placed in a ripple tank to reduce its depth.



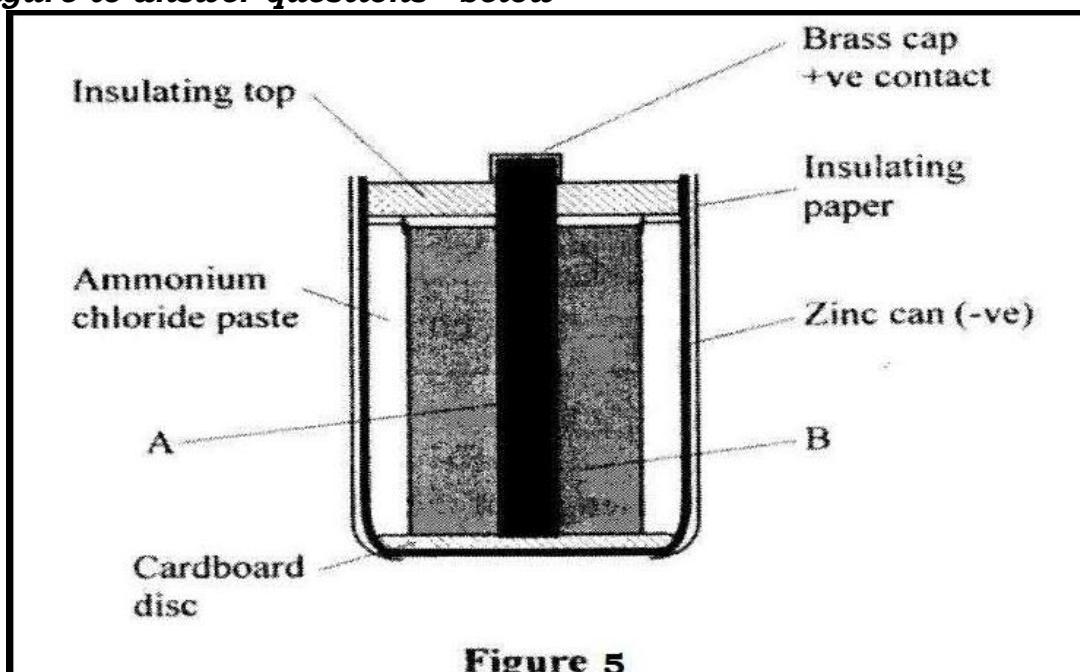
Complete the diagram to show the waves in both the shallow region and beyond the lens. (2 marks)



- ❖ Decreased in shallow region
- ❖ Diverging after refraction to the deep region must be complete



No. 7. Figure 5 shows the cross-section of a dry cell. Use the information on the figure to answer questions below



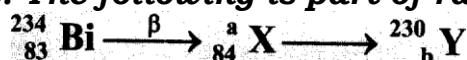
(a) Name the parts labeled A and B. (2 marks)

- ❖ A – Carbon rod or graphite rod
- ❖ B – Mixture of Manganese (IV) oxide with carbon powder

(b) State the use of manganese (IV) oxide in the cell. (1 mark)

- ❖ Manganese (IV) oxide is a depolarizer or oxidizing agent. It is used to oxidize hydrogen to water

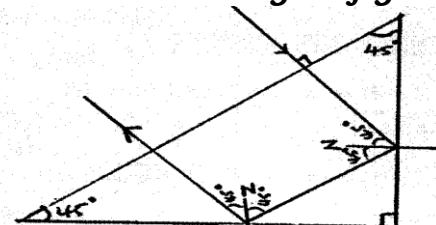
No. 8. The following is part of radioactive decay series



Determine the values of a and b (2 marks)

- ❖ a = 234
- ❖ b = 82

No. 9. Draw a ray diagram to show how a ray of light may be totally internally reflected two times in an isosceles right - angled glass prism. (Assume that the critical angle of glass is 42°) (2 marks)



No. 10. Figure 6 shows a narrow beam of X-rays passing between two metal plates in air. The plates are connected in series with a switch, a cell and a milliammeter.

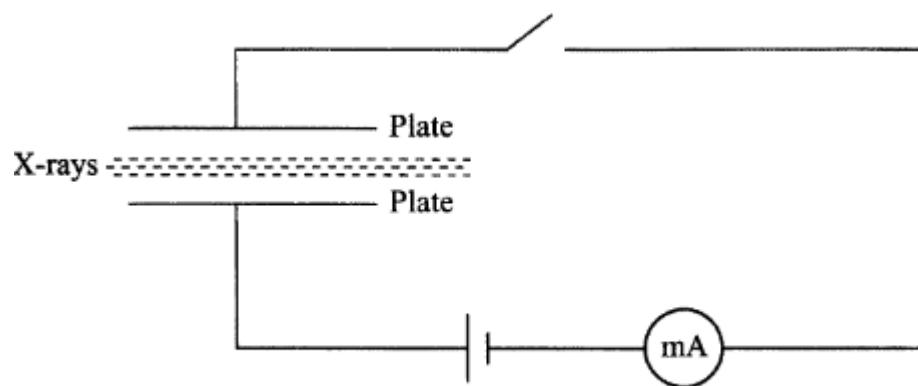


Figure 6

It is observed that when the switch is closed a current flows in the milliammeter. Explain this observation. (2 marks)

- ❖ X-rays cause ionization of air molecules between the plates. The ions move to plates of opposite charge.

No. 11. A heater of resistance R_1 is rated P watts, V volts while another of resistance R_2 is rated $2P$ watts, $\frac{V}{2}$ volts. Determine R_1 / R_2 3 marks)

$$R_1 = \frac{V^2}{P} \quad R_2 = \frac{V^2}{8P}$$

$$\frac{R_1}{R_2} = \frac{\frac{V^2}{P}}{\frac{V^2}{8P}} = 8$$

No. 12. When germanium crystal is doped with arsenic, it becomes an N-type semiconductor. Explain how this change occurs. (2mks)

(Number of electrons in the outermost shell for germanium =4, arsenic =5)

- ❖ Arsenic shares four electrons with germanium leaving a free electron for conduction.

No. 13. A boy standing in front of a cliff blows a whistle and hears the echo after 0.5s. He then moves 17 metres further away from the cliff and blows the whistle again. He now hears the echo after 0.6s. Determine the speed of the sound.

$$\frac{2d}{0.5} = \frac{2d}{0.6} + 34$$

$$D = 17/0.2 = 85 \text{ m}$$

$$\text{Speed} = \frac{2 \times 86}{0.5}$$

$$= 340 \text{ m/s}$$

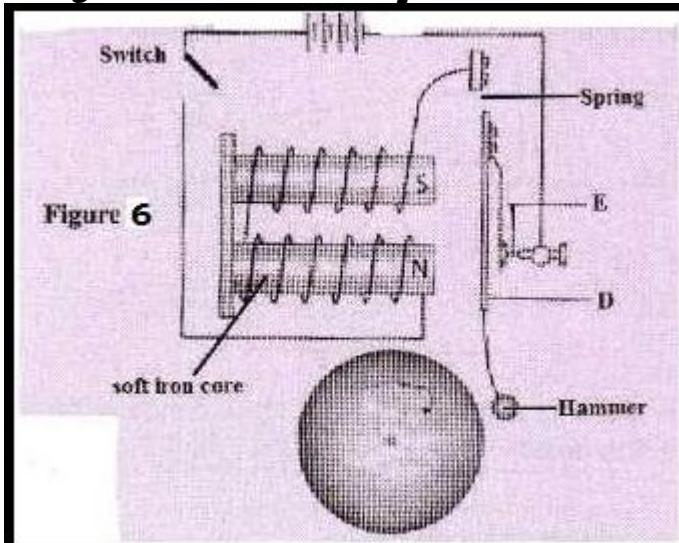
$$\text{OR } V = \frac{d}{t}$$

$$= \frac{17 \times 2}{0.1}$$

$$= 340 \text{ m/s}$$



No. 1 4. Figure 6 shows a simple electric bell circuit



(i) Name the parts labeled

(I) **D**

- ❖ Soft iron armature

(II) **E**

- ❖ Contact screw

(ii) When the switch is closed, the hammer hits the gong repeatedly.

Explain why:

(I) **the hammer hits the gong.** (2 marks)

- ❖ Soft iron core is magnetized
- ❖ It attracts the armature

(II) **the hammer hits the gong repeatedly.** (3 marks)

- ❖ Contact is broken
- ❖ The core then loses magnetism
- ❖ Armature spring back making contact again

(b) An electric bulb is rated 60 W, 240 V. Determine:

(i) the current that flows through it when it is connected to a 240 V supply. (3 marks)

$$\text{❖ } I = P/V = 60/240 = 0.25\text{A}$$

(ii) the resistance of the bulb. (3 marks)

$$\text{❖ } R = P/I^2 = 60/0.25^2 = 960\Omega \text{ or } R = V/I = 240/0.25 = 960\Omega$$

No. 15. Figure 15, shows two coils A and B placed close to each other. A is connected to a steady D.C. supply and a switch, B is connected to a sensitive galvanometer.

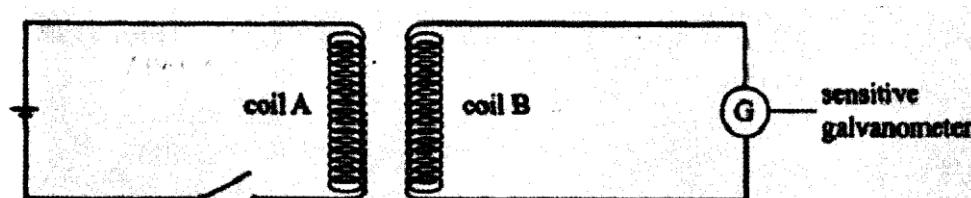


Figure 15



i) The switch is now closed, state the observation made on the galvanometer. (2marks)

- ❖ The galvanometer will be deflected to one side and then back to zero.

ii) Explain what would be observed if the switch is then opened. (2marks)

- ❖ A greater deflection will be obtained in the opposite direction as the current takes less time to die off than to build up

b) The primary coil of a transformer has 1000 turns and the secondary coil has 200 turns.

The primary coil is connected to a 240V ac. Mains supply.

i) Explain how an e.m.f is induced in the secondary coil. (2marks)

- ❖ The changing current in the primary coil induces a current in the secondary coil due to changing magnetic field of the primary current

ii) Determine the secondary voltage. (3marks)

$$\frac{N_s}{N_p} = \frac{V_s}{V_p} \text{ hence } V_s = \frac{240 \times 200}{1000} \\ = 48V$$

iii) Determine the efficiency of the transformer given that the current in the primary coil is 0.20A and in the secondary coil it is 0.80A. (3marks)

$$\text{Efficiency} = \frac{\text{power output}}{\text{Power input}} \times 100 \\ \frac{4.8 \times 0.8}{240 \times 0.2} \times 100 \\ = 80\%$$

No. 16. Figure 8, shows a circuit that may be used to charge a capacitor.

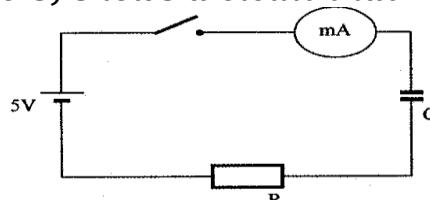


Figure 8

(i) state the observation on the milliammeter when the circuit is switched on:

- ❖ Current falls off to zero. Falling to zero deflects to maximum then zero.

(ii) explain the observation in (i) above.

- ❖ Current flows when the capacitor is charging. When fully charged no current flows and potential difference (p.d.) is equal to charging voltage

b) The circuit in figure 8 is left on for some time. State the value of p.d. across:

(i) the resistor R;

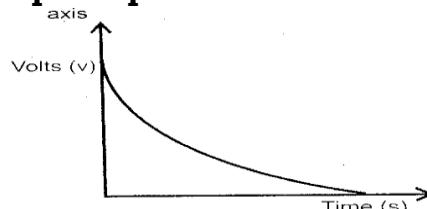
- ❖ $V_R = 0$ volts



(ii) the capacitor C;

$$\diamond V_c = 5 \text{ Volts}$$

(c) sketch the graph of potential difference (V) across R against time.



(d) Figure 9 shows three capacitors connected to a 10V battery

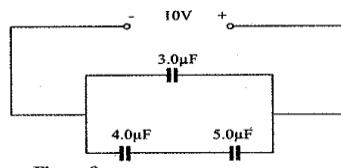


Figure 9

Calculate:

(i) the combined capacitance of the three capacitors;

$$\diamond \text{Parallel capacitance } C_p = \frac{1}{C} = \frac{1}{\frac{1}{4}} + \frac{1}{\frac{1}{5}} = \frac{9}{20} \Rightarrow C_p = \frac{20}{9} = 2.22 \mu F$$

(ii) the charge on the 5.0 μF capacitor.

$$\diamond \text{Charge on series section } Q = CV$$

$$\diamond = 2.22 \times 10 = 22.2 \mu C$$

No. 17.a When a radiation was released into a diffusion cloud chamber, short thick tracks were observed. State with a reason, the type of radiation that was detected. (2 marks)

❖ Alpha radiation. This radiation has a short range with intense ionization hence thick tracks

(b) The half-life of an element X is 3.83 days. A sample of this element is found to have an activity rate of 1.6×10^3 disintegrations per second at a particular time. Determine its activity rate after 19.15 days. (2 marks)

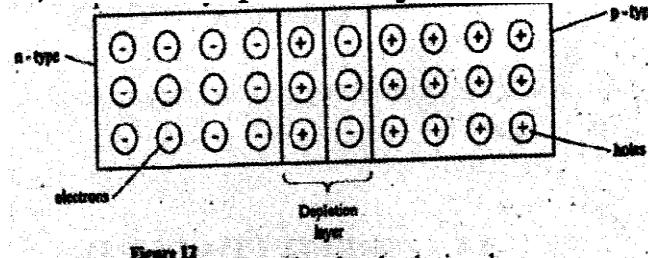
$$\diamond \text{Number of half lifes} = 19.15 / 3.83 = 5$$

$$\diamond N = N(\frac{1}{2})^{T/t} = 6 \times 10^3 (\frac{1}{2})^5 = 50 \text{ days/sec}$$

(c) State what is meant by an extrinsic semiconductor. (1 mark)

❖ It is a semiconductor in which impurities have been added to change conductivity

(d) Figure 11, shows a depletion layer in an unbiased p-n junction

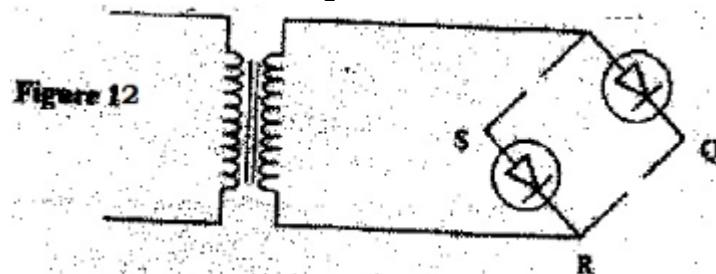


State how a battery can be used to make the depletion layer narrower. (1 mk)

❖ By connecting it in a forward biased mode



(e)Figure 12, shows an incomplete circuit of a full wave rectifier.



(i) Draw in the figure two more diodes to complete the circuit. (2 marks)

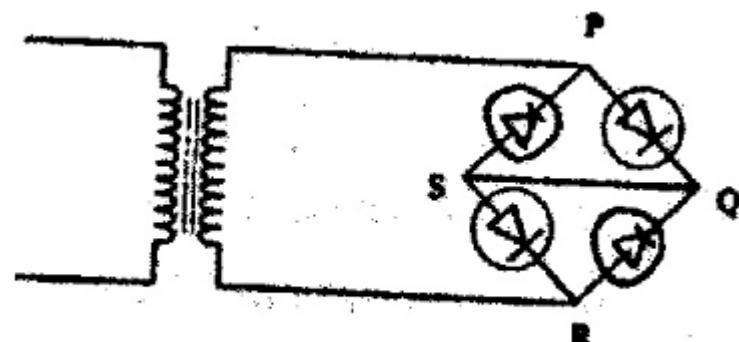


Figure 12

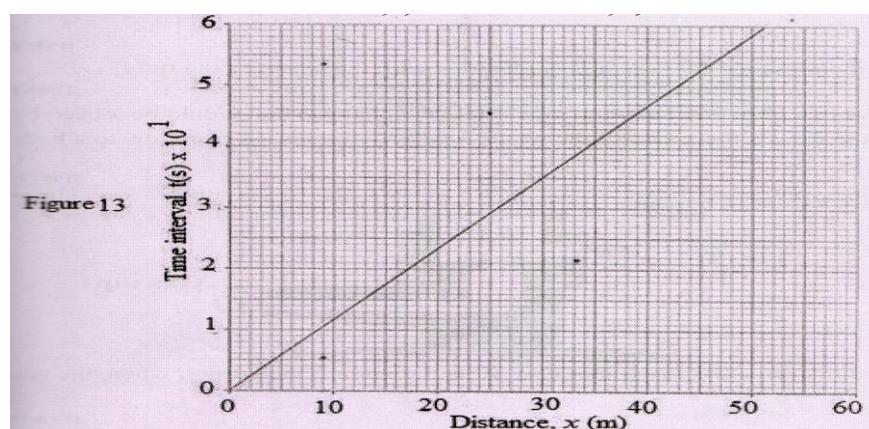
(ii) Show on the figure the points across which the output of the rectifier should be obtained. (1 mark)

- ❖ Across QS

No. 18.(a)State one factor that affects the speed of sound in a solid.(1mk)

- ❖ Temperature
- ❖ Density

b)An observer stands half-way between two vertical cliffs that are L metres apart. He strikes a gong and measures the time interval, t, between the echoes heard from the two cliffs. He moves a further 10m and again strikes the gong and measures the time interval between the echoes. The process is repeated several times. The graph in Figure 13 shows the relation between the time interval, t and the distance, x from the centre.



(i)From the graph, determine the value of x for which the time interval was 0.55. (1mk)

- ❖ 47 metres



(ii) Given that $t = \frac{4}{v}x$ where v is the speed of sound in air, determine the value of v from the graph. (3mks)

From $t = 4/Vx$, $4/v = \text{gradient}$ hence $v = 4/\text{gradient}$

$$\text{Gradient} = \frac{(4.7 - 2) \times 10^{-1}}{40 - 17}$$

$$= 0.01174$$

$$V = 4/0.01174 = 340.715 \text{ m/s}^2$$

(iii) If the maximum time measured by the observer was $t=4.7\text{s}$, determine the distance L between the cliffs. (3mks)

- ❖ Distance = speed x time
- ❖ $2D = \text{distance to and from the cliff}$
- ❖ $2D = 340.715 \times 4.7$
- ❖ $D = 800.68 \text{ metres}$

(c) A search boat uses a signal of frequency $6.0 \times 10^4 \text{ Hz}$ to detect a sunken ship directly below. Two reflected signals are received; one after 0.1 seconds from sunken boat and the other after 0.14 seconds from the sea bed. If the sea bed is 98 m below the boat, determine:-

(i) The speed of the signal in water. (3mks)

You may use the value of v from (ii) above.

- ❖ Distance moved by sound from sea bed = $98 \times 2 \text{ m}$
- ❖ $V = \frac{98 \times 2}{0.14}$
- ❖ = 1400 m/s

(ii) The depth of the sunken ship below the boat (2 mks)

- ❖ Distance = $v \times t$
- ❖ = $1400 \times 0.10/2$
- ❖ = 70 m

