KCSE 2021 PREDICTION

SET 1

Well Designed KCSE Format Questions Covering All High School Subjects

For Marking Schemes/Answers

Call/Text/Whatsapp 0705525657

MATHEMATICS PAPER 1-2021 KCSE Prediction Set 1

SECTION I (50 marks)

*Answer **all** the questions in this section*

1. Use logarithms to evaluate (4 marks)

$$\frac{log 0.0430}{22.43+13.67}$$

2. Solve for x in the equation given below (3 marks)

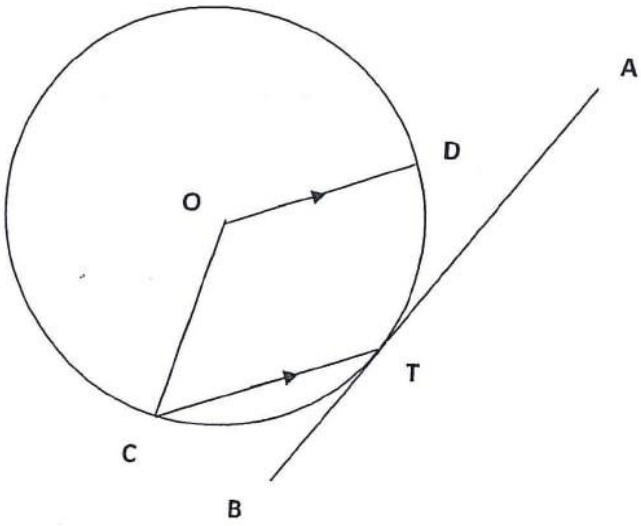
$9_{2x+1} = 30 - 34_{4x}$

3. The lengths of a triangle are in the ratio 5:6:9. if its area is $250\sqrt{2}$, calculate its perimeter (4 marks)
4. Simplify completely without using mathematical tables or calculator (3 marks)

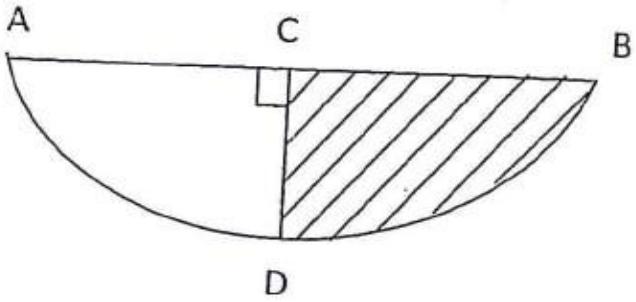
$$\frac{cos120°sin300°}{cos(-390°)}$$

5. Four metal rods of length $15x^3h^2y$, $3x^2yh^5$ and $9x^4y^2h$ are to be cut into smaller pieces of the same length such that there is no metal left. What is the maximum length of one of the pieces (1 mark)

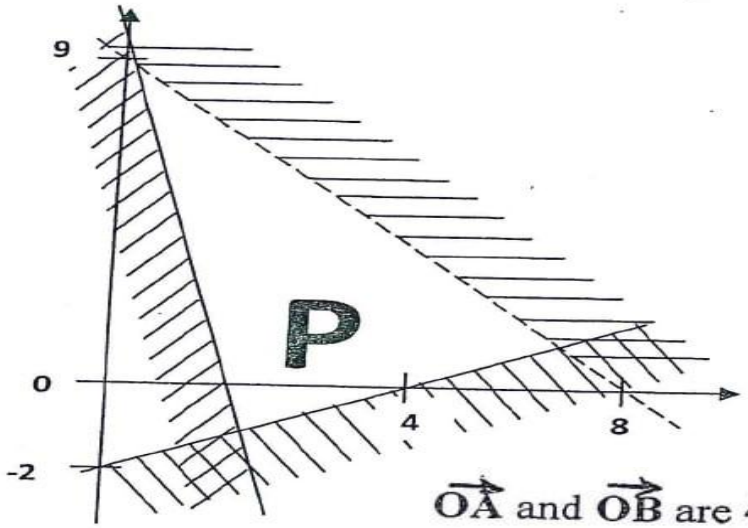
6. Given that the log 2 = 0.30103 and log 7 = 0.84510, find without using mathematical tables or calculator, log 9.8 (3 marks)
7. Given that $3x - y = 17$, find the value of $y^2 + 9x^2 - 6xy - 9$ (2 marks)
8. The center of a circle is C (6,7). A tangent to the circle passes through the point P (8,3) lying on the circle. Find the eqaution of the tangent (4 marks)
9. Coffee grade 1 at sh 30 per 50 g is blended with coffe grade 2 at sh 20 per 25g and the mixture is sold at sh 96 per 100g at a profit of 22%. Calculate the ratio in which the two brands of coffee were mixed. (4 marks)
10. In the figure below, O is the centre of the circle which passes through thepoints C, T and D. CT is parallel to OD and line ATB is tangent to the circle at T. If the angle BTC is 44^o, find the size of angle TOD. (3 marks)



11. Two similar solids have masses of 1000g and 1728g. if it costs Ksh 1080 to paint the outside of the larger solid, how much will it cost to paint the outside of the smaller solid (3 marks)
12. The figure below shows part of a circle. AB = 12 cm and CD= 6 cm. AC = CB. Calculate the shaded area. (4 marks)



13. Three interior angles of a polygon are 155^o, 153^o and 160^o. Each of the other interior angles is 148 o. How many sides does the polygon have (3 marks)
14. Write down the inequalities that describe the set of points in the unshaded region P. (3 marks)



$\overrightarrow{OA}$ and $\overrightarrow{OB}$ are $4\underset{\sim}{i}-\underset{\sim}{j}+4\underset{\sim}{k}$ and $-5\underset{\sim}{i}-b\underset{\sim}{j}$

15. The position vectors respectively. Given that the length of AB is $7\sqrt{2}$, find the value of b. (3 marks)
16. A line segment AB is shown below. Construct a triangle CBA = 30°. Hence use the constructed line AC to find a point T such that B divides At in the ratio 5: −2 (3 marks)

SECTION II (50 Marks)

*Answer **Five** questions only from this section*

17. A cylindrical tank is to be constructed. A model of the tank is made such that it is similar to the actual tank. The curved surface area of the model is 2160 cm^2 and that of the proposed tank is 135m^2
    a. Given that the length of the model is 6cm, calculate the height of the tank in metres. (3 marks)
    b. Caculate the volume of the model given that the diameter of the actual tank is 14 m. (3 marks)
    c. Determine the volume of the actual tank in m^3 (2 marks)
    d. The actual tank is used to store some liquids whose density is 0.82 g/cm^3. If the tank is half full, determine the mass of the liquid in kg. (2 marks)
18.
    a. A bus travelling at 99km/hr passes a check point at 10.00 a.m and a matatu travelling at 132 km/h in the same direction passes through the check point at 10:15 a.m. If the bus and the matatu continue at their uniform speeds, find the time the matatu will overtake the bus. (6 marks)
    b. Two passenger trains A and B which are 240 m apart and travelling in opposite directiosn at 164 km/h and 88km/h respectively approach one another on a straight railway line. Train A is 150 metres long and train B is 100 metres long. Determine time in seconds that elapses before the two trains completely pass each other. (4 marks)
19.
    a. On the grid provided, draw the garph of the function $y = x^2 + x + 9$ for $-3 \leq x \leq 3$

X	−3	−2	−1	0	1	2	3
Y			9	9			21

    b. Calculate the mid-ordinate for 5 strips between x = −2 and x = 3 and hence use the midordinate rule to aapproximate the area under the curve between x = −2, x = 3 and the x axis

c. Assuming that the area determined by inetgration to be the actual area, caluate the percentage error in using the mid-ordinate rule. (2 marks)

20. On the graph paper provided plots the points P (2,2) Q (2,5) and R(4,4).
    a. Join them to form a triangle PQR (1 mark)
    b. Reflect the triangle PQR in the line X = 0 and label the image P'Q'R'. (2 marks)
    c. Triangle PQR is given a translation by vector T($^{2}_{2}$) to P"Q"R". Plot the triangle P"Q"R". (3 marks)
    d. Rotate triangle P"Q"R" about the origin through -90^{o}. State the coordinates of P'"Q'"R'". (3 marks)
    e. Identify two pair of triangles that are direct congruence (1 mark)
21. Three warshisps P,Q,R are at sea such that ship Q is 400 km on a bearing of 030^{o} from ship P. Ship R is 750 km from ship Q and on a bearing of S60^{o}E from ship Q. Ship Q is 100km and to the north of an emeny warship S.
    a. Taking a scale of 1 cm to represent 100 km, locate the position of ships P,Q,R and S. (4 marks)
    b. Find the compass bearing of:
        i. Ship P from ship S (1 mark)
        ii. Ship S from ship R (1 mark)
    c. Use the scale drawing to determine
        i. The distance of S from P (1 mark)
        ii. The distance of R from S (1 mark)
    d. Find the bearing of
        i. Q from R (1 mark) ii. P from R (1 mark)
22. A certain number of people agreed to contribute equally to buy books worths shs. 1200 for a school library. Five people pulled out and so the others agreed to contribute an extra sh. 40 each.

    Their contribution enabled them to raise the sh. 1200 expected
    a. If the original number of people was x, write an expression of how much each was originally going to contribute (1 mark)
    b. Write down the expression of how much each contributed after the five people pulled out.
    c. Calculate how many people made the contributions (5 marks)
    d. If the prices of books before buying went up in the ratio 5:4, how much extra did each contributor give. (3 marks)
23. PQRS is a trapezium where PQ is parallel to SR. PR and SQ intersect at X, so that SX = KSQ and PX = hPR wher k and h are constants. Vectors PQ = 3q and PS = s,SR = q
    a. Show this information on a diagram (1 mark)
    b. Express vector SQ in terms of s and q (1 mark)
    c. Express SX in terms of k, q and s (1 mark)
    d. Express SX in terms of h, q and s (1 mark)
    e. Obtain h and k (4 marks)
    f. In what ratio does X divide SQ? (2 marks)
24. A solid cylinder has a radius of 21cm and a height of 18 cm. A conical hole of radius r is drilled in the cylinder on one of the end faces. The conical hole is 12 cm deep. If the material removed from the hole is $2^{2}/_{3}$% of the volume of the cylinder, find: (Use $\pi = {}^{22}/_{7}$)
    a. The surface area of the hole(5 marks)
    b. The radius of a spherical ball made out of the material (3 marks)
    c. he surface area of the spherical ball (2 marks)

MATHEMATICS PAPER 2 - 2021 K.C.SE
Prediction Set 1

SECTION I (50 Marks)

*Answer **all** questions in this section*

1. When asked to find $^{7}/_{18}$ of a certain number, Juma found by mistake $^{7}/_{8}$ of it. Hence the answer was too large by 105. Find the number. (3 marks)
2. Simplify leaving the answer in the form of $a\sqrt{2} + b\sqrt{5}$ where a and b are constants. (3 marks)

$$\frac{5}{2\sqrt{2}-\sqrt{5}} - \frac{2}{2\sqrt{2}+\sqrt{5}}$$

3.
   a. Expand completely $(x-0.2)^5$ (1 mark)
   b. Hence use your expansion to find the exact value of $(9.8)^5$ (2 marks)
4. The figure below represents a solid cuboid ABCDEFGH with a rectangular base. AB = 12 cm, BC = 10 cm and CH = 5 cm. M is the midpoint of GH

   Calculate the anle between BM and CE (3 marks)
5. A ball allowed to drop from a height of 16 cm on to a flor rebounds to $^{3}/_{4}$ of its previous height. Find the total distance the ball wil have travelled when it hits the ground for the tenth time correct to four significant figures. (2 marks)
6. Calculate the standard deviation for the distribution below (4 marks)

No. of children	0	1	2	3	4	5	6
No. of families	4	2	4	7	8	3	2

7. Make x the subject of the formula (3 marks)

$$Y = \frac{MX}{X^2+F}$$

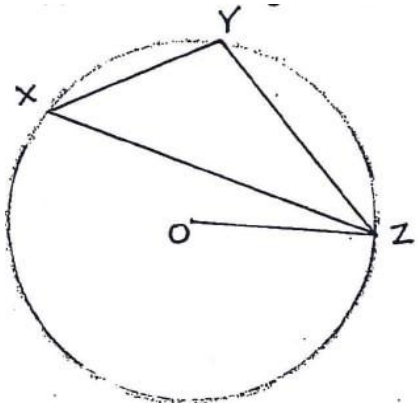
8. A triangle whose area is 7.2 cm^2 is mapped onto a triangle whose area is 3.6cm^2 by the matrix given below. Find the two possible values of x. (3 marks)

$$\begin{pmatrix} x+4 & 6 \\ 5 & x \end{pmatrix}$$

9. Simplify completely the expression (3 marks)

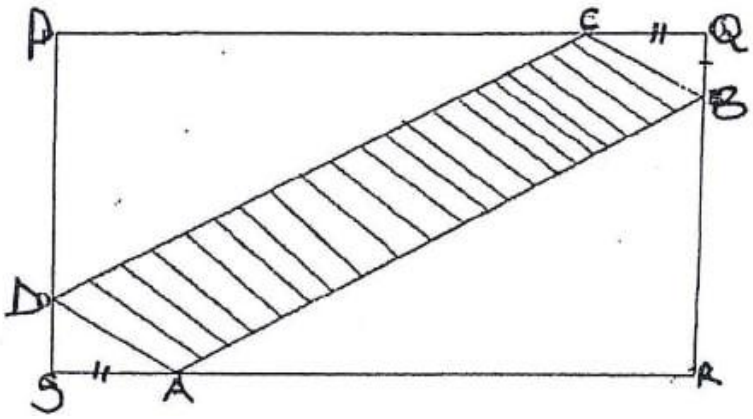
$$\frac{-2ax-3by+2ay+3bx}{3b-2a}$$

10. Find the amount after 3.25 years if Kshs 234,000 is invested at 10% p.a compunded semi annually. (3 marks)
11. In the figure below XY and YZ are chords of the circle centre O. XY = 6 cm and XZ = 9 cm. Find



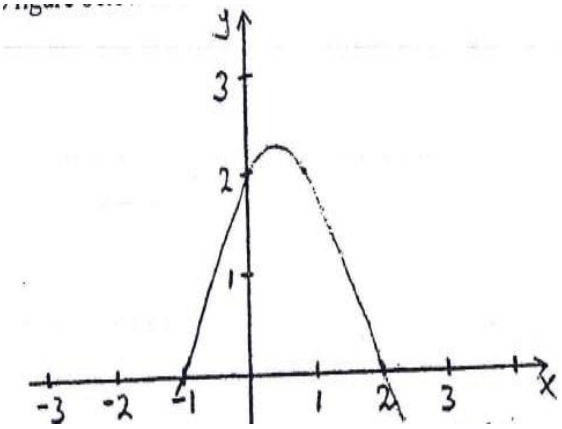
a. The value of angle XYZ
b. The length of OZ

12. In the figure below PQRS is a rectangle. PQ = 30cm and PS = 10 cm
The unshaded portions are cut off leaving a parallelogram ABCD



Given that line BQ = DS = x cm and line CQ = SA = 3x cm. Find the value of x when the area of the parallelogram ABCD is maximum (4 marks)

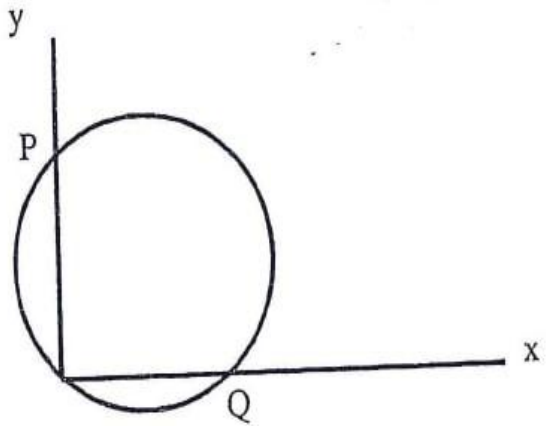
13. The figure below is a sketch of the graph of the quadratic function D = k(x-2) (x+1). Find the value of k. (3 marks)



14. Evaluate without using mathematical tables or calculator (2 marks)

$$\frac{450 \times \sqrt{0.36}}{27^{2/3} \div 81^{3/4}}$$

15. The figure below shows a circle passing through the origin cutting through P (K,0) and Q (0,K). If its radius is $3\sqrt{2}$, find the equation of the circle in the form of $x2 + y2 + ax + by + c = 0$ (4 marks)



16. A quantity Q varies jointly as the square root of X and inversely as Y. Given that when Y is reduced by 20% and X increased by A%, Q increased by 37.55 %, find the value of A. (3 marks)

SECTION II (50 Marks)

*Answer **any Five** Questions from this Section*

17. The table below shows income tax rate for the year 2014

Income in Kshs per month	**Rate %**
1 - 9680	10%
9681 - 18800	15%
18801 - 27920	20%
27921 - 37920	25%
Over 37920	30%

a. In the tax year of 2014 the tax of Kamau's monthly income was Ksh 10,880. If he is entitled to a tax relief of Ksh 1156. Find
   i. Gross tax of Kamau (1 mark)
   ii. Taxable income per month in shillings (5 marks)

b. Apart from basic salary, Mr. Kamau also earns a house allowance of Ksh 12, 000, a medicall allowance of Ksh 3,060 and a hardship allowance of Ksh 4,635. Find the his basic salary per month (2 marks)

c. Other deductions for Kamau include; SACCO loan kshs. 3000, SACCO contributions Ksh. 6 ,000 and hire purchase repayment Kshs. 2,000. Calculate Kamau's net pay per month (2 marks)

18. Water flows through a cylindrical pipe of diameter 8.4 cm at a speed of 50m/minute.
   a. Calculate the volume of water delivered by the pipe per minute in litres. ($\pi = {}^{22}/_{7}$) (3 marks)
   b. A cylindrical storage tank of radius 105 cm is filled by water from this pipe at the same rate of flow. Water begins flowing into the empty storage tank at 9.30 a.m and is full at 2.00 pm. Calculate the height of the tank in metres. (4 marks)
   c. A family consumes the capacity of this tank in one month. The cost of water is sh 50 per thousand litres and fixed basic charge of Ksh 1650 per month. Calculate the cost of this family's water bill for a year. (3 mks)

19. The position of two towns A and b on earth's surface are (60oN, 36oE) and (60°N, 144°W) respectively. Taking the radius of the earth as 6370 km and $\pi = {}^{22}/_{7}$

   a. Calculate the shortest distance between A and B in km to 1 dp. (2 marks)
   b. Calculate the distance between A and B along the parallel of latitudes in km (2 marks)

c. Another town C is 840 km east of twon B and on the same latitude as town A and B. Find the position of town C. (3 marks)

d. If an aircraft leaves town A at 8.30 am at a speed of 720 km/h to K (60°N,50°W). At what local time is it expected at K to the nearest minute? (3 marks)

20.

a. In a chemistry form 4 class in Jaribu high school $^1/_3$ of the class are girls and the rest are boys. $^4/_5$ of the boys and $^9/_{10}$ of the girls are right handed while the rest are left handed. The probability that a right handed student breaks a conical flask in any practical session is $^3/_{10}$ and the corresponding probability for a left handed student is $^4/_{10}$.

i. Represnt the above infomation on a tree diagram (2 marks)

ii. Determine the probability that a student chosen at random from the class is left handed and does not break a conical flask in its simplest form (2 marks)

iii. Determine the probability that the flask is broken in any practical session in simplest form (2 marks)

b. The probability of Peter scoring grade A in his exam is 0.6 while the probability of Ali scoring the same grade is 0.7.

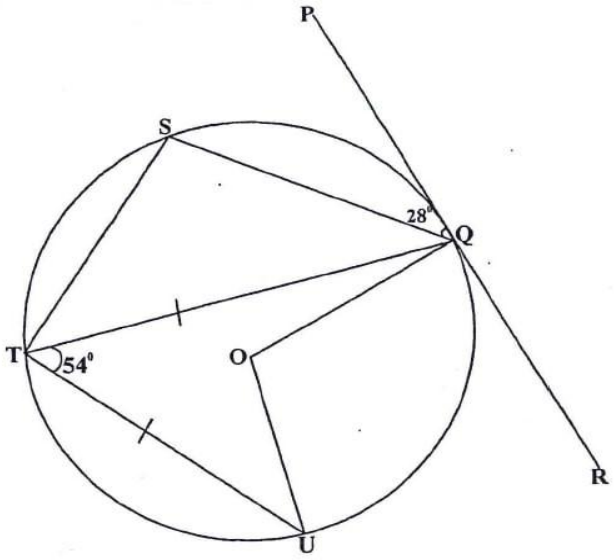
Determine the probability that,

i. Both will score grade A (1 mark)

ii. None of them will score grade A (1 mark)

iii. Only one of them will score grade A (1 mark) iv. At least one of them will score grade A (1 mark)

21. In the figfure below, O is the centre of the cricle. PQR is a tangent to the circle at Q. Angle PQS = 28°, angle UTQ = 54° and UT = TQ



Giving reasons, detrmine the size of

a. Angle STQ (2 marks)

b. Angle TQU (2 marks)

c. Angle TQS (2 marks)

d. Reflex angle UOQ (2 marks)

e. Angle TQR (2 marks) 22.

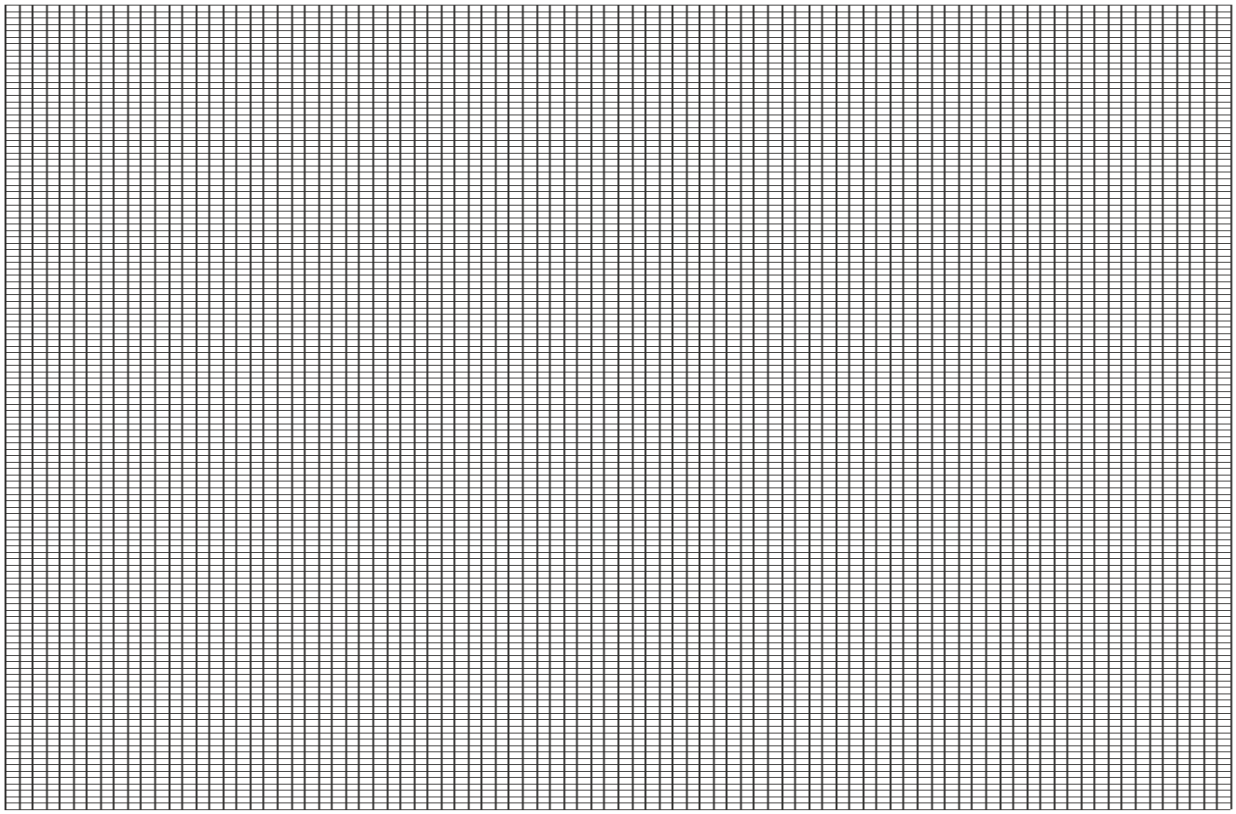
a. Using a ruler and pair of compasses only, construct a triangle ABC such that AB = 8 cm and angle ABC = 75° and angle BCA = 45°. Let AB be on the line drawn below(3 marks)

b. On the upper side of line AB, Locate the locus of p such that AP = PB and P is equidistant from AC and AB. (2 marks)

c. Construct the locus of a point T such that angle ATB = 120° (2 marks)
d. Construct a rectanbgle ABXY on the lower side of AB such that its area is 32 cm^2 (2 marks)
e. Shade the region R inside the rectangle suchthat XRY≥90° and angle ATB≥120° (1 mark)

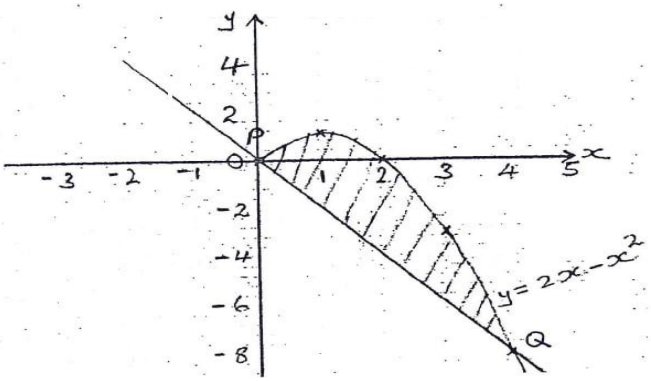
23. A farmer wishes to keep some chicks and ducks. Chicks cost Kshs. 60 each while ducks costs Kshs. 80 each. She cannot afford to spend more than Ksh 24,000. She finds it uneconomical to keep less than 250 birds. She also wishes to keep more chicks than ducks but chicks must be less than 200.

a. Taking x and y to be the number of chicks and ducks resectively, write down all the inequalities that satisfy the above conditions (3 marks)
b. Represent the inequalities graphically using a sclae of 1 cm represents 50 birds on both axis (4 marks)



c. If the farmer sells a mature chick at Kshs. 200 and a duck at Kshs 250, find the number of chicks and ducks she must keep in order to maximize her revenue. State the maximum revenue (3 marks)

24. The diagram below shows a line PQ and the curve $y = 2x - x^2$ intesrecting at point P and Q



a. Find the coordinates of P and Q
b. Calculate the area of the shaded region

PHYSICS PAPER 1 - 2021 K.C.SE
Prediction Set 1

SECTION A (25 Marks)
Answer all the questions in this section

1. Draw a section of the main scale and full Vernier scale that would give a reading of 3.07 cm (1 mark)
2. **Figure 1** shows a burette partly filled with a liquid. The liquid was initially at the level shown. If the 400 drops of the liquid each volume $0.015cm^3$ was removed from the burette, mark the new level of liquid in the burette (1 mark)

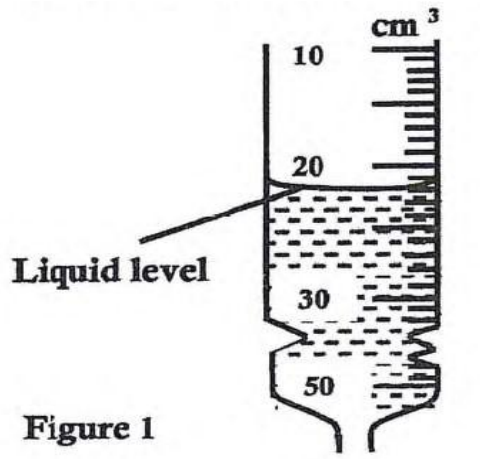


Figure 1

3. A block of metal of mass 150g at 100°C is dropped into a lagged calorimeter of heat capacity 45 JK^{-1} containing 100g of water at 25°C. The temperature of the resulting mixture is 34°C. Determine the specific heat capacity of the metal block. (Take the specific heat capacity of water as 4,200 J/kgK) (3 marks)
4. An object is placed on water and it floats. Write an equation connecting all the forces acting on the body. (1 mark)
5. **Figure 2** shows a 150 g mass tied on a string and whirled in a vertical circle of radius 30 cm with a uniform speed. At the lowest position of the circle the tension is 9.5 N. Calculate the speed ***v*** of the mass(3 marks)

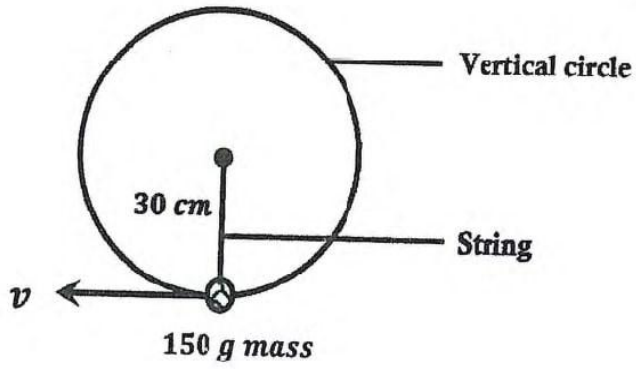


Figure 2

6. **Figure 3** shows two systems of spring arragements A and B. The springs are identical and have a spring constant K

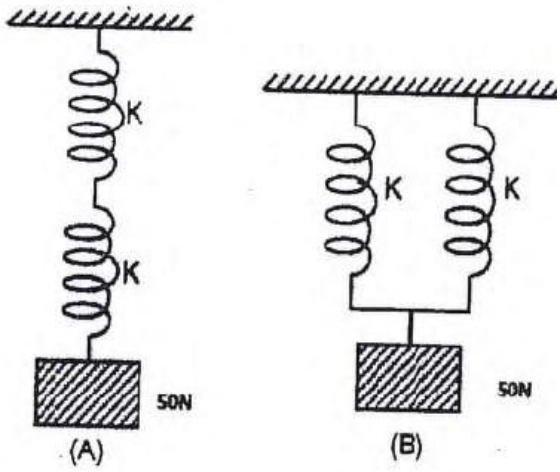
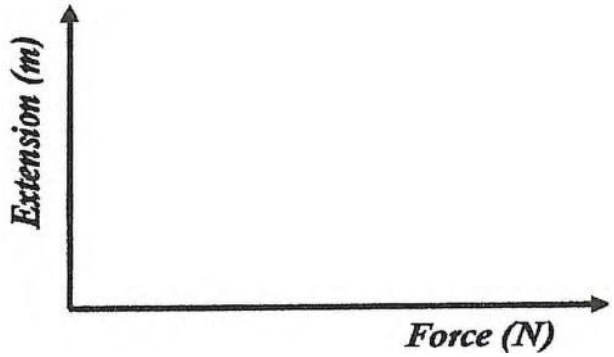


Figure 3

a. State with a reason which system of springs is stiffer (2 marks)
b. On the axes provided, sketch the graphs of systems A and B assuming that the springs obey Hooke's law



c. Determine the value K if the extension in system B was 25 cm (2 marks)

7. A piece of paper is wrapped round the joint of a rod partly made of iron and partly wood so that some of the paper is over the iron rod and the other part over the wooden rod as shown in **Figure 4**

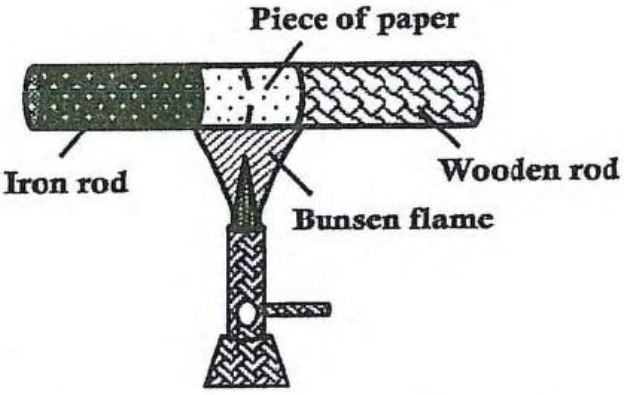


Figure 4

When a bunsen flame is passed over the paper several times it is observed that the paper gets charred or blacked on the region covering the wooden rod while the one covering the iron does not. Explain this observation made (2 marks)

8. A meter rule of mass 50 g is balanced by masses 35 g and 15 g suspened from its ends. Find the position of its pivot from 25g mass (3 marks)

Figure 5 shows a bunsen burner which is used for heating substances in a laboratory. Use the information given to answer Questions 9 and 10 below

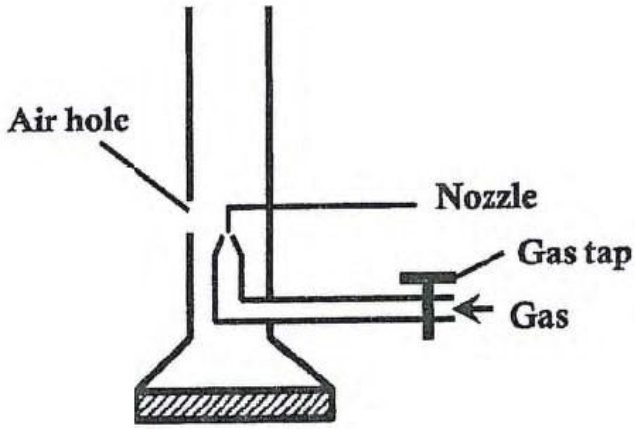


Figure 5

9. Explain the principle of worklikng of a bunsnen burner (2 marks)
10. Give a reason why the Bunsen burbner in the **Figure 5** has a wide base (1 mark)
11. Water rises up in capillary tubes but mercury which is also liquid, falls in capillary tubes to a level below the outside surafce as shown in **Figure 6**. Explain this observation. (2 marks)

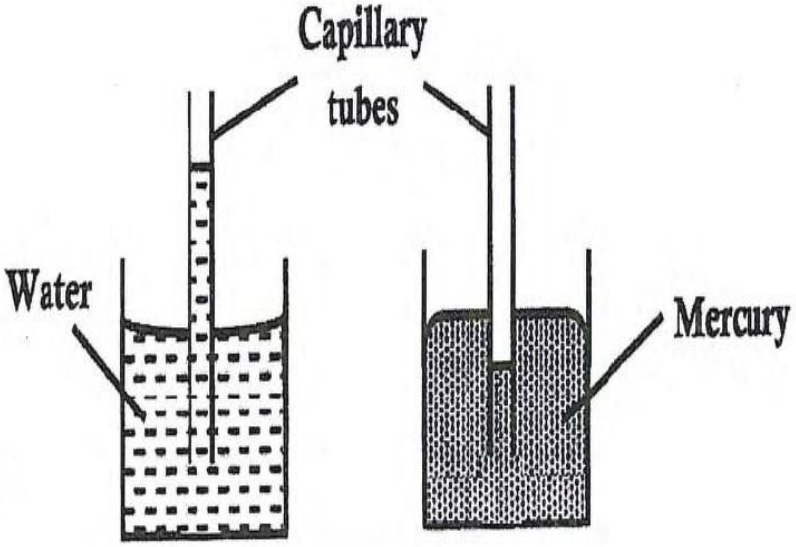


Figure 6

12. State the molecular difference between a real gas and an ideal gas (1 mark)

SECTION B (55 Marks)

Answer **all** the questions in this section

13.

a. **Figure 7** shows a car braking system. The brake fluid is an oily liquid

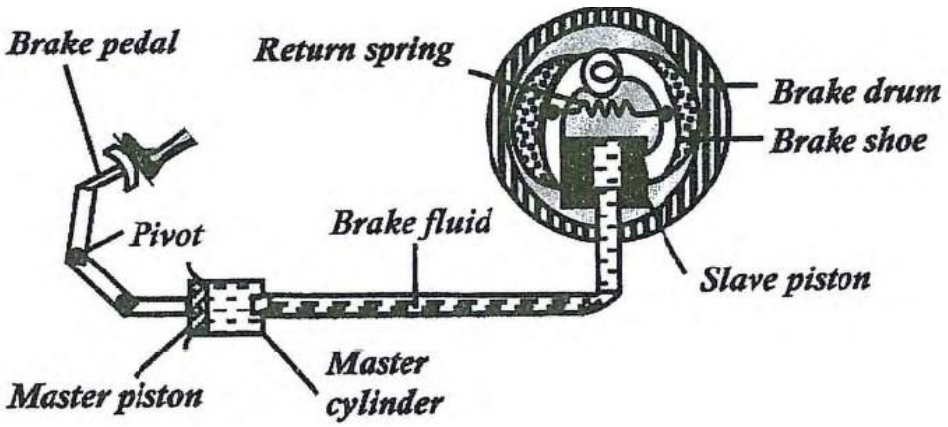


Figure 7

i. State the principle by which a car braking system works (1 mark) ii. State one property of the brake fluid used in this system (1 mark) iii. The cross-sectioanl area of the master piston is 5.0cm^2. A force of 1540 N is applied to the master psiton. Calculate the force exerted on each slave piston by the brake fluid given that the cross-sectional area of each slave psiton is 7.2 cm^2 (3 marks)

b. A diver is 15 m below the surface of water in a dam as shown in **Figure 8**

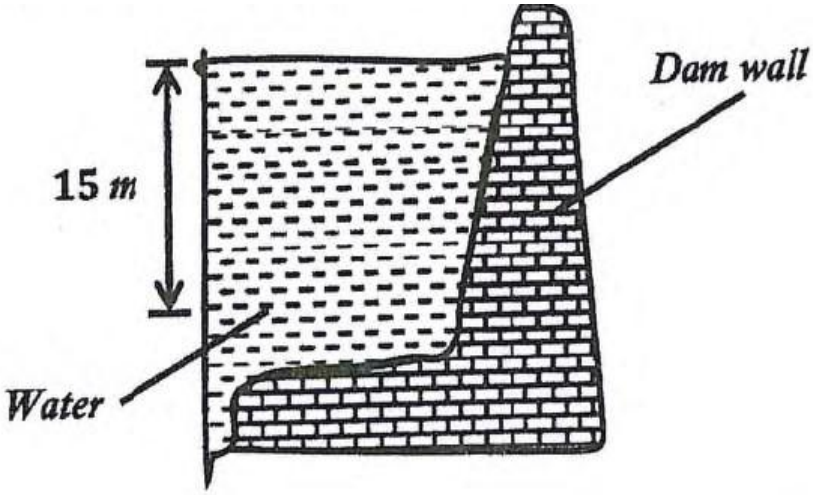
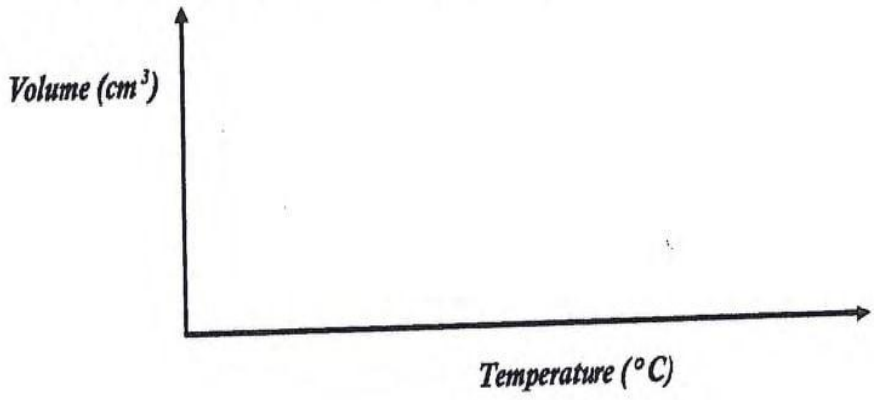


Figure 8

If the density of water is 1000 kg/m^3 and gravity is 10N/kg, determine

i. The total pressure acting on the diver given that the atmospheric pressure at this place is 1.0×10^5 N/m^2 (3 marks)
ii. Dam walls are made wider at the bottom than at the top. Explain (1 mark)

c. Water in a measuring cylinder is placed in a refrigerator and allowed to cool from about 15^{o}C to 0^{o}C. Assuming the water does not freeze, sketch on the axes provided the graph of Volume of water against temperature (1 mark)



d. **Figure 9** shows a column of air trapped by mercury thread 5 cm long. If the atmospheric pressure is 750 mmHg, determine the length of the air column when the tube is horizontal (3 marks)

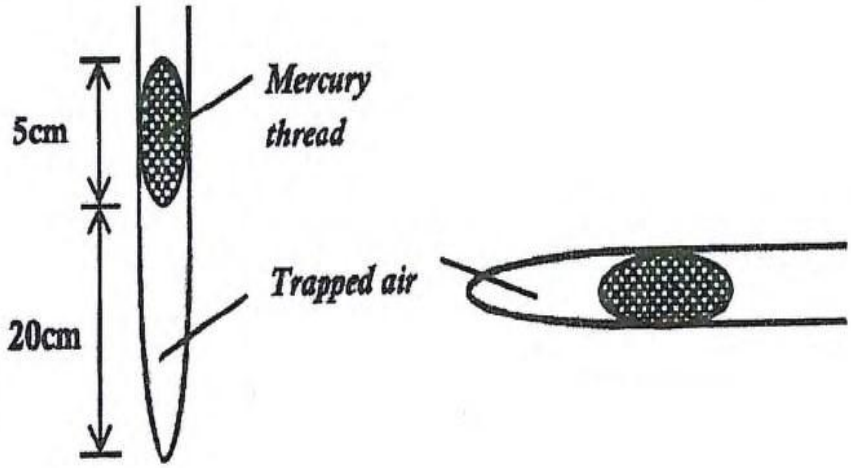


Figure 9

14.

Figure 10 shows a car of mass m moving along a curved part of the road with a constant speed

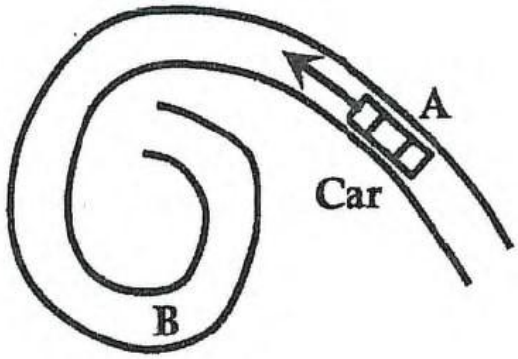


Figure 10

Explain why the car is more likely to skid at point B of the road if the speed is not changed
(2 marks)

b. A particle P tied to a string is moving in a horizontal circle about O as shown in **Figure 11**. Particle P moves with a constant speed ***v***

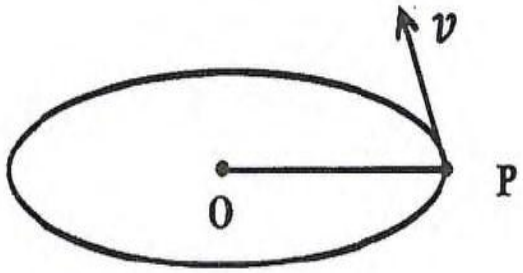


Figure 11

i. State what provides the centripetal force. (1 mark)
ii. Use an arrow to indicate the direction in which the net force F acting on P will act (1 mark)
iii. Give a reason why particle P above experiences centripetal acceleration even thopugh it is moving with a constant speed ***v*** (1 mark)

c. **Figure 12** shows two masses 0.2 kg and 0.4 kg connected by a string through a hole on a smooth horizontal surface

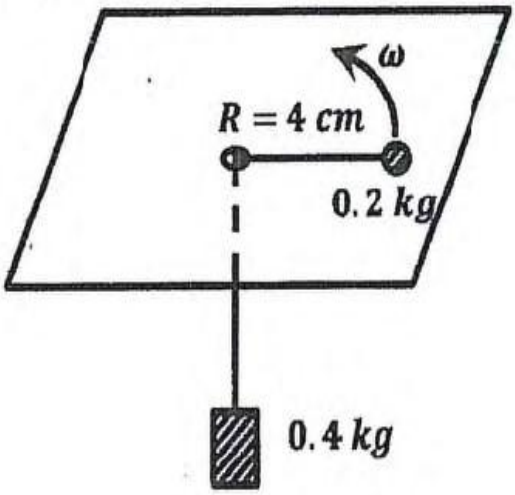


Figure 12

The 0.2 kg mass rotates in a horizontal circle of radius 4 cm. Calculate the angular velocity of the mass when the system is in equilibrium. Take acceleration due to gravity, g= 10 m/s^2 (3 marks)

d. A jet starts from rest with a uniform acceleartion of 500 m/s^2. how long does it take to cover a distance of 40 km? (3 marks)

15.

A horizontal force of 50 N is applied on a wooden block of mass 2.5 kg placed on a horizontal surface. Given that the coefficient of kinetic friction between the surface and the block is 0.5, determine the acceleration of the block (3 marks)

b. **Figure 13** shows a graph of velocity aginst time for a ball bearing released at the surface of a viscous liquid

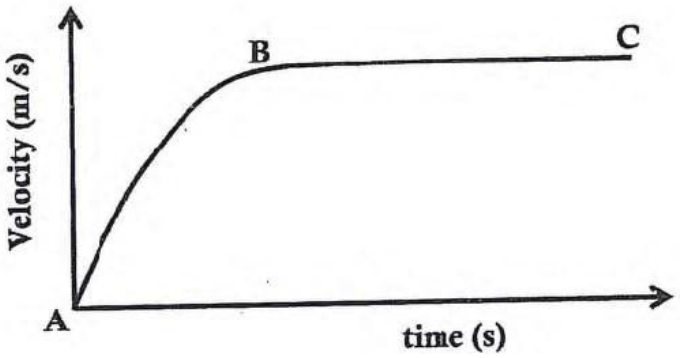


Figure 13

i. Write an expression/equation connecting all the forces acting on the ball bearing parts

I. AB (1 mark)

II. BC (1 mark) ii. Indicate on the graph the terminal velcoty $\mathbf{V_t}$ of the ball bearing (1 mark)

c. **Figure 14** shows a pulley system being used to lift a load of 150 N by applying an effort of 60 N

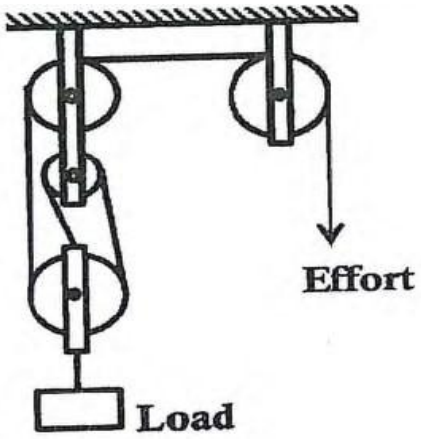


Figure 14

i. State the velocity ratio of the pulley system (1 mark)

ii. Calculate the efficiency of the pulley system (4 marks)

d. Show that the velocity ratio of a wheel and axle machine whose cross-section is shown in **Figure 15** is given by **V.R.** $= {}^{R}/_{r}$ where R is the radius of the wheel while r is the radius of the axle (2 marks)

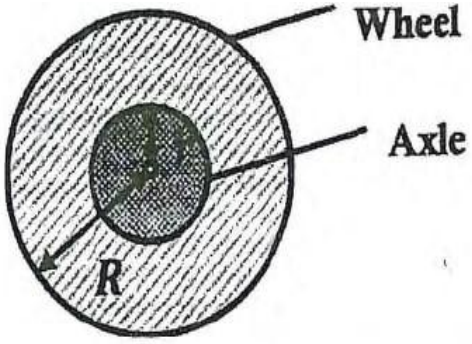


Figure 15

16.

Define the term "***specific latent heat of fusion"*** of a material (1 mark)

b. A metal bar of mass 30 g and specific heat capacity 880 J/kgK is placed in a small furnace. **Figure 16** shows how the teperature of the metal bar varies with time t in seconds

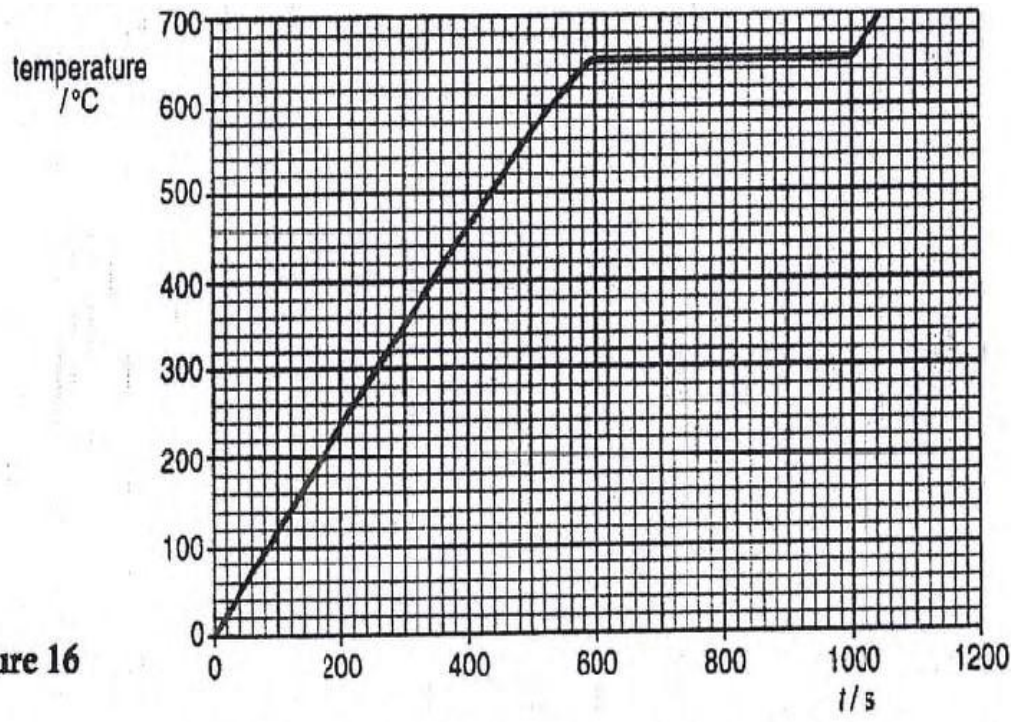


Figure 16

i. State what happens to the bar betwen t = 600s and 1000s (1 mark)
ii. Calculate the energy supplied to the bar between t = 0s and 600s (3 marks)
iii. Between t = 600s and 1000s the furnace supplies 30 joules of energy per secodn to the bar. Calculate the specific latent heat of fusion oof the metal bar (3 marks)

17.

a. State ***Archimedes' principle*** (1 mark)
b. The system in **Figure 17** below is in equilibrium

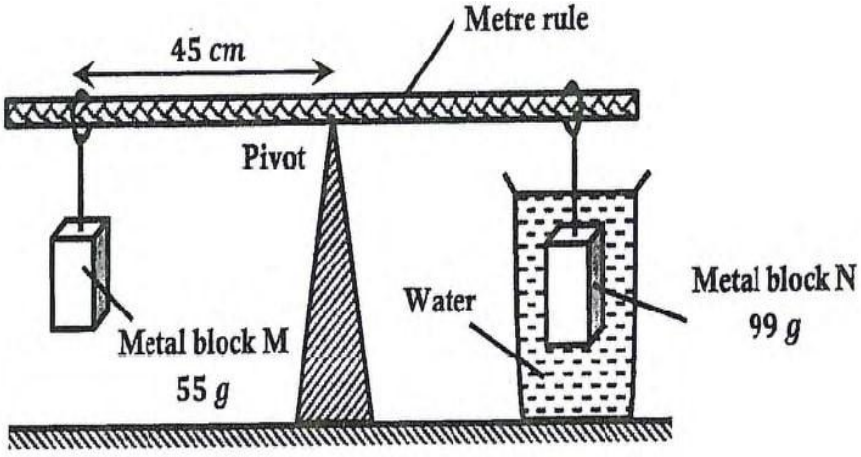


Figure 17

i. When the temperature of the water is raised the system is observed to tilt to the right, state the reason for this observation (2 marks)
ii. Calculate the apparent loss of weight of the metal block N given the dimensions of the block are 2cm × 2cm × 6cm (3 marks)
iii. Determine the apparent weight of the metal block N (2 marks) iv. How far is the metal block N from the pivot? (2 marks)

PHYSICS PAPER 2

2021 K.C.SE Prediction Set 1

SECTION A (25 Marks)

Answer all the questions in this section

1. **Figure 1** shows a plane mirror, a point object (P) and the position of the observer's eye. Show whether the observer will see the image of the object point P or not. (1 mark)

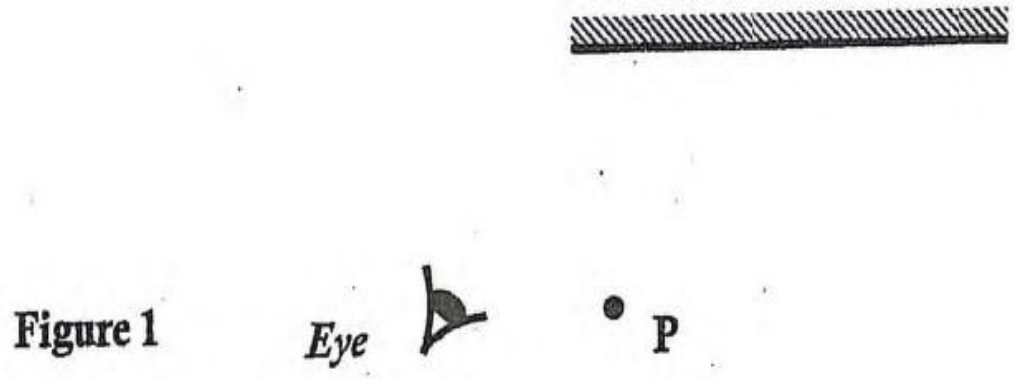


Figure 1

2. State one difference between a lead-acid battery cell and a Leclanche cell (1 mark)
3. A form one student at Elimu Girls' High School connected a simple electric circuit as shown in **Figure 2** below.

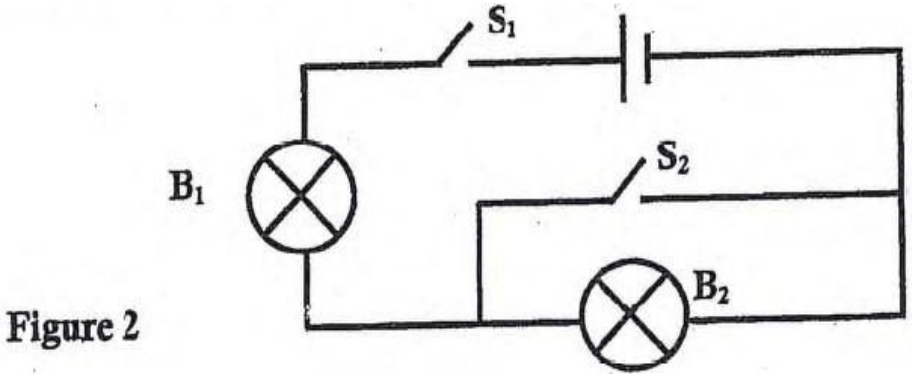


Figure 2

State and explain the observation made on bulbs B_1 and B_2 when switches S_1 and S_2 are both closed (2 marks)

Figure 3 shows an X - ray tube used to produce X - rays. Use it to answer questions 4 and 5

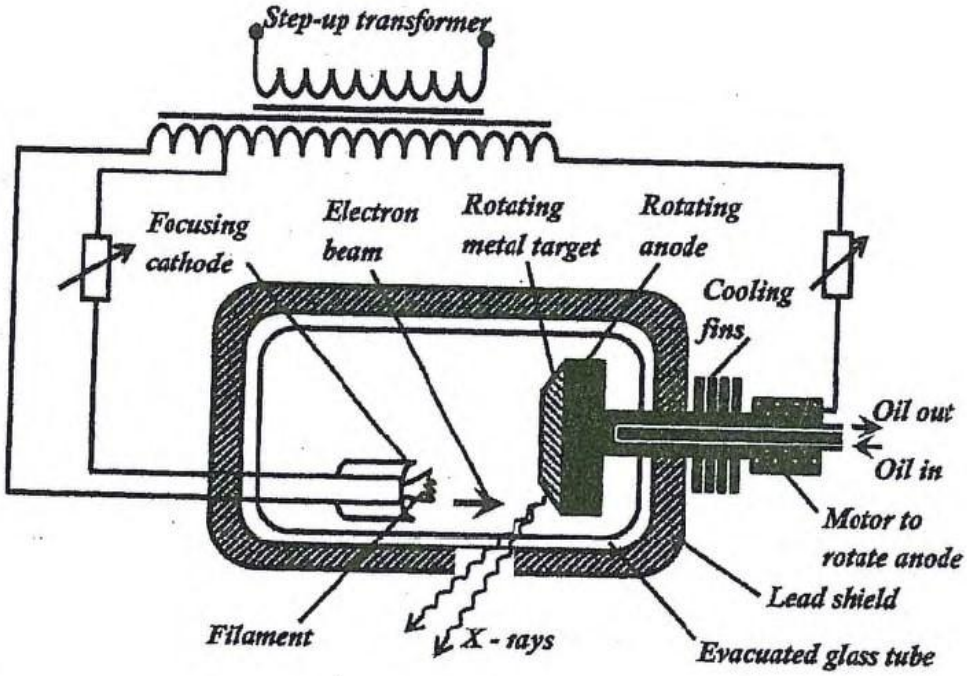


Figure 3

4. Give a reason why;
    a. The metal target is made to rotate (1 mark)
    b. Lead metal is used to shield the X-ray tube (1 mark)
5. The X-ray tube in **Figure 3** produces elctrons which are accelerated by a p.d of 12 kV. Assuming all the enrgy goes to produce X- rays, determine the maximum frequency of the X-rays produced.

    (Planck's constant $h = 6.62 \times 10^{-34}$ *Js*) and charge on an electron, $e = 1.6 \times 10^{-19}$ *C*) (3 marks)
6. **Figure 4**(not drawn to scale) shows a bright electric bulb placed behind a screen which has a hole with an object cross-wire. A concave mirror of focal length 30 cm is placed in front of the screen.

    The position of the mirror is adjusted until a sharp image of the cross-wire is formed on the screen

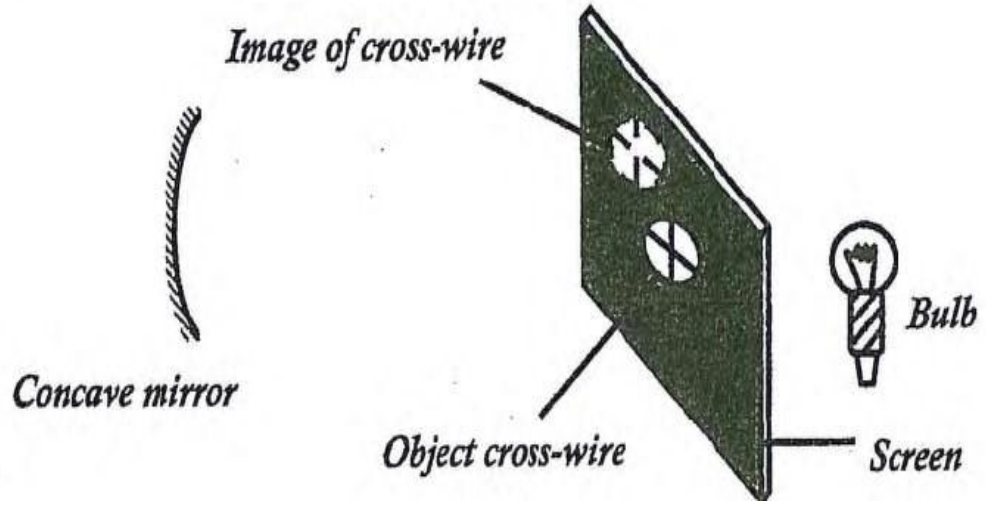


Figure 4

    Detrmine the distance between the mirror and the screen (1 mark)
7. In a house, there is a cooker rated 6 kW. The mains potential is 240 V and the fuses available are 35 A, 30 A, 15 A and 13 A. Determine the fuse that would be suitable for the cooker (3 marks)
8. When X- rays are passed above the cap of a positively charged electroscope it is observed that the leaf divergence decreases. Explain this observation (2 marks)
9. Several 200 Ω carbon resistors are to be connected in a circuit so that a current of 2A flows from a 50 V source. Determine how many resistors are required. (3 marks) 10.

Figure 5 shows part of a wiring circuit for a house

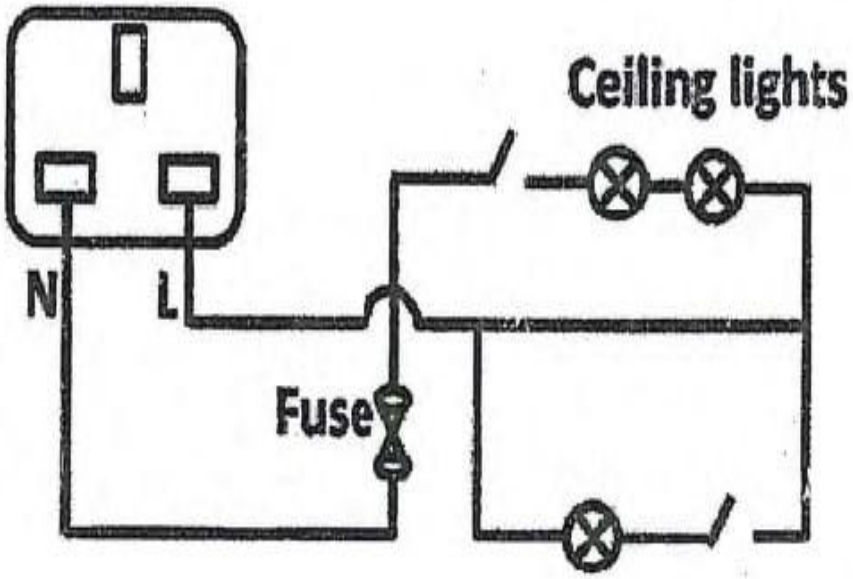


Figure 5

Correct two faults made in the wiring (2 marks)

11. The current of elctrons hitting the screen of a C.R.O is 15 mA. Given that the charge of one elctron is 1.6×10^{-19} C, determine the number of electrons that hit the screen per second (2 marks)
12. **Figure 6** shows an electromagnetic spectrum in the increasing order of wavelength from X to Y

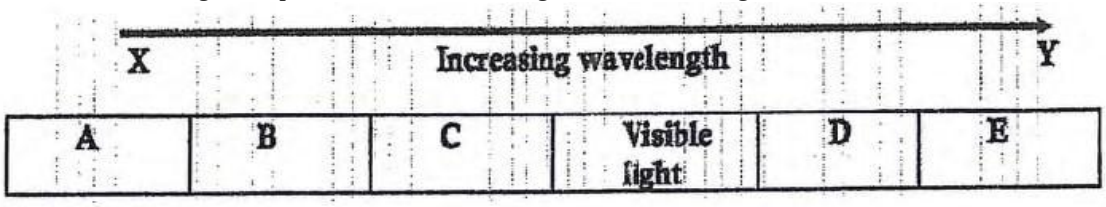


Figure 6

a. Identify the region of the spectrum labeled C (1 mark)
b. Give one similarity between the spectrum labeled B and the visible light (1 mark)

13. Give a reason why electrical power is transmitted over long distances at high voltage (1 mark)

SECTION B (55 Marks)

Answer **all** the questions in this section

14.

a. State what is meant by thermionic emission (1 mark)
b. **Figure 7** shows a beam of cathode rays entering the space between two charged metal plates. Continue the dotted line to show the path of the cathode rays as they travel between the plates and into the space beyond the plates (1 mark)

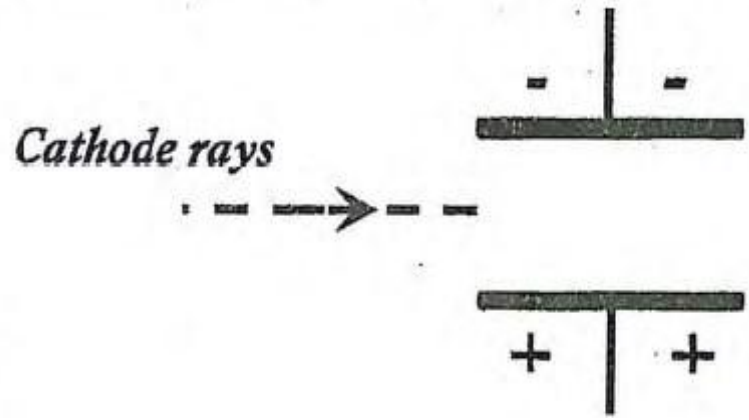


Figure 7

c. **Figure 8** shows a cathode ray tube of cathode ray oscilloscope (C.R.O)

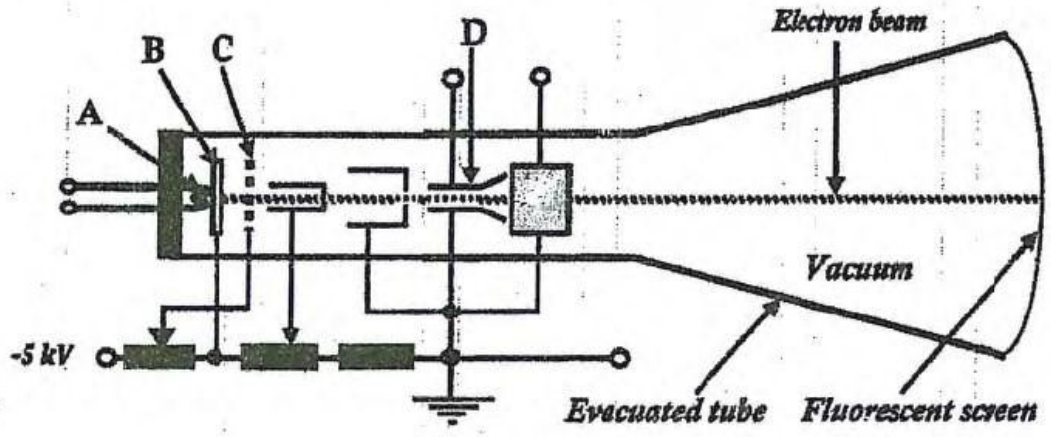
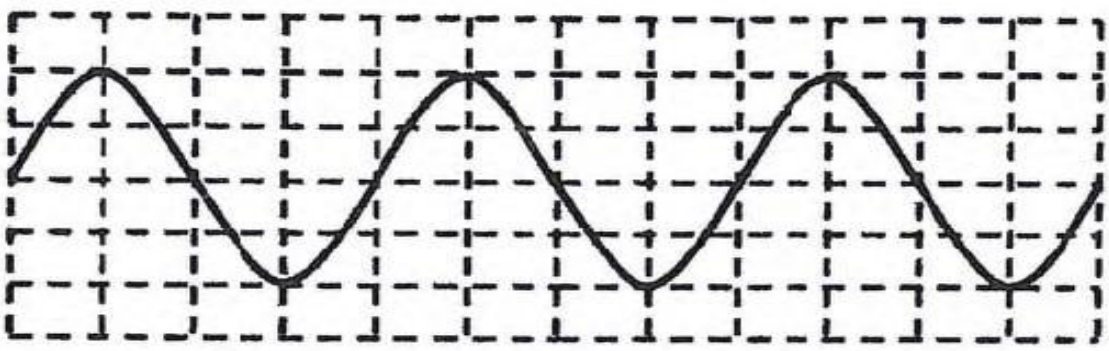


Figure 8

i. Name the parts labeled A and D (2 marks)
ii. What property does the part labeled B have for its efficient functioning (1 mark)
iii. State the function of the part labeled C (1 mark)

d. The figure below shows the trace on the screen of an ac signal connected to the Y plates of a CRO with time base on

Given that the time base control is 50 ms/div, determine the frequency of the a.c signal (3 marks)



15.

a. A piece of light object (cork floats on the surface of water as shown in **Figure 9** below. A straight edge vibrator placed at point A of the ripple tank generates water waves which travel towards point B

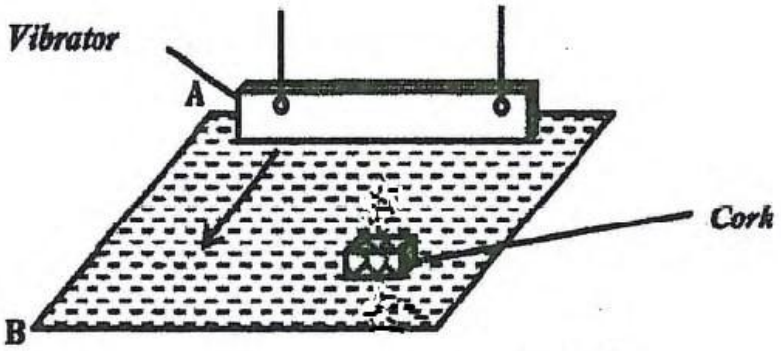


Figure 9

i. Successive waves pass the cork every 0.4 secodns and the speed of the wave is 0.5 m/s. Determine the wavelength of the waves (2 marks)

ii. Indicate on the diagram the direction in which the card moves as the waves pass on it (1 mark)

b. **Figure 10** shows a ray of light travelling from water towards its interface with air. The

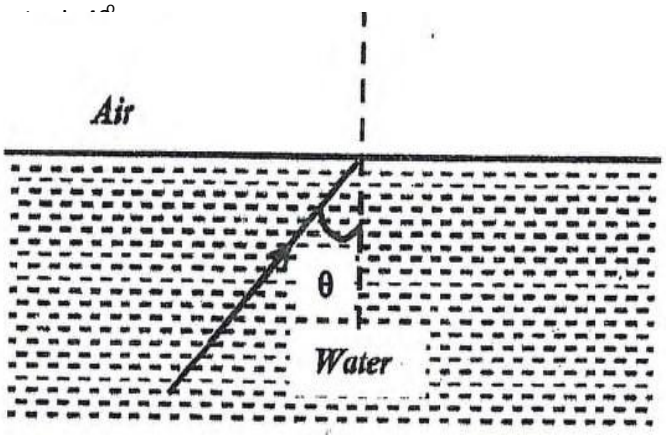


Figure 10

i. Skecth the path of the ray on the diagram above after striking the interface at I. An angle if incidence, $\theta = C$. Label the ray as R_1 (1 mark)

II. An angle of incidence $\theta > C$. Label the ray as R_2 (1 mark) ii.

Calculate the absolute refractive index, n, of water (3 marks)

c. A student struck the prongs of a tuning fork agaisnt a hard surface in the laboratory. The prongs vibrate producing a longitudinal wave passing through air as shown in the **Figure**

11

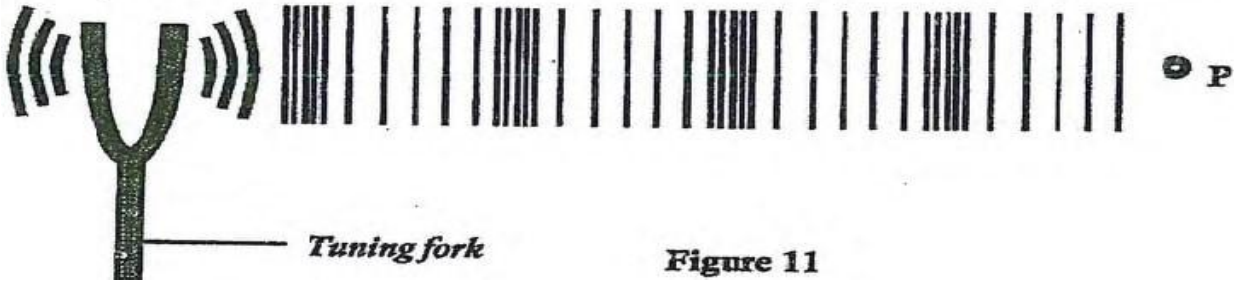


Figure 11

i. Label the compression and rarefaction regions in the longitudional wave. (1 mark)

ii. Using a lline with a double arrow, indicate on the diagram a distance d equal to one wavelength of the wave (1 mark)

iii. On the diagram, show with an arrow the direction of motion of the air particle P as the waves pass (1 mark)

d. State one advantage of optical fibre cable over conventional copper cables as used in telecommunication (1 mark)

16.

a. **Figure 12** shows ammeters and resistors connected to a battery of em.f. 15.0 V and negligible internal resistance

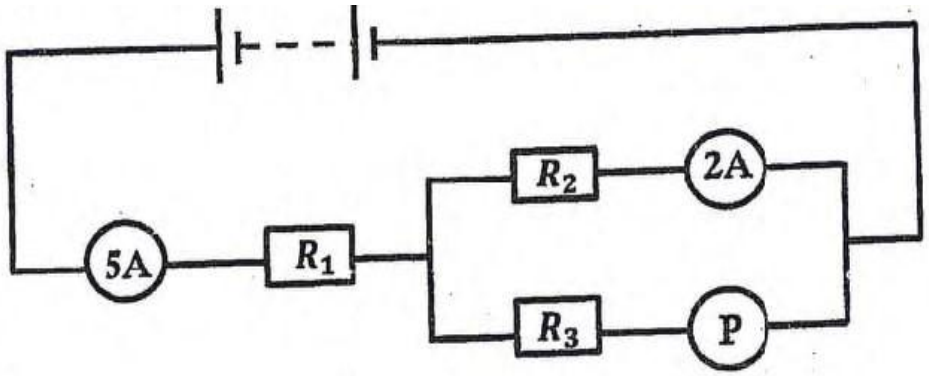


Figure 12

i. Find the reading of the meter P

ii. If the resistance R_1 is 1.2 Ω , determine as shown in figure 1 the values of R_2

b. **Figure 13** shows two charged plates P and Q one is earthed and the other is connected using a copper wire to the cap of an elctroscope which was initially unchanged.

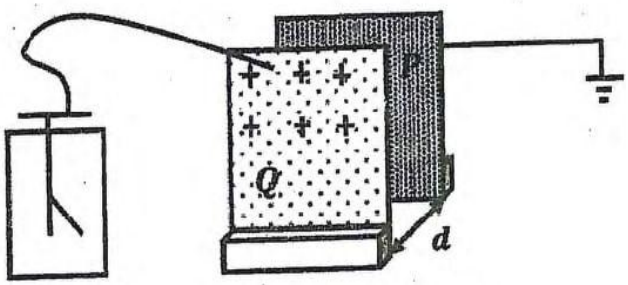


Figure 13

State what happens to the leaf of the eletrocope when plate P is moved sideways while keeping plate Q and distance of separation constant. (1 mark)

c. **Figure 14** shows a circuit where a battery of emf 4.5 V, switches A and B, two capacitors $C_1 = 0.4$ μF and $C_2 = 0.6$ μF and a voltmeter are connected.

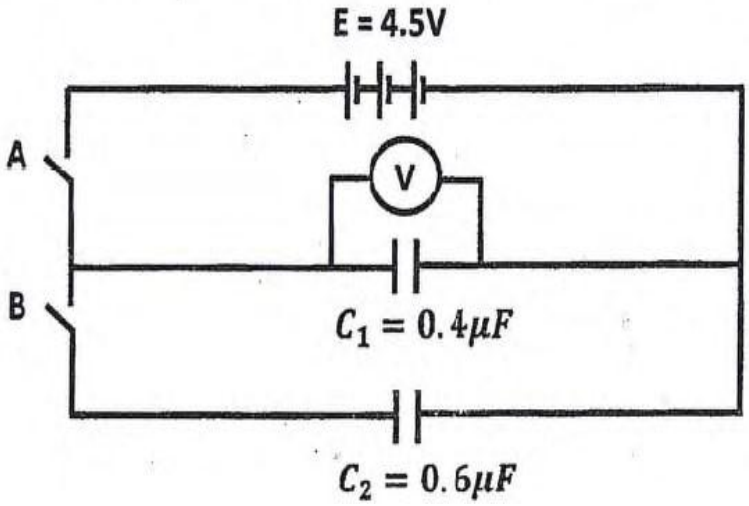


Figure 14

Determine the voltmeter reading when

i. Switch A is closed and switch B is open (1 mark)

ii. Switch A is closed and opened, and then B is closed (3 marks)

d. **Figure 15** shows a conductor C placed on a negatively charged polythene rod. Identify the charges on conducto C and sphere S when C is connected to S using a wire

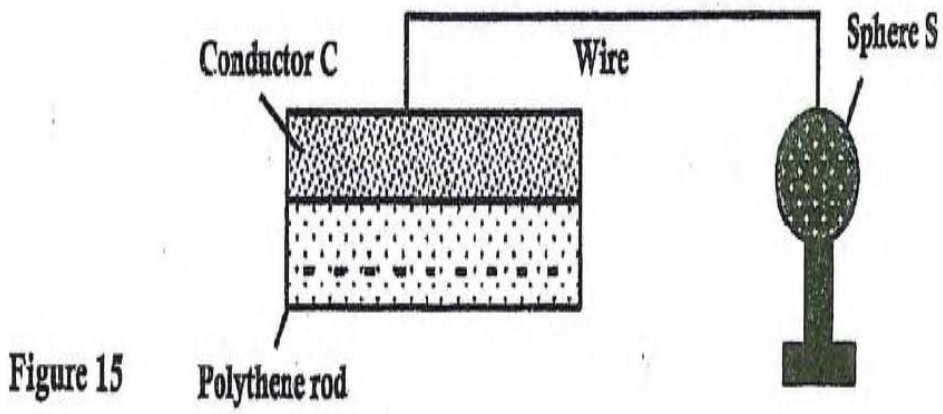


Figure 15

Conductor C (1 mark)

Sphere S (1 mark)

17.

a. **Figure 16** below shows a steel bolt being magnetized

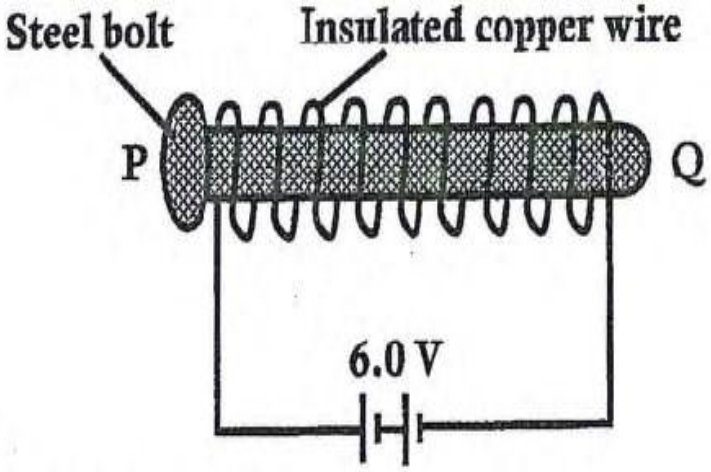


Figure 16

Identify the pole P and Q of the resulting magnet

b. **Figure 17** shows an electric device running on a battery

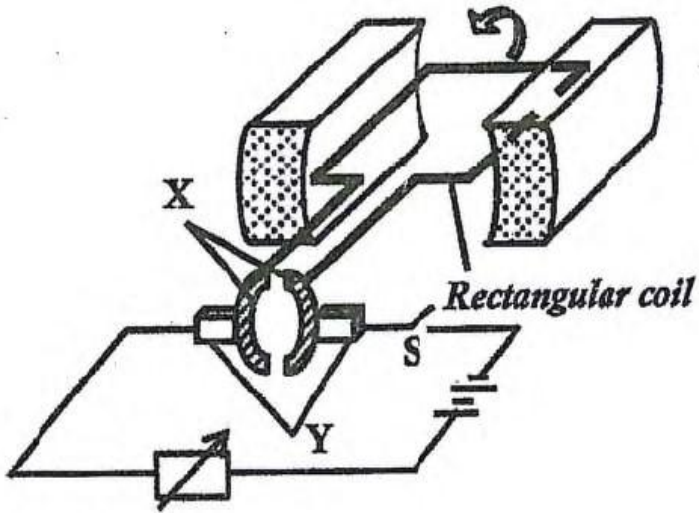
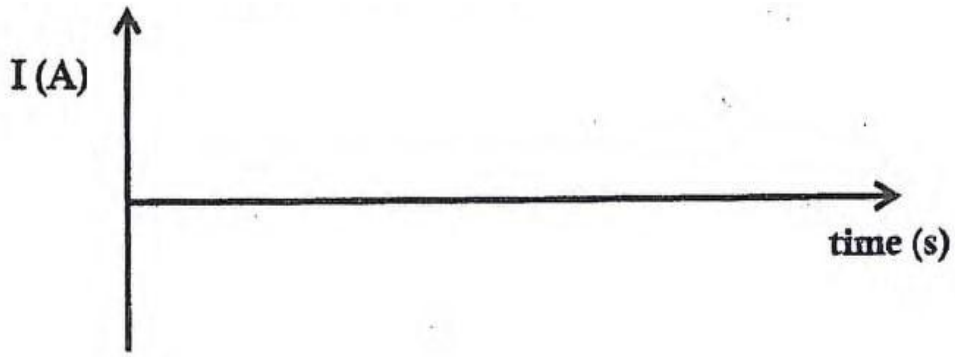


Figure 17

i. Name the parts labelled X and Y (2 marks)

ii. Given the direction of rotation of the coil is as shown in the diragram, indicate the poles of the magnet on the diagram

iii. If the battery was replaced with a copper wire, sketch on the axes below a graph of induced current against time flowing through the variable resitors if the coil is made to rotate as it is in the figure above (1 mark)



iv. Suggest an improvement that can be made to increase the magbitude of induced current in (iii) above

c. The input voltage of a transformer is 220 V and its output voltage is 12 V. When a 60 W bulb is connectd across the secondary coil, the current in the primary coil is 0.32 A.

Determine the efficiency of the transformer (3 marks)

d. One of the causes of energy loss in a tranformer is through fromation of eddy currents.
State one way in which eddy currents lead to energy loss in a transformer (1 mark)

e. **Figure 18** shows a connection to a three pin plug

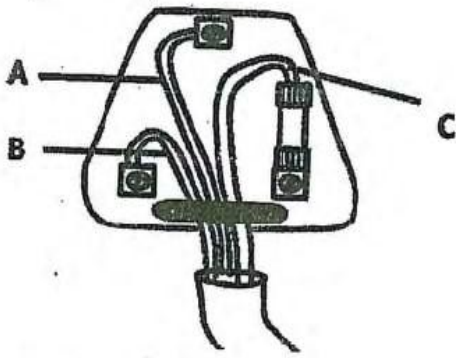


Figure 18

i. Identify the leads labelled B and C (2 marks)
ii. Give a reason why the pin onto which lead A is connected is normlly longer than the other two pins (1 mark)

18.

a. **Figure 19** shows a human eye with a defect

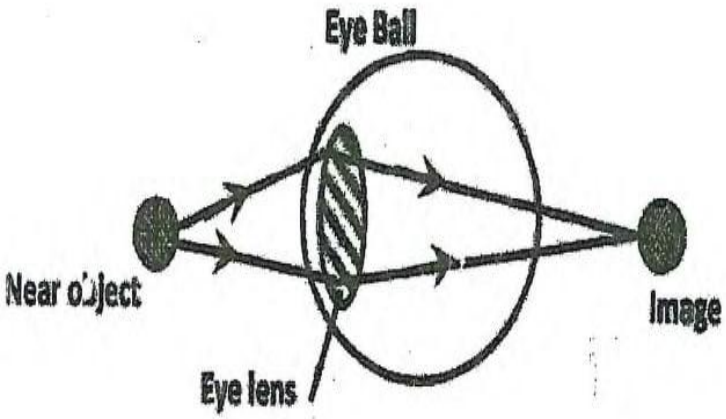


Figure 19

i. Name the defect (1 mark)
ii. State one possible cause of this defect (1 mark)

b. A lens forms an image that is four times the size of the object on a screen. If the distance between the object and the screen is 150 cm, determine;

i. State with reasons what type of lens was used (2 marks)
ii. The focal length of the lens (3 marks)

c. A barber holds a concave mirror a short distance from his client's face. Given that the described arrangement is as shown on **Figure 20** and the radius of curvature is 40 cm

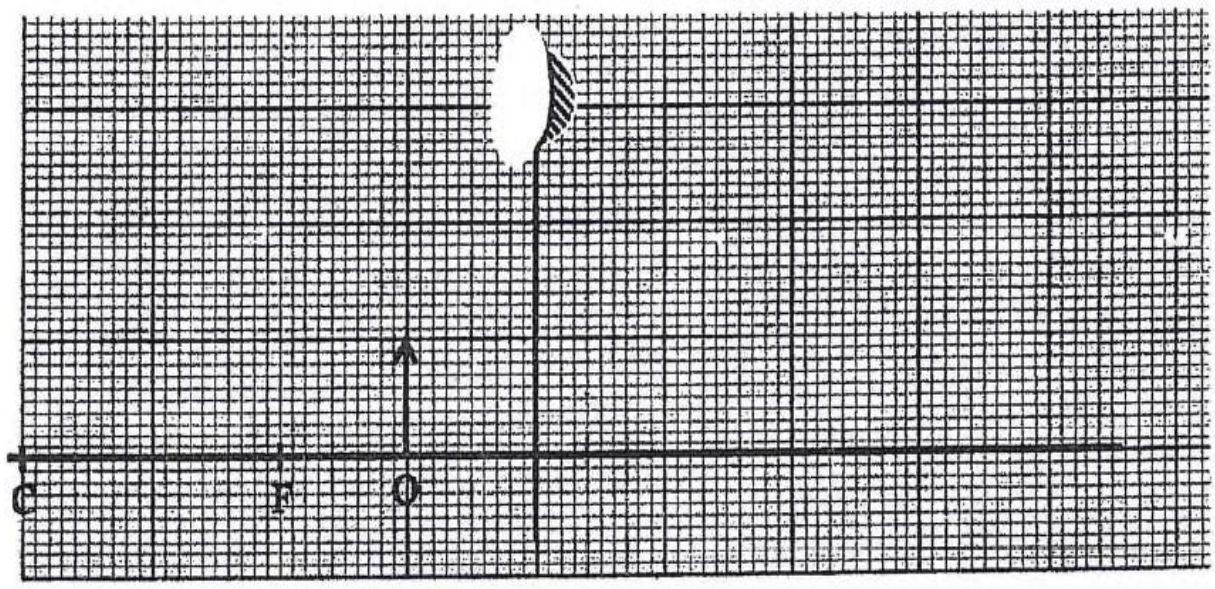


Figure 20

i. draw on the same figure, a ray diagram to show the position of the image of the client's face (2 **mark) ii. Use the ray diagram to determine the magnification of the image (1 mark)**

ENGLISH PAPER 1 - 2021 K.C.SE
Prediction Set 1

101/1 ENGLISH

PAPER ONE

TIME: 2HRS

INSTRUCTIONS TO CANDIDATES

1. Write your details in the spaces provided above.
2. Answer all the questions in this paper.
3. Answer the questions in English

1. **FUNCTIONAL WRITING**

Students in your school have raised concerns about poor hygiene in the school. In a bid to address these concerns, the principal appoints a four member committee to investigate the health situation and give recommendations. You are the secretary of the committee, write down the report you will present to your principal. (20mks)

2. **CLOZE TEST (10MKS)**

Fill in the blank spaces with the most appropriate words.

A new research title "Underage drinking in Kenya", has ……1…….that nearly one third of form four students aged below 18 years take alcohol ……2……. As our society ponders this sad ……3……., the urgent message to children who are taking alcohol ……4……. do not drink another sip. Advice to those children is to strongly say "no". ……5……irresponsible behaviour, to alcoholism, there are many……6……effects of alcohol. It is wrong and illegal for children to drink alcohol. This report also states that 46 percent of the children received ……7…….first pint from friends and ……8……. Do you offer alcohol to a child? As a parent or guardian, do you nurture ……9…….? How much time do you spend with them? Notably, ……10……of guidance and supervision are stimuli to underage drinking.

3. **ORAL SKILLS (30MKS)**

Read the poem below and answer the questions that follow

Make me a grave where'er you will,
In a lowly plain, or a lofty hill;
Make it among earth's humblest graves, But
not in a land where men are slaves.

I could not rest if around my grave
I heard the steps of a trembling slave;
His shadow above my silent tomb
Would make it a place of fearful gloom

I could not rest if I heard the tread
Of a coffle going to the shambles led,
And the mother's shriek of wild despair
Rise like a curse on the trembling air

(by Frances Ellen Watkins Harper)

Questions

a. Describe the rhyme scheme of the poem above. (2mks)
b. Apart from rhyme, mention two other ways they have achieved rhythm? (4mks)
c. Mention two ways in which you would know that your audience is fully participating during the recitation of the poem above. (2mks)
d. How would you say the last line of the poem? (2mks)
e. Indicate whether the following items have a falling or a rising intonation. (4mks) i. Get out now!
ii. The man was accused of theft. iii.
How did you find the English exam?
iv. Could he have left?
f. Underline the silent letters in the following words. (4mks)
i. Corps
ii. Parliament
iii. Leopard
iv. Fracas
g. Provide a homophone for each of the following words. (4mks) i. Bury
ii.
Cla
ws
iii.
Gu
est
iv. Male
h. The underlining indicates the stressed word in the sentences below. Briefly explain what each sentence mean (3mks)
i. The <u>lady</u> in a red dress lost her purse
ii. The lady in a <u>red</u> dress lost her purses
iii. The lady in a red dress lost her <u>purse</u>.
i. Identify the odd word out according to the pronunciation of the underlined sound. (2mks) i. S<u>ai</u>d H<u>ea</u>d G<u>a</u>te L<u>e</u>d
ii. <u>F</u>ace <u>Phr</u>ase She<u>ph</u>erd <u>Ph</u>ase

j. Below is a dialogue between Muthomi and James who are candidates. Read it and answer the questions that follow.

Muthomi: James, I'm worried about my performance in English. It's not encouraging.

James: Ah! I'm happy with mine in Biology. I got an A in the last exam.

Muthomi: I really don't know what to do about English, maybe…

James: I don't like History and P.E teacher. He thinks he is the only one who can a pick-up truck. My mum told me she would be buying one soon.

Muthomi: (Trying to bring him back to the topic) Tell me James, how do you revise English?

James: Oh! Is that Betty? She promised to bring me a movie. (Calling out) Betty! Betty!

(The runs after her)

h. Identiy the shortcomings in the dialogue above (3mks)

ENGLISH PAPER 2 - 2021 K.C.SE
Prediction Set 1

INSTRUCTIONS TO CANDIDATES

101/2
ENGLISH PAPER 2

INSTRUCTIONS TO CANDIDATES

COMPREHENSION

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

Unscrupulous as he was, Kwame Asante had a qualm as he looked at the woman sitting on the African stool near the bed. He had called her and yet when she came he did not quite know how to begin the conversation.

"Akosua, how would you like fifty pounds to start a small business of your own – selling cloths or perfume and powder?" The woman smiled nervously. Ten years of married life had made herwary of her husband's fits of generosity.

She was as black as ebony, with the fine features peculiar to the girls of the Akwapim hills; graceful in her brown and red design cloth and the lovely silk head-tie wrapped round her head. Her feet were shod in 'spitfire' sandals and on her tiny ears she had the popular golden ear-rings named 'Abongo'.

The slender woman on the stool was the mother of three children though she still looked a girl. Married under the native customary law, she had served her lord and master with zeal and zest. It is a law which as some other law in the Gold Coast, needs disinfecting for though it aids the man to gain his desire when it is at its fiercest, it in no way safeguards the position of the woman when the man's passion abates.

"Would you like fifty pounds?" asked Kwame again. "Could make it a hundred. You have been a very good wife to me, Akosua." Did the truth begin to dawn on the woman's consciousness? No. She thrust the thought away from her. 'He could not do it'.

Kwame cleared his throat – after all he might as well get it off his chest: hadn't she noticed that the whole relationship had become impossible? A cloth woman was all right when one was young and struggling. She could be so useful – a general servant, and yet a wife. Akosua was so gentle, and even quite refined, but a man needs a change. He had just completed his two-storied building and he had been made a committee member of an important club. The other day his academy had conferred on him an associateship and his university had given him a coveted degree. He had at last achieved his ambition and had become an important man in the community. He was thinking seriously of entering the town council.

Fancy being addressed councilor Kwame Asante, O.B.A…. A.S.S. He smiled inanely to himself. Akosua looked at him in wonder.

"Er….. er…. Akosua…., I want to tell you I am going to marry a lady; you will be paid off with a hundred pounds. A…. frock….. lady….um…..er …. of course you can read and write Ga and Twi but my friends will call you an illiterate woman."

"Did you consult your friends before you married me ten years ago?" The voice was cold and calm, yet the words cut like a whip.

"If you are going to be impertinent, I shall not discuss the matter further." He got up and walked up and down the room. "How many men in the Gold Coast will pay a woman off with one hundred pounds? You are only entitled to twenty-five pounds and here I am out of kindness offering you a hundred. Show some gratitude, Akosua." Akosua looked at him. Stark misery was in her eyes.

"I shall send the children to Achimota College." There was a whining note in his voice. "I am only doing this because of my position in society. You see I may be called to Government House and other important places……. say somethingAkosua.

"I say you can keep your twenty five pounds, fifty pounds or a hundred pounds. I will have nothing to do with it. I will not be paid off.

"What! What! Come! Come! Don't do anything rush!"

"If you dare touch me I shall strike your face."

"Strike your master, your husband! Are you mad?"

"I shall leave this house."

"If you dare to disgrace me by leaving the house before I am ready for you to go, there will be trouble. I do not intend to put up with a willful woman. What is my sin after all? I only want to become a decent and respectable member of society. If you leave this house without my knowledge and permission, I shall claim every penny I have spent on you since I married and lived with you these ten years; and not only that but I shall claim all the presents I have given to your parents and other relatives. You know our native customary law."

"Yes, I know your native customary law. It is a grave to bury women alive whilst you men dance to the tom-tom on top of the mound of earth."

Questions

Why does Akosua smile nervously when Kwame offers her fifty pounds to start a small business of her own? (2mks)

……

……

……

……

Explain the effect of Akosua's silence on Kwame? (2mks)

……

……

……

……

In not more than 60 words, summarize the reasons for Kwame's intention to marry another wife.

(4mks)

……

……

……

……

……

……

……

……

……

……

……

Identify a statement from the passage which proves that Kwame was ashamed of the action he was about to take. (1mk)

……

……

What is Kwame Asante's burning ambition? (1mks)

……

……

……

Rewrite the following sentence in reported speech
'*Did you consult your friends before you married me ten years ago?*' *Akosua asked Kwame.*
(1 mks)

……

……

Give an instance of irony in the passage. (2mks)

……

……

……

……

……

'It is a grave to bury women alive whilst you men dance to the tom-tom on top of the grave.'
Explain the meaning of this statement. (2 marks)

……

……

……

……

……

What is Kwame's attitude towards women? (2mks)

……

……

……

……

Explain the meaning of the following words and phrases as used in the passage. (3 mks)

Disinfecting ……..

The words cut like a whip …….....

Impertinent ……...

LITERARY APPRECIATION:

BLOSSOMS OF THE SAVANNAH

Read the following excerpt and answer the questions that follow.

Although Resian had a lot to complain and grumble about in life in their new environment, Taiyo found it tolerable. For instance,
she gladly discovered that mornings in their new home began with a lively chatter of birds in the trees surrounding their house. That gave the home an atmosphere of tranquility and peace.

However, one of the unpleasant aspects that the girls had to live with was the constant violation of their privacy. In Nasila, they soon discovered, the home belonged to all the clan members. It was not an unusual thing to get up in the morning to find the living room full of men and women who came early, not for any tangible business, but simply to share a sumptuous breakfast with their kith and kin. Taiyo and Resian were soon to get used to hearing an urgent knock at the door very early in the morning.

On opening, they would invariably be met by a grinning group of men or women who would unashamedly ask them what they were doing in bed that late in the morning. They would proceed to take seats in the living room and order them to serve them breakfast.

When they got used to what at first, they considered negative aspects of the Nasila culture, Taiyo and Resian adjusted accordingly and soon they began to live harmoniously with the people. Their father was out of the homestead most of the time working at the shop and organizing other business matters. His absence meant the absence of his irksome and corrosive remarks that always heightened tension in the house. In his absence, the house was a continuous joy with comfort and conveniences, and the girls found it pleasurable to keep it clean and well-arranged.

Questions

What happens immediately after this extract? (5 marks)

……

……

……

……

……

……

Where had the family been living before and why did they move? (3 marks)

……

……

……

Give the character traits of the following: (6marks)

Taiyo

……

……

……

……

……

……

The people of Nasila

……

……

……

……

……

……

Discuss a theme implied in the extract. (4 marks)

……

……

……

……

……

……

Using the rest of the book, cite and explain one cultural aspect that had a life changing effect on the lives of the two girls (4mks)

……

……

……

……

……

……

Explain a stylistic device used in the extract. (2mks)

……

……

……

……

……

……

Taiyo and Resian adjusted accordingly? Add a question tag. (1mk)

……

……

……

ORAL LITERATURE

The Man, His Son and The Squirrel

There was a certain town whose only occupation was catching squirrels (ground squirrels). There was a man in this town who excelled at catching squirrels. One squirrel was so smart that it eluded everyone in town. It was said that only this man said to his son, "Come, let's go to catch the squirrel." They took an axe; they found the squirrel near its hole. Then the squirrel ran and entered its hole. They searched out all the holes, then they stopped them up. Then the man said to his son, "Don't let the quirrel get out of its hole." He answered, "Okay." But one hole wasn't stopped up, and the squirrel escaped. When it escaped, the father came to his son and said to him, "Why did you let it escape? If I go home now, I will beashmed." He grabbed the axe and struck his son. Then he went on his way and left his son unconscious. Ants began to fill his eyeballs an his ears; vultures were circling above him.

In the afternnon, the headman of a rich caravan arrived at the spot. When he arrived, he setp up camp. Then he got up and went for a stroll and saw the boy. He called his slaves to take him and have him washed and shaved. The boy recovered. The headman had no offspring. When he took the boy, he decided that he would make him his son. He sent a message to the chief of the town, telling him that he had an offspring, that he was happy he had become a complete man, and that he would now receive the gifts due to him.

The chief said, "This is a lie. He is not his son. If he is his son, then let him come that I can see." Then the headman arrived in town. The chief gave his sons horses worth ten pounds. He said, "Go and join the son of the headman. Have a race. When you finish give these

horses away" (forcing him to do the same). They did it and they returned. the next day, the chief again gave them horses worth ten pounds. They did as the day before. They did it five times. They ran out of horses. Then the chief said, "Indeed, it is his son I have run out of horses. If it weren't his son, he wouldn't agree to let him give his own horses away to match the presents." Then the chief summoned his daughter. The Gralladima brought his to help. The Madaki also gave, and the Makama gave. Altogether, four wives. The chief gave a big house. The headman came and brought twenty concubines and gave to his son. There was continuous feasting.

Then one day the son saw his father, the one who had knocked him down with the axe because of the squirrels. The father came to the house of his son and said, "Throw away your gown and start catching squirrels." The slaves of the headman said, "This is a crazy man, let us all strike him." The boy said to him, "This is my father, the one who sired me." The headman said, "I have already lied to the chief. Let us keep that secret. I will give your father wealth. Let him go home. Should he want to see you, let him come to visit you. If you want to see him, then you can go and visit him." The real father said he did not agree. Then the headman said, "Well then, let us go out in the countryside." They went. The headman unsheathed his sword. He handed it to the son, and said, "Kill one of the two of us." Here ends the story.

Questions

(i) Classify the above narrative. (1 mk)

……..

……..

(ii) What are the characteristics of the above classification? (2 mks)

……..

……..

What is the function of this narrative? (1 mk)

……..

Identify and illustrate any <u>three</u> features of oral narrative evident in the story. (6 mks)

……..

……..

……..

……..

……..

……..

Give <u>one</u> economic activity that is undertaken by the community referred to in this narrative. (2 mks)

……..

……..

Describe the character of the following:

The young man (2 mks)

……..

……..

(ii) his father (2 mks)

……..

……..

(e) Whom do your think would be the most appropriate audience of this story. (2 mks)

……..

……..

(f) What is the moral lesson of this narrative? (2 mks)

……..

……..

GRAMMAR

Rewrite the following sentences as instructed.

(i) (a) The photographs will be taken at the venue of the wedding. The photographs will be taken in a reputable studio. (Combine into once sentence using 'either …..or,,,,') (1 mk)

……

……

(b) Neither the children nor the peasant ……allowed to go to the hall yesterday. (Rewrite filling the blank with an appropriate auxiliary verb). (1 mk)

……

……

(ii) (a) The principal noticed serious laxity among the students. He warned them against such behaviour. (Combine the sentence using present participle.) (1 mk)

……

……

(b) The farmer's cow gives twenty-five kilos of milk everyday. He feeds and waters it very well. (Combine using the present participle). (1 mk)

……

……

(iii)Underline the gerund in the following sentence.

Kibet is studying but swimming is his hobby. (1 mk)

(iv) Replace the underlined word with a phrasal verb.

It is not good to <u>despise</u> other people. (1 mk)

……

I am currently <u>living</u> with my brother in Karen. (1 mk)

……

The principal was <u>annoyed</u> with the three boys. (1 mk)

……

Rewrite the following sentences correcting the errors.

(i) There are situations of which you need to act with speed or else the consequences will catch up with you. (1 mk)

……

……

(ii) She likes football as it is more superior than hockey. (1 mk)

……

Fill in the blanks with the appropriate prepositions.

(i) He was charged …….forging property inheritance document. (1 mk)

(ii) Kamau deals ……..groceries. (1 mk)

Give two meanings from the sentence below.

"Did you see the girls with a telescope?" (1 mk)

……

……

……

……

Use the correct form of the words in the brackets to fill in the blanks.

(i) The couple has applied for a divorce over ……..……differences. (reconcile).

(1 mk)

(ii) That matter is highly ……..…..(contest) in a court of law. (1 mk)

ENGLISH PAPER 3 - 2021 K.C.SE
Prediction Set 1

INSTRUCTIONS TO CANDIDATES

1. *Write your details in the spaces provided above.*
2. *Answer three questions only*
3. *Questions one and two are compulsory*
4. *In question three choose only one of the optional texts you have prepared on.*
5. *Where a candidate presents work on more than one optional text, only the first one to appear will be marked.*
6. *Each of your essays must not exceed 450 words.*
7. *Candidates should check to ascertain that no questions are missing.*

I) Imaginative composition (compulsory) (20 marks)

Your relatives have organized a farewell party for you in preparation for your departure to the USA for further studies. Write the speech that you will deliver on that day.

2) Drama (compulsory) (20 marks)

The past always catches up with the present, sometimes with some unintended consequences. Using the play, A Doll's House, explain this statement.

3) Optional set texts

Either (20 marks)

a) The Short Story

The grass is always greener on the other side of the fence. Using the stories in the anthology, Memories we Lost and other Stories, discuss this adage. (20 marks)

Or

b) Drama

Using the play, Inheritance, explain the saying: the mouth that eats the seeds asks what it will plant. (20 marks)

Or

c) The Novel

The sea shapes the destiny of the Kino family. Discuss this statement using the book The Pearl. (20 marks)

KISWAHILI KARATASI YA 1 - 2021
K.C.SE Prediction Set 1

1. Andika tahariri kwa gazeti la Taifa Leo juu ya umuhimu kwa ushauri nasaha katika shule za upili kwa wanafunzi.(Alama 20)

2. Utandawazi una athari mbaya kwa maisha yetu jadili. (Alama 20)

3. Aambuaye nyayo safari imeanza (Alama 20)

4. "Mwanangu Nyanchama miaka kumi sasa tangu yakupate yaliyokupata.Shukuru Mola kwamba alikuhifadhi. Kuteleza si kuanguka..." ..... Endeleza Insha hii. (Alama 20)

KISWAHILI KARATASI YA 2 - 2021 K.C.SE
Prediction Set 1

1. **UFAHAMU (ALAMA 15)**

Soma ufhamu kisha ujibu maswali

Mojawapo ya masuala tata yanayokumba taifa letu la Kenya ni zimwi la ufisadi. Ufisadi huu umekuwa kizingiti kikubwa katika juhudi za serikali katika kuendeleza miradi ya maendeleo kwa raia wake. Kulingana na utafiti uliofanywa na shirika la Transparency International, Kenya imeorodheshwa miongoni mwa mataifa fisadi duniani. Utafiti huu umeleta mwamko mpya kwa serikali, upinzani pamoja na mashirika mengi ya humu nchini na ya kimataifa kupiga darubini suala hili.

Kwanza, suala la ubepari limeelekezewa lawama. Kuna baadhi ya watu ambao wanatamani kumiliki ulimwengu mzima, wana ***utashi*** wa kupokea mali kwa njia yoyote. Watu kama hawa ndio wameweka vikwazo na kulazimisha wenzao kutoa ***kadhongo*** ili wahudumiwe. Aidha, wafanyakazi wa serikali wasipolipwa vyema wanaweza kuitikia mpango wa ufisadi ili waeze kujipatia riziki. Sababu hhi ndio inawafanya baadhi ya polisi kushirikiana na wahalifu. Badala ya kutarajia pingu za polisi, wanatarajia pambaja baada ya kula mlungula.

Ukosefu wa kazi nchini pia umechangia pakubwa kukuza ufisadi. Vijana barobaro wanazururа ovyo ovyo huku wakitafuta kazi lakini hawapati kazi wala bazi. Ili wapate kazi wanalazimika kutoa ***kadhongo*** ndipo waajiriwe.

Ufisadi una madhara chungu nzima. Mojawapo wa madhara haya ni kuzorota kwa usalama nchini. Wahalifu humiliki silaha kinyume cha sheria. Silaha hizi hutumiwa kupora mali na kutekeleza mauaji. Tatizo hili limepiga dhoruba kali uchumi kwani wawekezaji wa kigeni wamesita kuwekeza humu nchini.

Eneo jingine ambapo ufisadi hutekelezwa ni katika ukwepaji ushuru. Ni bayana kwamba kulipa ushuru ni kujitegemea. Serikali hupata hela muhimu za kugharamia huduma kwa wananchi kupitia ulipaji wa ushuru. Basi ikiwa hela hizi zitapotea kupitia ukwepaji wa ushuru, serikali haitakuwa katika nafasi ya kutoa huduma kwa wananchi. Huduma hizi ni kama vile afya, nguvu za umeme, usalama, ujenzi wa barabara na miuondomsingi mingine miongoni mwa huduma nyingine. Aidha, serikali hushindwa kulipa mishahara ya wafanayikazi wake.

Ufisadi bila shaka umekuwa kidondandugu katika harakati za kuimarisha uchumi. Serikali inafaa kushutumiwa kwa ***kutovalia njuga*** suala hili ambalo linaendelea kuota mizizi kila uchao. Wanachi hawana budi kushirikiana na taasisi za kukabiliana na ufisadi ili kulizika janga hili katika kaburi la sahau.

Maswali

a. Taja kichwa mwafaka cha makala haya (alama 2)
b. Eleza kiini cha zimwi linalozungumziwa katika makala haya (alama 4)
c. Thinitisha kwamba ufisadi ni "kidondandugu" (alama 4)
d. Eleza namna uchumi umelamazwa kwakuwepo kwa ufisadi (alam 2)
e. Toa maana ya
    i. Utashi
    ii. Kadhongo iii. Kutovalia njuga

2. **UFUPISHO (ALAMA 15)**

Soma makala yafuatayo kisha ujibu maswali

Wataalamu wa maswala ya kielimu wanadai kuwa huenda nchi hii ikalaumiwa kwa kuendeleza mfumo wa elimu unaozingatia maslahi ya wakwasi na kuwapuuza wachochole. Mfumo huu wa elimu umezua mfumo mwingine wa kijamii ambapo watoto wa wenye hadhi wanaapata eleimu bora kuliko watoto wa maskini. Pengo baina ya haya matabaka linzaidi kupanuka kama ardhi na mbingu

Watoto kutoka jamii hohehahe wanasomea katika shule za umma zisizo na lolote wala chochote na watoto wa kifahari wanasomea katika shule za kibinafsi zilizo na vifaa mufti na mazingira faafu. Mfumo wa jinsi hii ni kuitia jamii kitanzi kwa sababu ya kuzuka kwa matabaka yanayohasimiana

Katika nchi ambapo asilimia sitini ya watu inaishi katika hali ambayo ni chini ya dola moja kila siku, watoto wengi huenda shuleni bila kula chochote na hushinda hivyo kutwa nzima na wasing'amue chochote darasani. Walimu wao nao hawana ilhamu au kariha ya kufanya kazi kwa sabau mazingira ya kikazi ni mabovu na huenda shuleni shingo upande kama wakulima bila pembejeo. Madarasa yao ni mabanda na wengine husomea chini ya miti ambayo inaweza kukatwa wakati wowote na wachoma makaa waliokosana na mazingira. Unapowatazama watoto hawa, kile kinachoitwa sare ya shule kinakirihisha na kuyaudhi macho. Ni matambara yaliyosheheni viraka vya kila aina katika mseto wa ufakiri. Hawa ni wenzetu eti!

Tatizo hili limekuwa nyeti hasa kutokana na utandawazi wa mfumo wa soko huru ambao unaruhusu shule za kibinafsi kuendeshwa kama mashirika ya kibiashara. Karo inayolipwa katika shule hizi ni ya kibiashara, majengo na vifaa ni vya kibishiara, walimu ni wa kibiashara, ilmuradi kila jambo lalenga maslahi ya kibiashara ya walala hoi. Hapo ndipo chimbuko la makabila mawili maarufu nchini yaani matajiri walamba vidole na maskini wanaostakimu madongo-kuinama

Uchunguzi umethibitisha kwamba zaidi ya asilimia sitini ya wanafunzi wanaojiunga na shule za kitaifa hutoka katika shule za kibinafsi zinazomilikiwa na matajtri. Mbinu ya wizara ya Elimu ya kugawa nafasi kwa njia ya haki katika shule za kitaifa haijafua dafu kwa sababu matajiri wajanja huwasajili watoto wao kufanyia mitihani katika shule zisizokuwa na ushindani mkubwa zilizomo mashambani. Kwa kufanya hivyo, watoto wa maskini huwa wamefungiwa njia kotekote na kuporwa haki yao. Ama kwa kweli, mwenye nguvu mpishe kwani dau la mnyonge haliendi joshi.

Wanafunzi katika shule za binafsi hufunzwa katika makundi madogo amabyo humwezesha mwalimu kushughulikia mahitaji ya kibinafisi ya kila mtoto. Wazazi wao pia huwaajiri walimu wakati wa mapumziko ili kugongomeza au kushadidia mada ambazo hawakuzielewa vizuri shuleni. Upeo wa lugha wa watoto hawa hauwezi kulinganishwa na wa wenzao kwa sababu shule zao zina maktaba za kisasa, vifaa vya kisasa na vitu meme na hufunzwa teknolojia za kileo kuhsuu mawasiliano. Watoto hawa huandaliwa ziara za kieleimu ili kutanua uelewa wao wa mambo na vile vile hualikiwa watu wanoasifika katika jamii kuwahutubia shuleni mwao kuhusu mada mbalimbali. Wawasilishaji hawa huwa ni kielelezo tosha kwa watoto hawa. Mzazi aliyesoma hujua umuhimu wa elimu na hivyo basi huandaa mikakati mahsusi ili kumfaulisha mwanawe kinyume na wazazi wakata.

Ni bayana kuwa iwapo hivi ndivyo mambo yalivyo basi hata vyuo vikuu vitakuwa himaya ya watoto wa matajiri huku watoto wa kimaskini wakisubiri kuajiriwa nao kama walinzi na matopasi. Sera za elimu nchini haziwezi fanikiwa pale ambapo rasilimali muhimu zinatengewa watu wachache katika jamii. Watoto wa waunda sera hizi husomea katika shule ambazo hufuata mifumo ya kimataifa ambayo haina ukuruba na yetu hafifu. Katika majukwaa ya kisiasa utawasikia wakisifu

mfumo ambao watoto wao wanaukwepa kama ukoma. Imekuja kudhihirika kuwa wale wanaosemekana kuwa viongozi wa kesho ni wale ambao sasa hivi wansomea katika hizo akademia na kufuatilia mifumo ya kigeni au akademia zinazofuata mfumo wetu katika mazingira teule. Swali ni hili, kesho ya mtoto wa kimaskini ni ipi?

Inahitajika mikakati ya kimakusudi ili kulitanzua swala hili kabla ya milipuko ya kijamii kama vile ujambazi, uuaji, ubakaji, uraibu wa mihadarati na kadhalika kutokea. Ipo lazima ya kujenga shule vielelezo katika kila gatuzi ambazo zitafadhiliwa na serikali kwa kupewa mahitaji yote muhimu na lazima mpango wa lishe bora kuanzishwa katika shule za umma ili kukidhi matilaba ya watoto wote. Udahili wa wanfunzi katika shule za kiatifa na katika vyuo vikuu ni sharti uvalishwe vazi la utu na uzalendo bila ubaguzi. Shule za umma ziwe na walimu na madarasa ya kutosha ili kuondoa matatizo yaliyoibuka kutokana na kuanzishwa kwa mpango wa elimu bila malipo katika shule za msingi. Sera kuhusu shule za chekechea lazima izinduliwe kitaifa ili kusawazisha msingi wa kila mtoto kielemu. Walimu wa shule hizi za malezi lazima wawe na maadnalizi sawa yatakayowawezesha kusawazisha viwango kitaalamu. Mitaala yetu ilenge kuzalisha binadamu ambaye atajinufaisha yeye binafsi na taifa kwa jumla.

Maswali

a. Ni mabo yapi muhimu yanayojitokeza katika aya ya tatu hadi ya saba (maneno 80-85)
(alama 8, 1 utiririko)
Matayarisho.....
.....
Jibu..... .....

b. Ni mapendekezo yapi yanayotolewa katika aya ya mwisho (maneno 55-65) Alama 7, 1 ya utiririko)
Matayarisho.....
.....
Jibu..... .....

3. **MATUMIZI YA LUGHA (ALAMA 40)**

a. Kanusha sentensi ifuatayo:
Nyumba yake ina milango na mapambo mengi (alam 2)

b. Eleza maana nne za sentensi ifuatayo (alama 2)
Alinunuliwa ng'ombe na mtoto wake

c. Changanua sentensi ifuatayo kwa kutumia mishale (alama 4)
Wanafunzi wasiofuata maagizo watapata alama ambazo zitawaudhi

d. Eleza maana ya semi zifuatazo
   i. Ana mkono wa msiba (alama 1)
   ii. Pele hupewa msi kucha (alama 1)

e.
   i. Eleza maana ya kirai (alama 1)
   ii. Tambulisha aina za virai vilivyopigiwa mstari katika sentensi ifuatayo (alama 1)
   <u>Wale wasichana watundu</u> walijificha **<u>chini ya</u>** dawati mwalimu alipowaita

f. Taja aina moja ya sentensi kidhamira na kuitolea mfano mwafaka (alama 1)

g. Andika kifungu kifuatacho katika usemi halisi (alama 4)
Wanafunzi waliambiwa na mwalimu wao kuwa watakaporudi nyumbani waoge, wale halafu waanze kusoma moja kwa moja badala ya kupoteza wakati wao kutazama vipindi vya runinga. Aliwasisitizia kuwa waliokuwa wakifanya maonyesho kwenye runinga walikuwa tayari wamefuzu vyuoni na kuajiriwa kazi

h. Andika sentensi ifuatyo katika udogo umoja (alama 2)
Tulipoyaona yalikuwa yakisoma majitabu

i. Tunga sentensi moja kuonyesha matumizi mawili ya kiambishi -KI- (alama 1)

j. Eleza matumizi ya kiambishi -KU- katika sentensi ifuatayo: (alama 2)

Kucheza huku kulitufurahisha ingawa mgeni hakufurahi

k. Iandike upya sentensi hii kwa kugeuza shamirisho kitondo kuwa kiima (alama 2)

Tunamwandalia mgeni chakula sasa hivi

l. Tunga sentensi mbili ili kubainisha matumizi ya alama ya mshazari (alama 2) m.

i. Eleza maana ya mofimu (alama 1)

ii. Bainisha mofimu -li- katika utungo huu (alama 2)

Alikimbilia shamba

n.

i. Eleza maana ya shadda (alama 1)

ii. Tia shadda katika neno hili kutoa maana mbili tofauti (alama 2)

Katakata

o. Tofautisha maneno haya kwa kutumia sentensi moja (alama 2)

i. Vuka

ii. Fuka

p. Tumia neno shirika kama nomino na kama kielezi katika sentensi moja (alama 2)

q. Unda nomino moja dhahania kutokana na kitenzi -cha (alama 1)

r. Eleza sifa bainifu zozote mbili za sauti /ch/ (alama 1)

4. **ISIMU JAMII (ALAMA 10)**

a. Eleza/bainisha ithibati kuwa kiswahili ni lugha ya kibantu (alama 4)

b. Tofautisha istilahi zifuatazo katika Isimu Jamii

i. Uwili lugha
na ujozi lugha

ii. Lafudhi na
lahaja iii. Sajili
na msimbo

KISWAHILI KARATASI YA 3 - 2021 K.C.SE
Prediction Set 1

MAAGIZO:

- **1.Jibu maswali MANNE Pekee.**
- **2.Swali la kwanza ni la lazima.**
- **3.Maswali mengine yachaguliwe kutoka sehemu zilizobaki.**

4.Usijibu maswali mawili kutoka sehemu moja.

5.Kila swali lina alama ishirini

1.SEHEMU A: USHAIRI (LAZIMA)

Eti
Mimi niondoke hapa
Niondoke hapa kwangu
Nimesaki, licha ya risasi
Vitisho na mauaji, siondoki

Mimi
Siondoki
Siondoki siondoki
Niondoke hapa kwangu!
Kwa mateke hata na mikuki
Marungu na bunduki, siondoki

Hapa
Siondoki
Mimi ni Pahame!
Niondoke hapa kwangu!
Fujo na ghasia zikizuka
Na kani ya waporaji, siondoki

Haki
Siondoki
Kwangu siondoki
Niondoke hapa kwangu!
Nawaje; waje wanaokuja
Mabepari wadhalimu, siondoki

Kamwe
Siondoki
Ng'oo hapa kwangu!
Katizame chini mti ule!
Walizikwa babu zangu, siondoki

Sendi
Nende wapi?
Si hapa kitovu changu
Niondoke hapa kwangu
Wangawa na vijikaratasi
Si kwamba hapa si kwangu, siondoki

Katu
Siondoki
Sihitaji karatasi
Niondoke hapa kwangu
Yangu mimi ni ardhi hii
Wala si makaratasi, siondoki

Maswali

a) Shairi hili ni la aina gani? Kwa nini (alama 2)

b) Taja masaibu anayopitia mzungumzaji (alama 4)

c) Eleza toni ya shairi hili (alama 2)

d) Eleza muundo wa shairi hili (alama 3)

e) Tambua matumizi ya mbinu ya usambamba (alama 2)

f) Andika ubeti wa tano kwa lugha nathari (alama 4)
g) Tambua idhini moja ya mtunzi (alama 1)
h) Eleza maana ya maneno yafuatayo kama yalivyotumika katika shairi (alama 3)
(i) Karatasi
(ii) Nimesaki
(iii)kitovu

2<u>SEHEMU B TAMTHILIA YA KIGOGO</u>
2.Uliona nini kwa huyo zebe wako ? Eti mapenzi!
Eleza muktadha wa dondoo. (al. 4)
Andika mbinu za lugha zinazojitokeza kwenye dondoo hili (al. 4)
Taja hulka za mnenaji unajitokeza katika dondoo. (al. 2)
Mwanamke ni kiumbe wa kukandamizwa. Thibitisha kauli hii ukirekjelea tamthilia. (al. 10)
3.wa kurejelea tamthlia ya 'Kigogo ya Pauline Kea, onyesha jinsi ambavyo viongozi wengi katika nchi za kiafrika wamejawa na tamaa. (alama 20)

SEHEMUC.RIWAYA YA CHOZI LA HERI(ASSUMPTA MATEI)

4.“ Kwa kweli ni hali ngumu hii”
Weka dondoo katika muktadha wake. (alama4)
Ni hali gani yamsemewa inayorejelewa kwenye dondoo. (alama16)

5) Ukabila ni tatizo sugu katika nchi nyingi za Kiafrika. Tetea kauli hii ukilejelea Chozi la Heri
(al. 20)

Alifa Chokocho na Dumu Kayanda: Tumbo Lisiloshiba na Hadithi nyingine
jibu swali la 6 au la 7
6.Ukirejelea hadithi zifuatazo, eleza jinsi maudhui ya mapenzi na asasi ya ndoa yanavyojitokeza.
(alama20
a) Mapenzi ya kifaurongo
b) Masharti ya kisasa
c) Ndoto ya Mashaka
d) Mtihani wa maisha
Au

Shibe inatumaliza : Salma Omar Hamad

7.“Hiyo ni dharau ndugu yangu. Kwa nini kila siku tunakula sisi kwa niaba ya wengine ?”
a) Eleza muktadha wa dondoo hili. (alama 4)
b)Eleza sifa za msemaji. (alama 6)

c) Eleza jinsi viongozi wanavyokuwa wabadhirifu. (alama 10)

SEHEMU YA E: FASIHI SIMULIZI

8a) Fafanua mchakato/fomula ya uwasilishaji wa vitendawili. (alama4)

b) Linganisha naulinganue vitendawili na methali. (alama10)

c) Toa sababu sita za kudidimia kwa fasihi simulizi. (alama6)

BIOLOGY PAPER 1 - 2021
K.C.SE Prediction Set 1

1. Name the reagent used for testing presence of (3 marks)
    a. Starch
    b. Reducing sugars
    c. Vitamin c
2. State the processes which occur in each of the following organelles. (2 marks) a. Chloroplast
    b. Mitochondrion
    c. Ribosomes
3. A student observed a specimen through a light microscope. He used the objective lens marked X40.If he indicated the magnification of the image as x 400, what was the eye - piece magnification? (Show your working). (3 marks)
4. State the function of the following in mammalian trachea. (3 marks)
    a. Rings of cartilage
    b. Mucus
    c. Cilia 5.

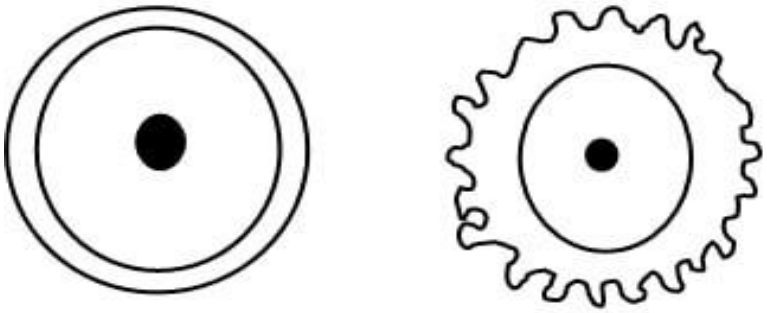
    a. What do you understand by the term biological control?
    (1 mark)
    b. Explain why all the energy produced by producers does not flow to the tertiary consumers. (2 marks)
6. Name any **three** forces that maintain the transpiration stream (3 marks)
7. Give the form in which the following gases are transported in blood. (3 marks a.
    Oxygen
    b. C
    arbon (IV)
    oxide
    c. C
    arbon (II)
    oxide 8.

    a. Name the **main** group of organisms which comprise the Kingdom Monera. (1mark)
    b. State any **three** ways in which the organisms named in 8 (a) above affect human lives. (3 marks)
    c. State the **main** characteristics of Monera which distinguish it from all other kingdoms. (1 mark)
9. State ways in which the xylem tissue is adapted to carry out its function. (3marks)
10. Why is it necessary for an athlete to breathe heavily after running? (2 marks)
11. State ways in which the following diseases can be prevented
    a. Typhoid and amoebic dysentery (2 marks)
    b. Malaria (2 marks)
12. What are the **three** distinguishing features of phylum Arthropoda? (3marks) 13.

a. Name the **main** product of the dark stage of photosynthesis. (1mark)
b. What is the role of chlorophyll during photosynthesis (2mark)

14. Name **three** mechanisms that prevent self-pollination in flowers that have both male and female parts. (3 marks)
15. State **three** applications of anaerobic respiration. (3 marks)
16. What is the significance of highly folded inner membrane of a mitochondrion? (2 marks)
17. Why is it necessary for blood from the gut to pass through the liver before joining general circulation? (2 marks)
18. A person's urine tested positive for reducing sugars.
    a. Name the type of sugar present in the urine. (1mark)
    b. Name the gland and the hormone which failed to control the above condition. (2marks)
       Gland……
       Hormone……
    c. Which disease was the person suffering from? (1mark)
19. State **two** roles played by the process of reproduction. (2marks)
20. What is the habitat of the following plants? (3marks)
    a. Xerophytes
    b. Hydrophytes
    c. Halophytes 21.
    a. State ways in which molars are adapted to their functions. (2marks)
    b. Name any **two** dental diseases. (2 marks)

22. How is the sperm cell adapted to carry out its function? (3 marks) 23.
The following are diagrams of two pollen grains.



K L

a. State one observable difference between K and L. (1 mark)
b. State the agent of pollination for each of them. (2 marks)
   K……
   L……

24. How do sunken stomata reduce transpiration? (2 marks)
25. Give the classes to which the following animals belong. (3 marks)
    a. Human being
    b. House fly
    c. Spider 26.

a. State **one** event that occurs in prophase of meiosis I which does not occur in prophase of mitosis. (1 mark)

b. What are the results of the above phenomena? (2 marks)

27. Explain why growing grass die a few days when salt is sprinkled on it. (3 marks)

walimuepublishers@gmail.com

BIOLOGY PAPER 2

2021 K.C.SE Prediction Set 1

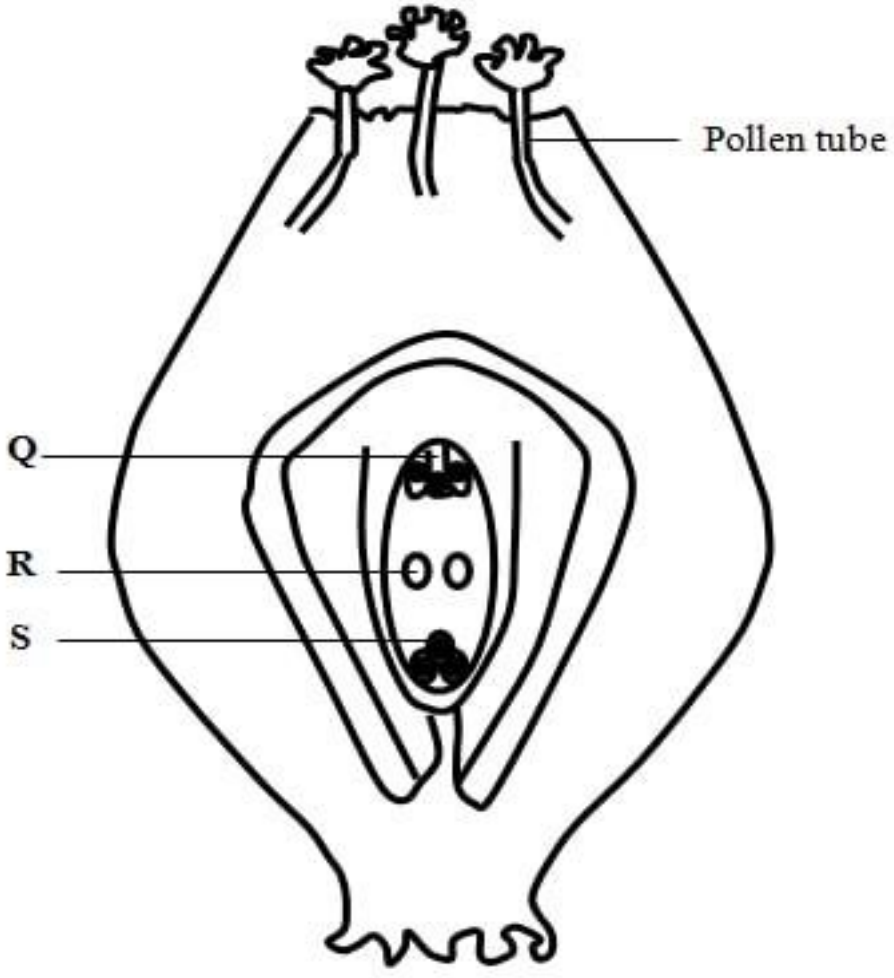
1.

a. What is meant by the following terms?

i. Protandry (1mark)

ii. Self sterility (1mark)

b. The diagram below shows a stage during fertilization in a plant.



i. Name the parts labelled Q,R and S (3 marks)

Q……

R……

S……

ii. State two functions of the pollen tube (2 marks) iii. On the diagram label the microphyle. (1mark)

2.

a. Explain what happens to excess amino acids in the liver of humans. (3marks)

b. Which portions of the human nephron are only found in the cortex? (3 marks) c.

i. What would happen if a person produced less antidiuretic hormone? (1 mark) ii. What term is given to the condition described in C (i) above? (1mark)

3.

a.

i. What is meant by the term biological control? (1mark)

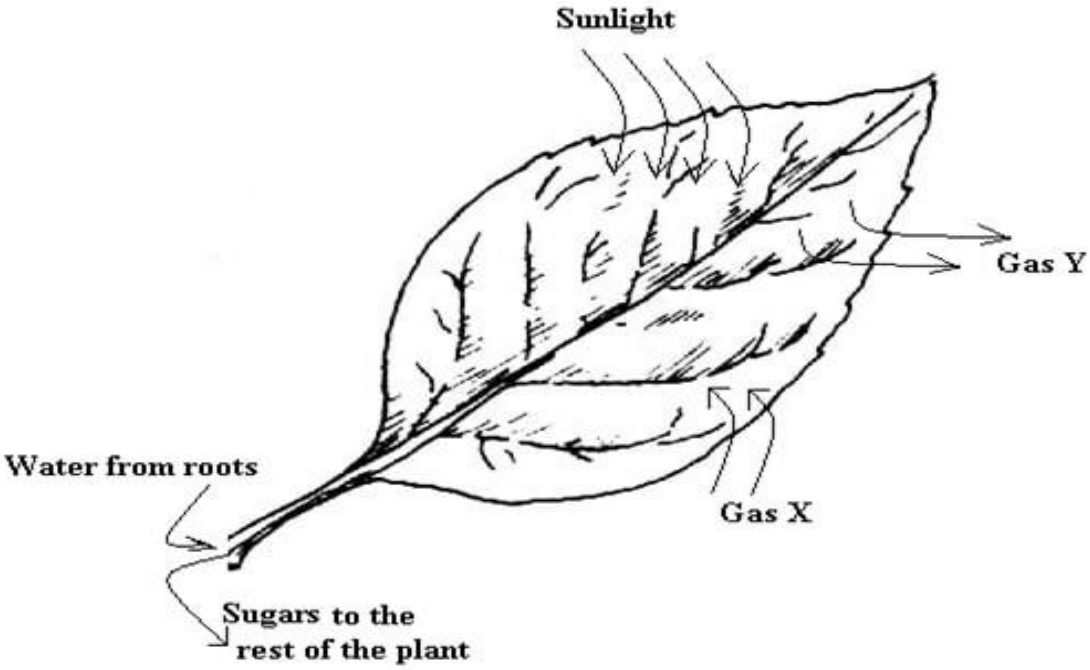
ii. Give an example of biological control. (1mark) b.

i. What is eutrophication? (3marks)

ii. What are the effects of eutrophication? (3 marks)

c. Name a substance that is responsible for acid rain. (1mark)

4. Leaves are the organs of photosynthesis. The following diagram shows what happens in a plant leaf during photosynthesis.



a. Give two ways in which leaves are adapted to absorb light. (2 marks)

b. Name the gases labelled X and Y. (2marks)

X……

Y……

c. Name the tissue which transport:

i. Water in to the leaf. (1 mark)

ii. Sugars out of the leaf. (1 mark)

d. Explain why it is an advantage for the plant to store carbohydrates as starch rather than as sugars. (2marks)

5. Some millet seeds were socked in water for two days. They were then broken into small pieces and placed on the surface of agar containing starch. After two days it was found that the agar no longer contained starch.

a. Suggest how the test for starch in the agar was carried out. (1 mark)

b. Explain why there was no starch in the agar after two days. (2marks)

c. Why was it necessary to soak the seeds? (1mark)

d. Why were the millet seeds broken into small pieces? (1mark)

e. State the observation that would be made if the seeds had been soaked in boiling water? (1 mark)

f. Suggest a control experiment that would have been suitable. (2marks)

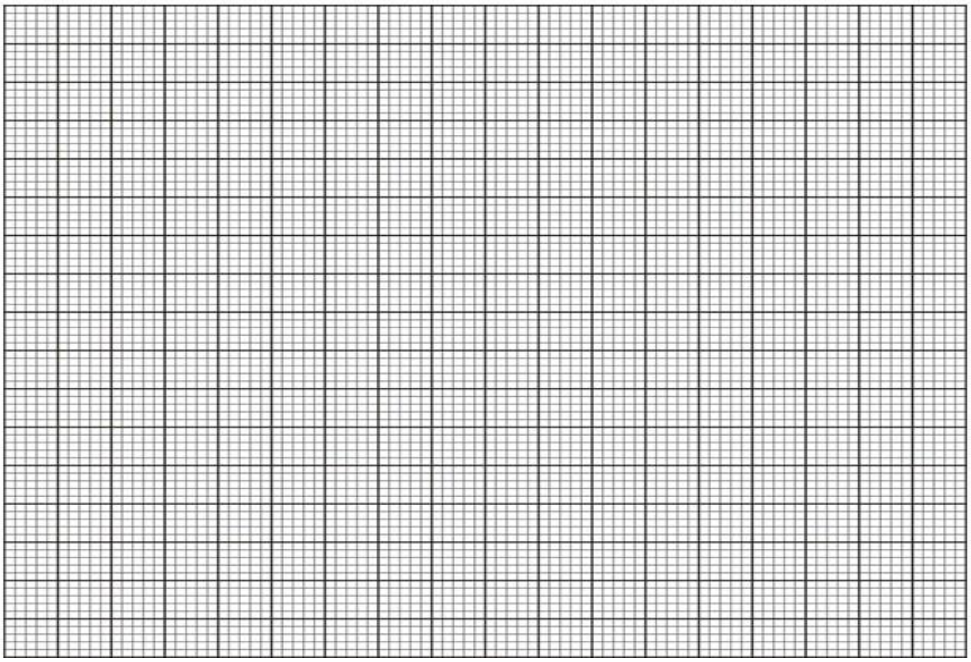
SECTION B:

Answer **question 6 (compulsory)** and either question 7 or 8 in the spaces provided after question 8

6. A research was carried to determine the trend of growth of some boys and girls.Their average mass in kilograms was taken separately for a period of 20 years and tabulated as shown in the table below.

Age	**Average mass of boys (kg)**	**Average mass of girls (kg)**
0	2.5	2.5
2	11.5	11.5
4	15.0	16.0
6	18.5	19.3
8	22.1	27.1
10	25.1	27.1
12	27.5	30.5
14	37.0	35.5
16	44.0	44.0
18	46.9	52.0
20	48.5	55

a. On the same axis draw a graph of the average mass of the girls and boys against age. (7 marks)



b. From the graph , determine the;-
   i. Mass of boys at the age of 11 years. (1 mark)
   ii. Growth rate of girls between ages 13 and 15. (3 marks)

c. Account for the change in the mass of girls during the age stated in (ii) above. (2 marks)

d. Explain the trend observed in the curves for both boys and girls. (2 marks)

e. Why do girls above 10 years require in take of food that is richer in iron than boys of the same age? (2 marks)

f. Apart from using average mass to estimate growth in human beings, name two other parameters that can be used. (2 marks)

7. Describe how the various parts of the human digestive system are adapted to their functions. (20 marks)
8.
    a. State the causes of air pollution. (5 marks)
    b. State h
    c. ow air pollutants affect organisms hence state how air pollution should be controlled. (15 marks)

BIOLOGY PAPER 3 - 2021 K.C.SE Prediction Set 1

1.

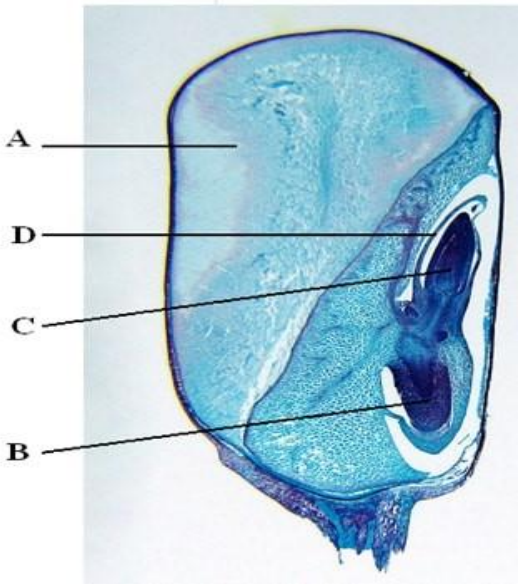
a. You are provided with a solution L. Using the reagents provided; determine the food compounds in L. Fill in the table below.

FOOD COMPOUND	PROCEDURE	OBSERVATION	CONCLUSION

b. Place 10mls of solution L in a visking tubing. Tie both ends and place it in 50mls of distilled water contained in a beaker.leave the set up for 20 minutes and make observations. i. Observations. (1mark)

ii. Account for the observation in b (i) above. (2marks) iii. Give the equivalent of a visking in the bodies of living organisms. (1mark)

2. Study the photomicrograph of the longitudinal section of a maize fruit below and answer the questions that follow.



a.

i. Name the parts labelled A, B, C and D. (4marks)

A

B

C

D

ii. Give the role played by A and D. (2 marks)

A

D

b.

i. Name the type of germination exhibited by maize grain. (1 mark)

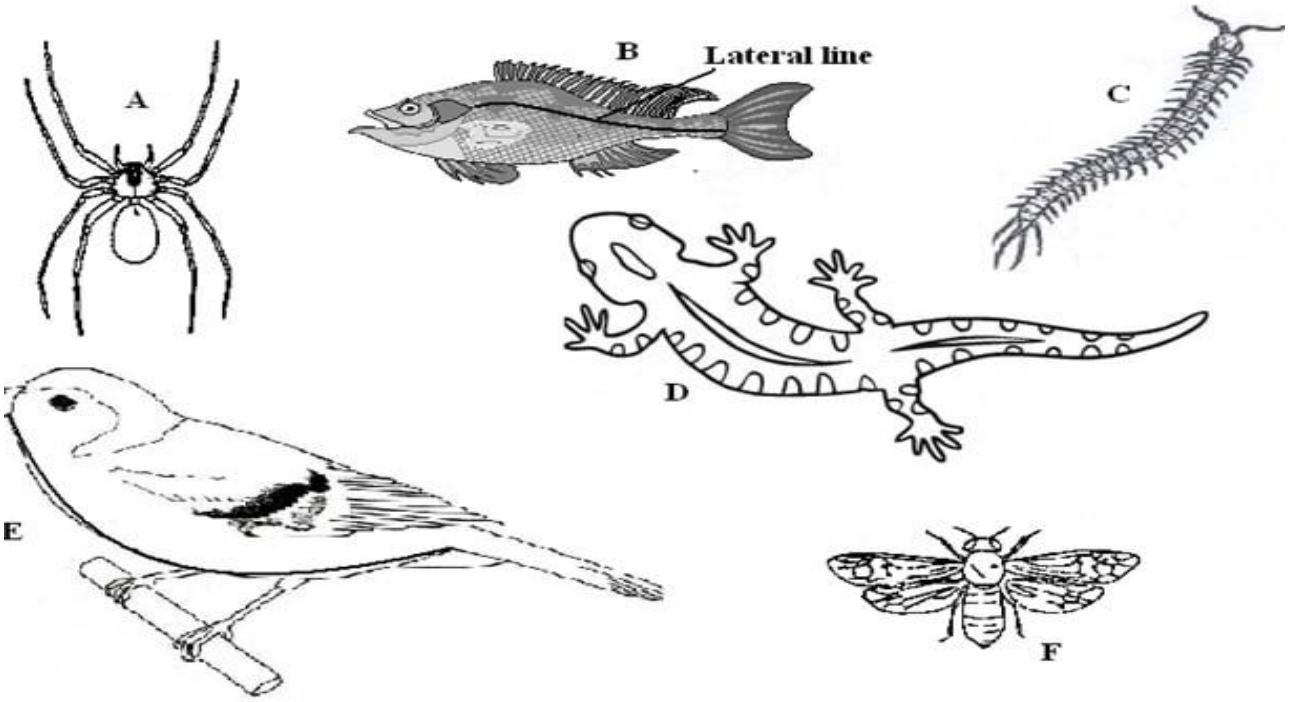
ii. Place the organisms from where the photomicrograph was obtained into its

Kingdom
Division
Class (3marks)

iii. State three characteristics of members of the class identified in b (ii) above (3 marks

c. Give one reason why the maize grain is classified as a fruit. (1mark)

3. Study the organisms drawn below and answer the questions that follow.



a. Use the dichotomous key below to identify the class the organisms belong to. (12 marks)

a.

a. Phylum Chordata
…… go to 2

b. Phylum arthropoda
……. go to 3 b.

a. Has scales on the body …… go to 4

b. Has no scales on the body ……..… Mammalia c.

a. Has cephalothorax
……..……. Arachnida

b. Has no cephalothorax
……. go to 5 d.

a. Has fins
…… Pisces

b. Has no fins
……... go to 7 e.

a. Has three pairs of legs ……. Insecta

b. Has more than three pairs of legs …… go to 6 f.

a. Two pairs of legs per segment …… Diplopoda

b. One pairs of legs per segment ……. Chilopoda g.

a. Has feathers …… Aves

b. Has no feathers …… go to 8 h.

a. Has a tail …….. Reptilia

b. Has no tail …….. Amphibia

Specimen	Step followed	Identity
A		
B		
C		
D		
E		
F		

b. If the actual length from the tip of the mouth to the tip of the tail of the specimen B is 100 mm, calculate the magnification. (2marks)

GEOGRAPHY PAPER 1 - 2021 K.C.SE Prediction Set 1

SECTION A (25 MARKS)

*Answer **ALL** the questions in this section*

1.

a. State briefly **three** ways how air pressure influences the weather of a place. (3 marks)

b. Identify **two** Global winds that influence the climate of Kenya. (2 marks) 2.

a. Give **two** examples of chemically formed sedimentary rocks. (2 marks)

b. State **three** conditions necessary for the growth of coral. (3 marks) 3.

a. Name the **two** theories that explain the origin of the earth. (2 marks)

b. Give **three** proofs that the earth is oblate spheroid. (3 marks) 4.

a. Name the categories of lakes formed by earth movement. (2 marks)

b. Give **two** examples from East Africa of each category named in (a). (2 marks)

5.

a. Define of hydrological cycle. (2 marks)

b. State **four** factors that determine the amount of water that sinks into the ground or flows on the surface. (4 marks)

SECTION B (75 MARKS)

*Answer question **6** and **any other two** questions from this section.*

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 East of Easting 40 and North of Northing 27. (3 marks

b.

i. What is the bearing of air photo principle point at grid square 2931 from the air photo principle point at grid square 3426. (2 marks)

ii. Measure the distance of the dry weather road (C640) from the junction at point M(345142) to the junction at N(416200) give your answer in kilometres.

(2 marks

c.

i. Draw a rectangle measuring 3 cm by 4 cm to represent the area in the map extract bounded by Easting's 28 and 31 and Northing's 11 and 15. (1 mark)

ii. On the rectangle drawn, mark and name the following;

Loose surface road (1 mark)

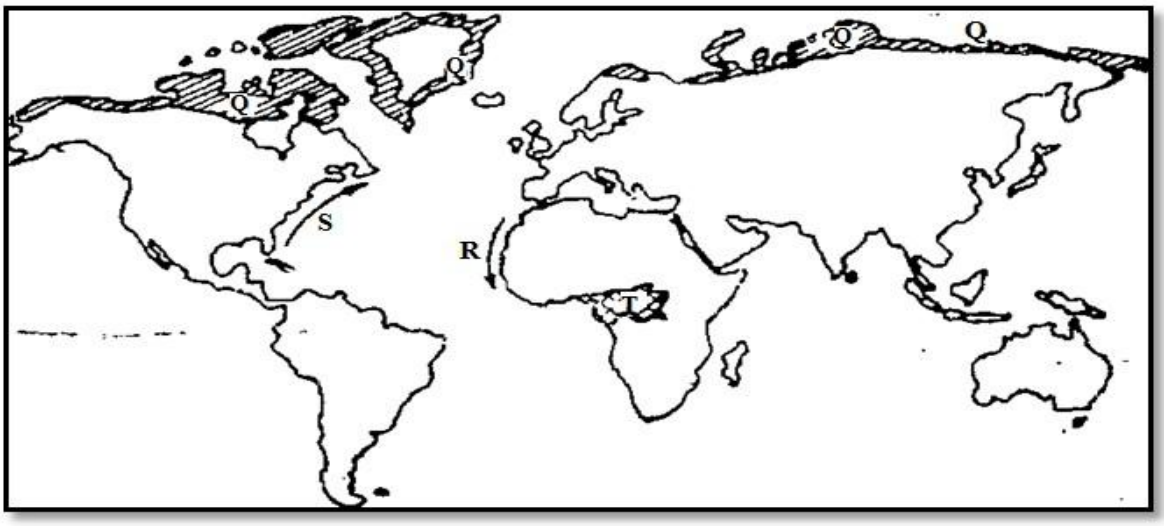
Air photo principle point (1 mark)

- Swamp (1 mark)
- Pond (1 mark)

d.

i. Identify **four** social services offered in Kitale Municipality. (4 marks) ii. Describe the drainage of the area covered by the map. (5 marks)

7. Use the map below to answer questions (a) and (b).



a. Name;
   i. The type of climate found in the shaded area marked Q. (1 mark)
   ii. The ocean current marked R and S. (2 marks)

b. Describe the characteristics of the type of climate found in the shaded area marked T. (8 marks)

c. Explain how the following factors influence climate.
   i. Altitude (4 marks)
   ii. Distance from the sea (4 marks)

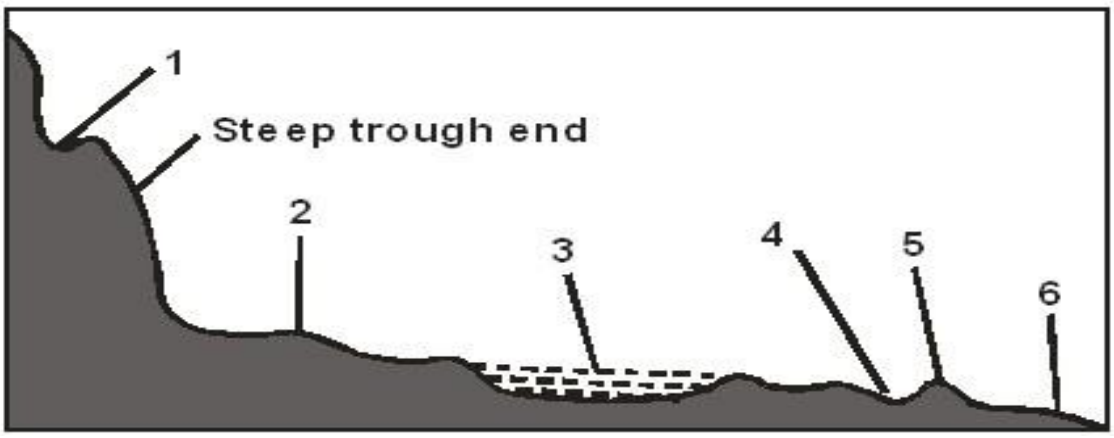
d.

i. Explain **two** effects of climate change to the physical environment (4 marks) ii. State **two** climatical conditions experienced in the Sahara desert. (2 marks

8.

a.

i. Identify **two** factors that influence glacial erosion. (2 marks)
ii. The diagram below shows the long profile of a glacial trough. Study it carefully and answer the questions that follow.



Name the parts labeled 1 to 6. (6 marks)

b. Describe the **four** various ways in which tills are formed at the coast. (8 marks) c.

i. What is an erratic? (2 marks)

ii. Give **three** examples of areas with erratics. (3 marks)

d. A field study was carried out in an area affected by wind action.

i. List **two** types of interviews the study would have made use of. (2 marks) ii. Give **two** problems the researcher would have experienced. (2 marks)

9.

a. What is natural vegetation? (2 marks)

b.

i. Give the types of grassland vegetation found in the following countries. (3 marks)

- New Zealand
-
-

Argentina

South

Africa

ii. State **two** factors why mountain tops have no vegetation. (2 marks) c.

i. Explain **four** ways in which coniferous forest is adapted to the climatic conditions. (8 marks) ii. Explain how the following factors influence the distribution of vegetation.

- Altitude (2 marks)
- Human beings (2 marks)

d. You are planning to carry out a fieldstudy on the forest vegetation near your school.

i. State **four** reasons why it is necessary to have a route map. (4 marks) ii. Give **two** reasons why you need a tape measure. (2 marks)

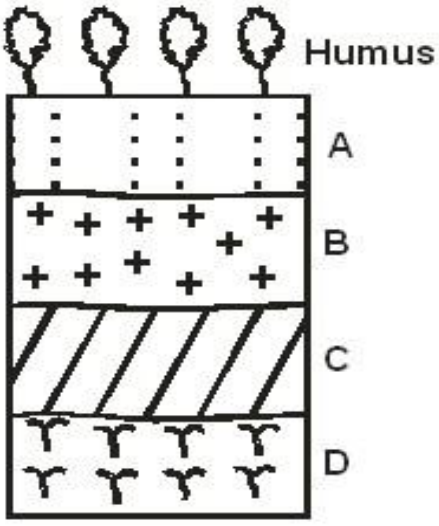
10.

a.

i. What is soil? (2 marks)

ii. Give **three** components of soils. (3 marks)

b. The diagram below shows different layers of soil. Use it to answer questions b) i), ii), iii).



A SOIL PROFILE

i. Name the soil layers marked B, C, and D. (3 marks)
ii. Give **two** main processes of soil formation which takes place in horizon A. (2 marks)
iii. Name **four** characteristics of soil in horizon B. (4 marks)

c. Explain how the following helps in the maintenance of soil fertility and quality.

- Crop rotation (2 marks)
- Mixed farming (2 marks)
- Bush fallowing (2 marks)

d. State **five** significances of soils to human activities. (5 marks)

GEOGRAPHY PAPER 2 - 2021 K.C.SE Prediction Set 1

SECTION A (25 MARKS) *Answer*

***ALL** the questions in this section*

1.

a. Name any **two** underground mining methods. (2 marks)

b. State any **three** negative effects of mining on the environment. (3 marks)

2.

a. List down **three** human factors that favour wildlife conservation. (3 marks)

b. State **two** advantages of domestic tourism in Kenya. (2 marks) 3.

a. What are floods? (2 marks)

b. Name **three** rivers in Kenya which cause large scale flooding. (3 marks)

4.

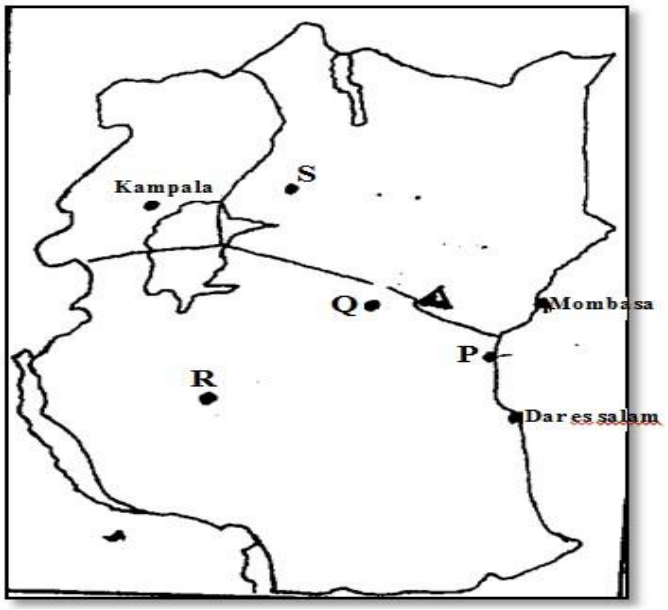
a. Define the following terms;

i. Fertility rate (1 mark)

ii. Mortality rate (1 mark)

b. State **three** types of information that may be derived from an age-sex pyramid. (3 marks)

5. Use the map of East Africa below to answer the questions that follow.



a. Name the towns marked P, Q and R. (3 marks)

b. State **two** major functions of the town marked S. (2 marks)

SECTION B (75 MARKS)

*Answer question 6 and **any other two** questions from this section*

6. The table below shows the value of export crops from Kenya in the year 1995.

Crop / Year	1995
Maize	224,000,000
Coffee	168,000,000
Tea	320,000,000
Horticultural	190,000,000
TOTAL	902,000,000

Use it to answer the questions below.

a.

i. Draw a divided rectangle measuring 15cm to represent the above data. (9 marks)

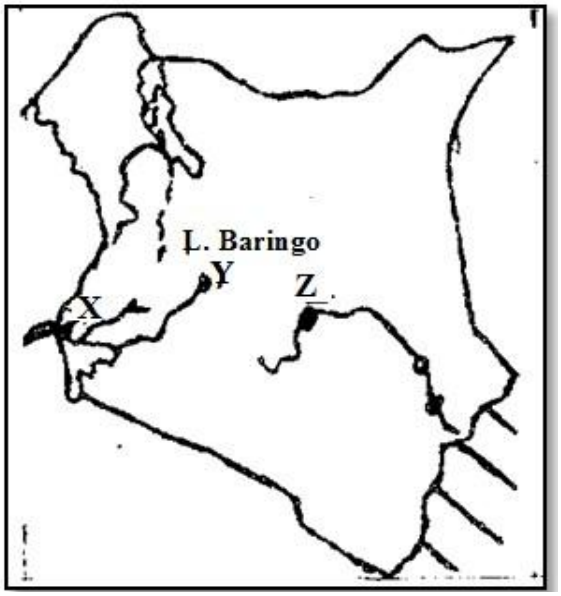
ii. State **three** advantages of using divided rectangles to represent geographical data. (3 marks)

b. State **four** physical conditions that favour coffee growing in Kenya highlands. (4 marks)

c. Describe the processing of coffee from harvesting to marketing. (6 marks)

d. List **three** ways in which planted coffee is taken care by farmers. (3 marks)

7. Use the map of Kenya below to answer question 7. a) i), ii) and iii).



a.

i. Identify the irrigation schemes marked X, Y and Z and in each case the main crop grown. (6 marks)

ii. Explain **four** factors that led to the location of irrigation scheme Y. (8 marks)

iii. State **four** problems that are experienced in the irrigation marked Z. (4 marks) b. What is a polder? (2 marks)

c. Give **five** benefits of the Zuyder Zee project. (5 marks) 8.

a.

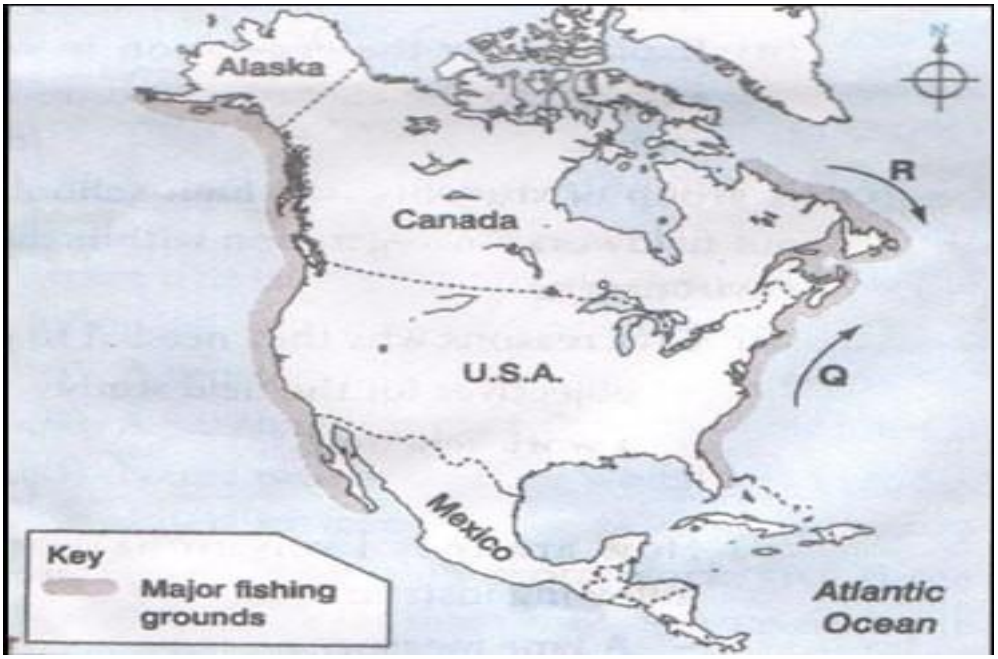
i. Name **two** types of fishing grounds in Kenya. (2 marks)

ii. Give **two** types of fishing methods. (2 marks)

iii. Give **four** reasons why marine fishing industry in east Africa is not well developed. (4 marks)

b. Explain **four** ways in which marine fisheries are being conserved in Kenya. (8 marks)

c. Use the map of North America below to answer questions (i) and (ii).



i. Name **one** method of fishing used in the shaded area. (1 mark)
ii. Name ocean currents marked Q and R. (2 marks)

d. Explain why major fishing grounds of the world are located in the temperate latitudes of the northern hemisphere. (6 marks)

9.

a. Distinguish between manufacturing and tertiary industries. (2 marks) b.

i. Name **four** agricultural food processing industries in Kenya. (4 marks)
ii. Explain **four** factors that influenced the location of the iron and steel industries in the Ruhr region of Germany. (8 marks)

c. Give **five** reasons why the government of Kenya encourages the establishment of Jua Kali industries. (5 marks)

d. You intend to carry out a field study in a coffee factor near your school.

i. State **three** reasons why you would visit the area of study in advance. (3 marks)
ii. You have prepared a working schedule for your study.
State **three** items you would include in your schedule. (3 marks)

10.

a. Draw an outline map of Kenya. (2 marks)
b. On the map indicate the following forests. (3 marks)

i. Kakamega forest
ii. Mt. Kenya forest
iii. Arabuko sokoke forest

c.

i. Name **three** natural causes of forest depletion. (3 marks)
ii. Describe **four** problems facing forests in Kenya. (8 marks)

d.

i. State **three** factors favouring production of soft wood forests in Canada. (3 marks)
ii. Explain **three** reasons why the Kenyan government should conserve her forests. (6 marks)

walimuepublishers@gmail.com

CHRISTIAN RELIGIOUS EDUCATION (C.R.E)
PAPER 1 - 2021 K.C.SE Prediction Set 1

1.
   a. Outline **seven** importance of CRE to a secondary school student in Kenya. (7mks)
   b. Describe the second account of creation in Genesis 2:4b-25. (7mks)
   c. Give **six** traditional African views of creation. (6mks)

2.
   a. Describe the call of Moses in Exodus 3:1-22. (8 mks)
   b. Give reasons why Moses was reluctant to go back to Egypt. (6 mks)
   c. What do Christians learn about God from the call of Moses? (6 mks)

3.
   a. Outline seven ways in which King Jeroboam promoted the spread of idolatry in Israel. (7 mks)
   b. Give seven reasons why Elijah was uncompromising in his attitude to the worship of Baal. (7 mks)
   c. State six reasons why Christians should fight against the spread of devil worship in the society. (6 mks)

4.
   a. State **six** titles given to prophets in the Old Testament. (6mks)
   b. Explain the evils committed by other nations that were to be punished by God according to Prophet Amos. (7mks)
   c. Mention **seven** ways how Christians can avoid God's punishment today. (7mks)

5.
   a. Describe how the people of Judah renewed their covenant with God under the leadership of Ezra. (8 mks)
   b. Give **five** reasons why Nehemiah carried out religious reforms in Judah. (5 mks)
   c. In what ways do Christians renew their covenant faith with God? (7 mks)

6.
   a. Identify **seven** occasions when prayers were conducted in Traditional African societies. (7 mks)
   b. Outline **seven** roles of kinship system in traditional African society. (7 mks)
   c. What changes have taken place in property ownership in Traditional African communities. (6 mks)

walimuepublishers@gmail.com

CHRISTIAN RELIGIOUS EDUCATION (C.R.E)
PAPER 2 - 2021 K.C.SE Prediction Set 1

INSTRUCTIONS: ANSWER ANY FIVE QUESTIONS

ALL ANSWERS MUST BE WRITTEN IN ENGLISH

1.
   a. What does Mary's song (the Magnificat) reveal about the nature of God. (7mrks)
   b. Outline **six** activities that took place when Jesus was born. (6mrks.)
   c. Write down seven ways through which Christians in Kenya express their joy for the birth of Jesus. (7mrks)

2.
   a. Giving examples state seven methods used by Jesus to spread the gospel. (7mrks)

   b. What are the Reasons why Jesus chose the twelve disciples? (6mrks)
   c. Identify **seven** problems faced by new converts in the church today. (7mrks) 3.

   a. With reference to the life and ministry of Jesus, show how he tried to promote social equality. (7mrks)
   b. With the story of the sinful woman as a reference, explain Jesus teachings on forgiveness. (5 mrks)
   c. Give ways in which Christians engage themselves in the healing ministry. (8mrks) 4.

   a. Give **seven** reasons why Jesus sent the Holy Spirit to his disciples after ascension (7mrks) b. List **seven** fruits of the Holy Spirit (7mrks)

   c. How are the gifts of the Holy Spirit manifested in the church today? (6mrks) 5.

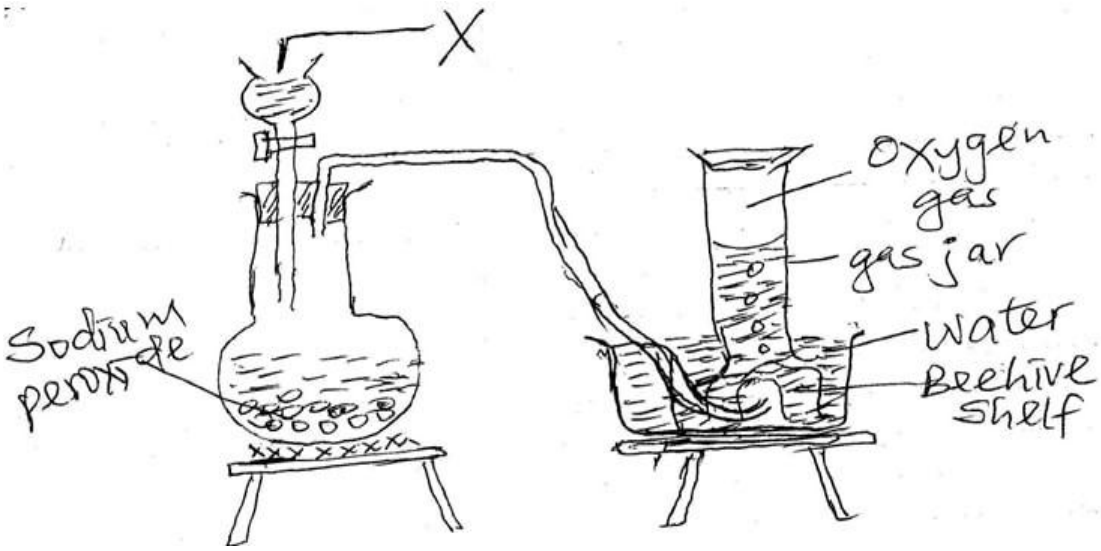
   a. Outline **eight** Christians teachings on work (8mks)
   b. Give **six** factors that cause increased unemployment in Kenya today (6mrks)
   c. How does the church help to reduce the rate of unemployment in Kenya (6mrks) 6.

   a. Explain how unfair distribution of wealth can lead to social disorder in Kenya today (6mrks)
   b. Give reasons why Christians should not involve themselves in gambling (7mrks)
   c. How is corruption affecting the society in Kenya today? (7mrks)

CHEMISTRY PAPER 1 - 2021 K.C.SE Prediction Set 1

Answer all questions

1. The set up below can be used to prepare oxygen gas. Study it and answer the questions that follow.



   a. Identify X (1mk)
   b. What property of oxygen makes it possible for it to be collected a shown in the above set up. (1 mk)
   c. State two uses of oxygen . (1mk)

2. Write an equation to show the effect of heat on each of the following
   a. Silver nitrate (1mk)
   b. An hydrous iron (ii) sulphate (1mk)
   c. Sodium hydrogen carbonate .(1mk) 3.
   i. What name is given to the process by which alcohol is formed from a carbohydrate.?. (1 mk)
   ii. Explain why the solubility of ethane in water is lower than that of ethanol. (2mks)

4.
   i. Complete the nuclear equation below (1mk)

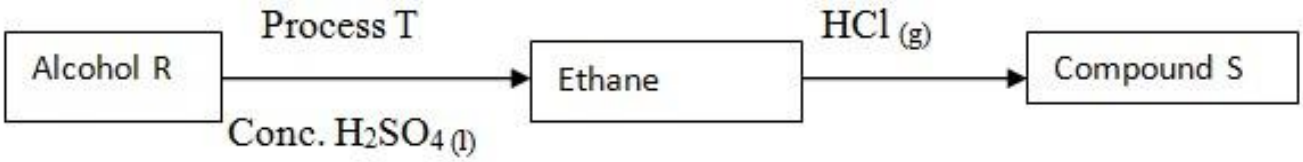
$$^{131}_{53}I \rightarrow {}^{131}_{54}Xe + \_\_\_\_\_$$

   ii. The half – life of is 8 days
   Determine the half life of if 50 grammes decayed for 40 days. (1mk) iii. Give one agricultural use of radio isotope. (1mK)

5. Charcoal is a fuel that is commonly used for cooking. When it burns it forms two oxides
   a. Name the two oxides . (2mks)
   b. State one use of any of the two oxides . (1mk)

6. An element X has a relative atomic mass of 88. When a current of 0.5 amperes was passed through a fused chloride of X for 32 minutes, 10 seconds; 0.44g of X was deposited.
   i. Determine the charge of element X (1 Faraday = 96,500c) . (2mks)
   ii. Write the formula of hydroxide of X. (1mk)

7. Study the following flow chart and answer the questions that follow:



a. Write the formula of
   i. Alcohol R (1mK
   ii. Compound S (1mk)
b. Name process T (1mK)

8. $60cm^3$ of oxygen gas diffuses through a porous plug in 50 seconds. How long will it take $80cm^3$of sulphur (iv) oxide to diffuse through the same plug under the same conditions. (S = 32 O = 16) (3mks)

9. Study the information in the table below and answer the questions that follow.

Salt	Solubility	g/100g water
	At 50o C	At 80oc
G	43	58
Y	82	138

A mixture containing 40g salt G and 120g salt Y in 100g of water at 80° was cooled to 50°
   i. Which salt crystallized out?. Give a reason (2mks)
   ii. Calculate the mass of the salt that crystallized out. (1mk) 10.

a. State two conditions necessary for rusting to occur.(1mk)
b. State the two reasons why tin coating is used in food cans. (2mks)

11. A form one student was supplied with a colourless liquid which was suspected to be water.
   i. Describe one chemical test that could be carried out to show that the liquid is water.(2mks)
   ii. How could it have been shown that one liquid was pure water (1mk)

12. During extraction of copper, the ore is first concentrated and roasted to produce copper (I) Sulphide.
   i. Name the ore from which copper is commonly extracted. (1mk)
   ii. Write an equation for the reaction in which copper (I) sulphide is produced by roasting the ore in air .(1mk)
   iii. Give one effect that the process in (ii) above could have on the environment. (1mk)
   iv. Give one use of copper metals (1mk)

13.
a. Name two cations that are present in hard water. (1mk)
b. Explain how the ion exchange resin softened had water.(2mks)

14. Below is a representation of an electrochemical cell.
$Pb_{(s)}/ Pb^{2+}_{(aq)} // Ag^{+}_{(aq)} / Ag_{(s)}$
a. What does / / represent ? (1mk)
b. Given the following: E^{Θ} (V)
$Pb^{2+}_{(aq)} + 2e \rightarrow Pb_{(s)}$ - 0.13
$Ag^{+}_{(aq)} + e \rightarrow Ag_{(s)}$ + 0.80
Calculate the e.m.f of the electrochemical cell. (2mks)

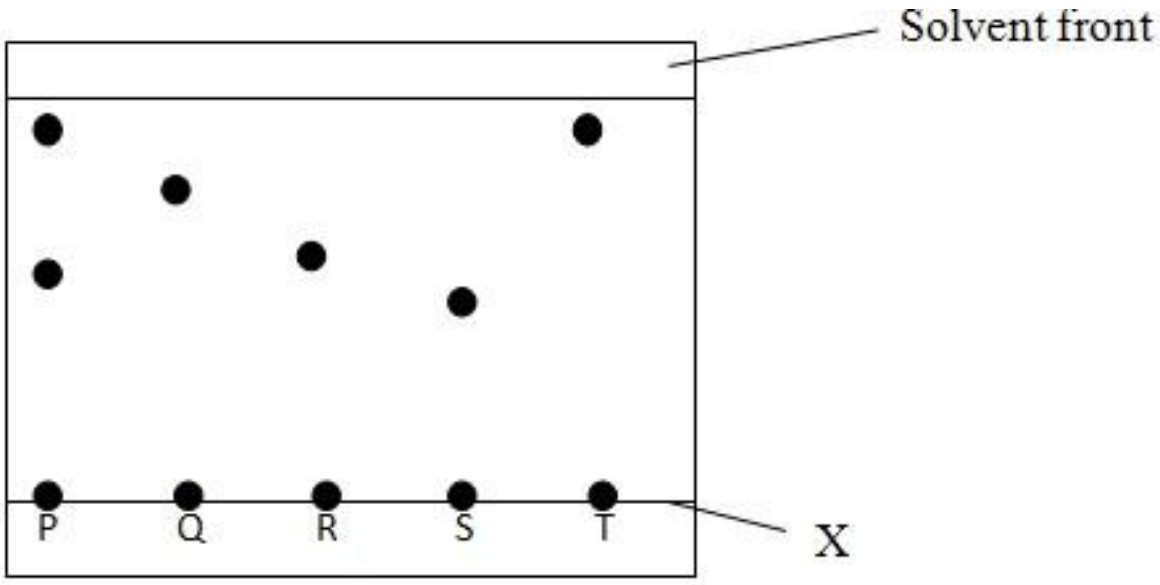
15. Distingush between ionization energy and electron affinity of an element (1mk)

16. Calculate the percentage by mass of copper in copper (ii) carbonate salt. (Cu = 64, C= 12, 0 = 16) (3mks)

17. What name is given to elements which appear in group (II) of the periodic table? (1mk)

18. Explain why the following substances conduct an electric current
a. Magnesium metal (1mk)
b. Molten magnesium chloride (1 mk)

19. The chromatography below was obtained from a contaminated food sample P. Contaminants Q, R, S and T are suspected to be in P. Use it to answer the following questions.



i. Name line labelled X. (1mk)
ii. Identify the contaminants in mixture P.(1mk)
iii. Which is the most soluble contaminant in P. (1mk)

20.

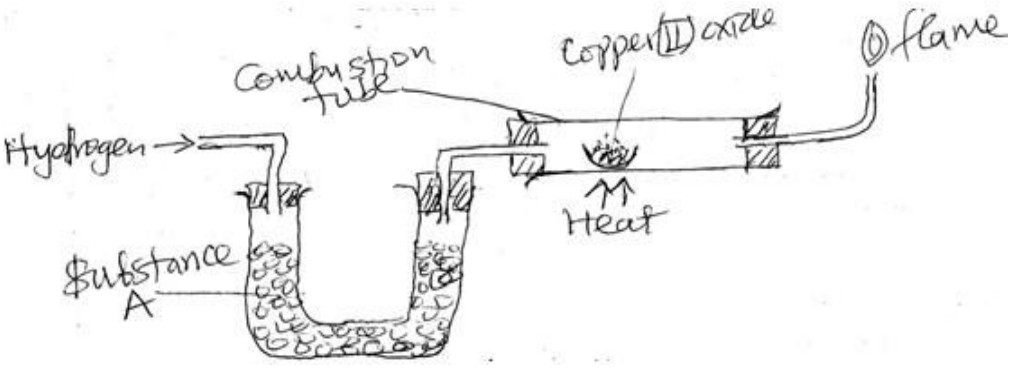
a. Diamond and graphite are allotropes of carbon. What is meant by an allotrope? (1 mk)
b. Explain why graphite can be used as a lubricant while diamond cannot. (2mks)

21. Where 15cm^3 of a gaseous hydrocarbon,p, was burnt in 100 cm^3 of oxygen, the resulting gaseous mixture occupied 70cm^3 at room temperature and pressure. When the gaseous mixture was passed through potassium hydroxide solution, its volume decreased to 25cm^3 .

a. What volume of oxygen was used during the reaction?. (1mk)
b. Determine the molecular formular of the hydrocarbon. (2mks) 22. In terms of structure and bonding, explain the following observations:

a. The melting point of aluminium is higher than that of sodium. (1½ mks)
b. Melting point of chlorine is lower than that of sulphur. (1½ mks)

23. The set up below was used to investigate the reaction between dry hydrogen gas and copper (II) oxide.



i. Name substance A. (1mk) ii. State the observation made in the combustion tube. (1mk) iii. Explain the observations made in (ii) above. (1 mk)

24. Hydrogen chloride gas can be prepared by reacting sodium chloride with an acid.

a. Write an equation for the reaction between sodium chloride and the acid. (1mk)
b. Give two chemical properties of hydrogen chloride gas (1mk)
c. State two uses of hydrogen chloride gas. (1mk)

25. State and explain what would happen if a dry red litmus paper was dropped in a gas jar of dry chlorine. (2mks)
26. By using aqueous sodium chloride describe how a student can distinguish calcium ions from lead ions. (2mks)
27. Given the following substances: wood ash lemon juice and sodium chloride
    a. Name one commercial indicator that can be used to show whether wood, lemon juice and sodium chloride are acidic, basic or neutral. (1mk)
    b. Classify the substances in 27(a) above as acids, bases or neutral.(2mks)

28 .A solution was made by dissolving 8.2g of calcium nitrate to give 2 litres of solution. Determine the concentration of nitrate ions in moles per litre. (3mks)

CHEMISTRY PAPER 2 - 2021 K.C.SE
Prediction Set 1

1.

a. Study the information in the table below and answer the questions that follow. (The letters do not represent the actual symbol of the substances).

Substance	Density at room temperature g/cm^3	Solubility in water	Boiling point (^{o}C)	Melting point(^{o}C)
U	0.8	Very soluble	78.5	-117
V	0.77×10^{-3}	Very soluble	-33	-78
W	1.6	Insoluble	77	-23
X	1.33×10^{-3}	Slightly soluble	-183	-219

i. Select the letter that represents a substance that is a gas at room temperature and which can be collected:

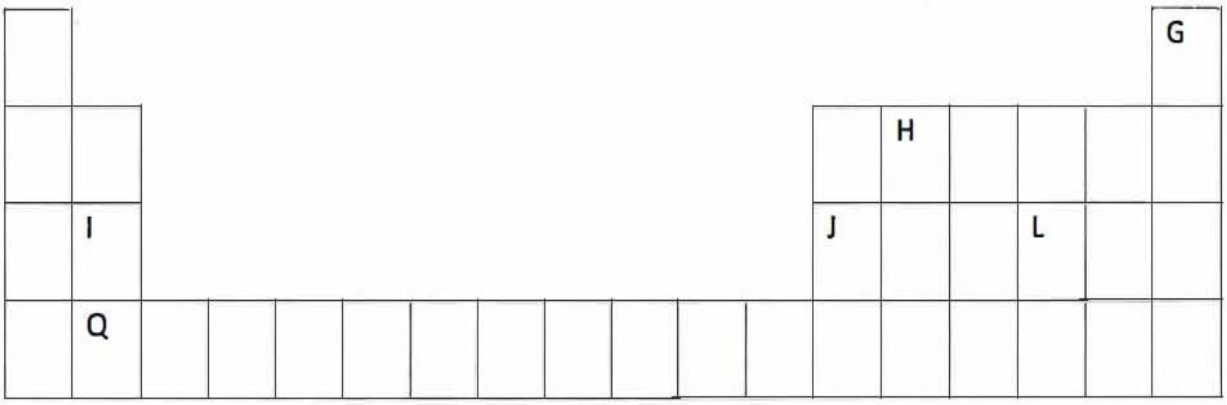
I. Over water. Explain. {2 marks}

II. By downward displacement of air. (Density of air is 1.29 x 10-3 g/cm3 at room temperature). {1 mark}

ii. Which substance would dissolve in water and could be separated from the solution by fractional distillation? Explain. {2 marks}

iii. Which substance is a liquid at room temperature and when mixed with water two layers would be formed? {1 mark}

b. The grid below shows part of a periodic table. Study it and answer the questions that follow.



(The letters do not represent the actual symbols of the elements)

i. Name the Group to which element I and Q belong. {1 mark}

ii. Which letter represents the element that is least reactive? {1 mark}

iii. Name the type of bond that is formed between element H and L when they react. Explain. {2 marks} iv. Write the chemical formula of the compound formed when element J and Oxygen gas react. {1 mark}

v. On the grid, indicate with a tick (√) the position of element R, which forms R^{3-} ions and is in the third period of the Periodic Table. {1 mark}

2.

a. A form four student investigated a property of acids C and E by reacting equal volumes of 1 M sodium hydroxide solution with equal volumes of acid C and E of the same concentration.

The results obtained were recorded in the table below.

Acid	C	E
Rise in temperature (Δt)k	4	2

i. Select the letter that represent a weak acid. Explain. {2 marks}
ii. Write a chemical equation for the reaction between Sodium hydroxide solution and aqueous ethanoic acid. {1 mark}

b.

i. What is molar heat of vaporization? {1 mark}
ii. The formation of Hydrogen peroxide under standard conditions is represented by the following thermochemical equations:

$H_{2(g)} + O_{2(g)} \rightarrow H_20_{2(g)}\ \Delta H\theta_f = -133$ kJ/mol

$H_{2(g)} + O_{2(g)} \rightarrow H_20_{2(l)}\ \Delta H\theta_f = -188$ kJ/mol

Draw an energy cycle diagram that links the above two thermochemical equations. {3 marks}

iii. Calculate the molar heat of vaporization of hydrogen peroxide. {1 mark}
iv. Write the thermochemical equation for the molar heat of vaporization of Hydrogen peroxide. {1 mark}

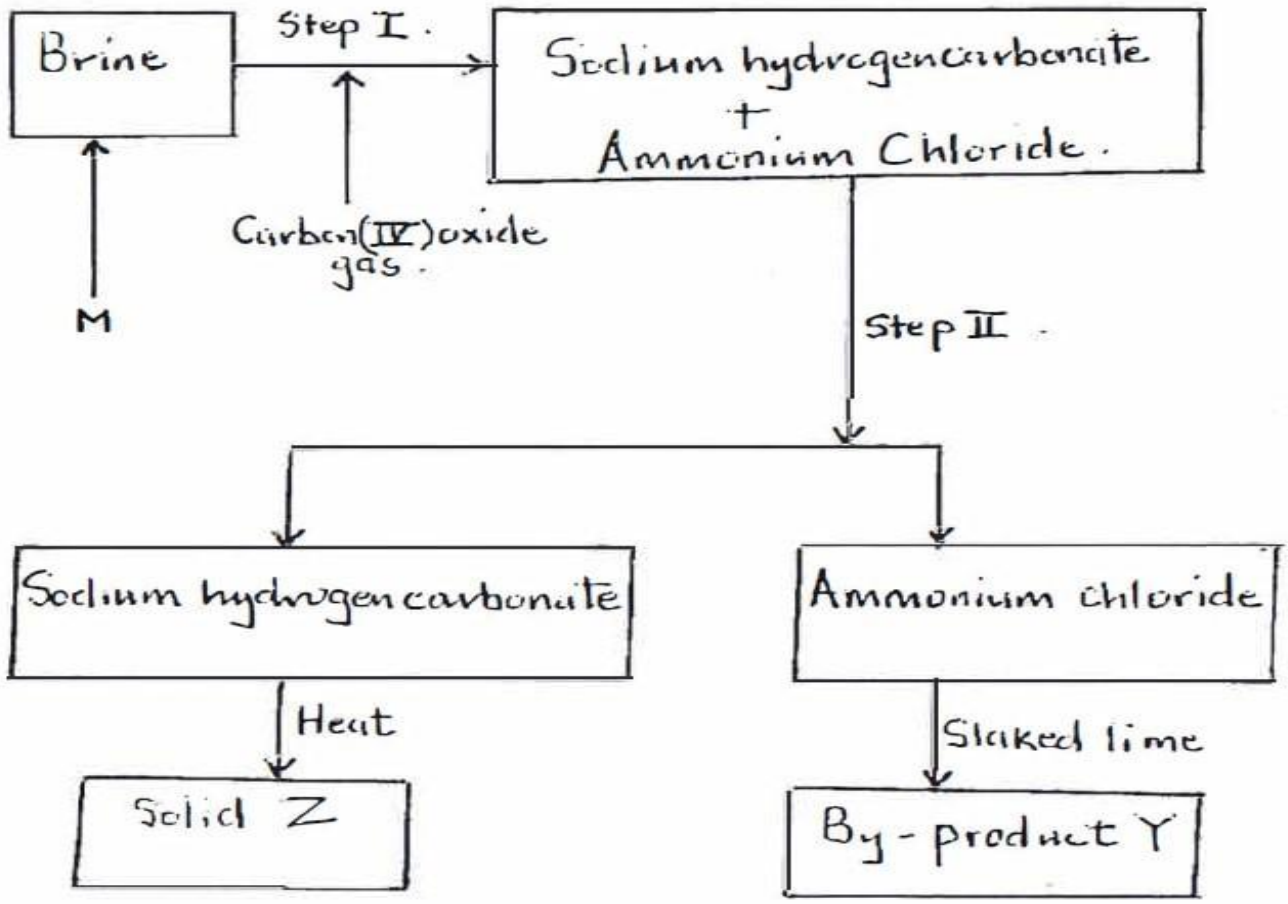
c.

i. What is a fuel? {1 mark}
ii. Natural gas, coal and oil are known as fossil fuels. They are major sources of energy.

Hydrogen gas is also a source of energy.

I. State and explain two reasons why Hydrogen is a very attractive fuel compared to fossils. {2 marks}
II. State one disadvantage of using Hydrogen fuel instead of fossil fuels.{1 mark}

3. The flow chart below is a simplified version of th



e steps in the manufacture of Sodium carbonate.

a. Name the process illustrated by the flow chart above. {1 mark}
b. Name three main raw materials of the above process. {3 marks}
c. Name substance M. {1 mark}
d. Name the process taking place in step II. {1 mark}
e. Identify by-product Y and write a balanced chemical equation to show how it is formed. {2 marks }
f. 98.123 Kg of Sodium hydrogen carbonate was manufactured in this process.
    i. What is solid Z. {1 mark}
    ii. Write a chemical equation for the formation of solid Z. {1 mark}
    iii. Determine in Kilograms, how much of solid Z was produced in this process. (Na = 23 , H = 1, 0 = 16, C = 12) {3 marks }

4.

b. Study the standard reduction potentials for elements R, T, U, V and W given below and answer the questions that follow. (The letters are not the actual symbols of the elements).

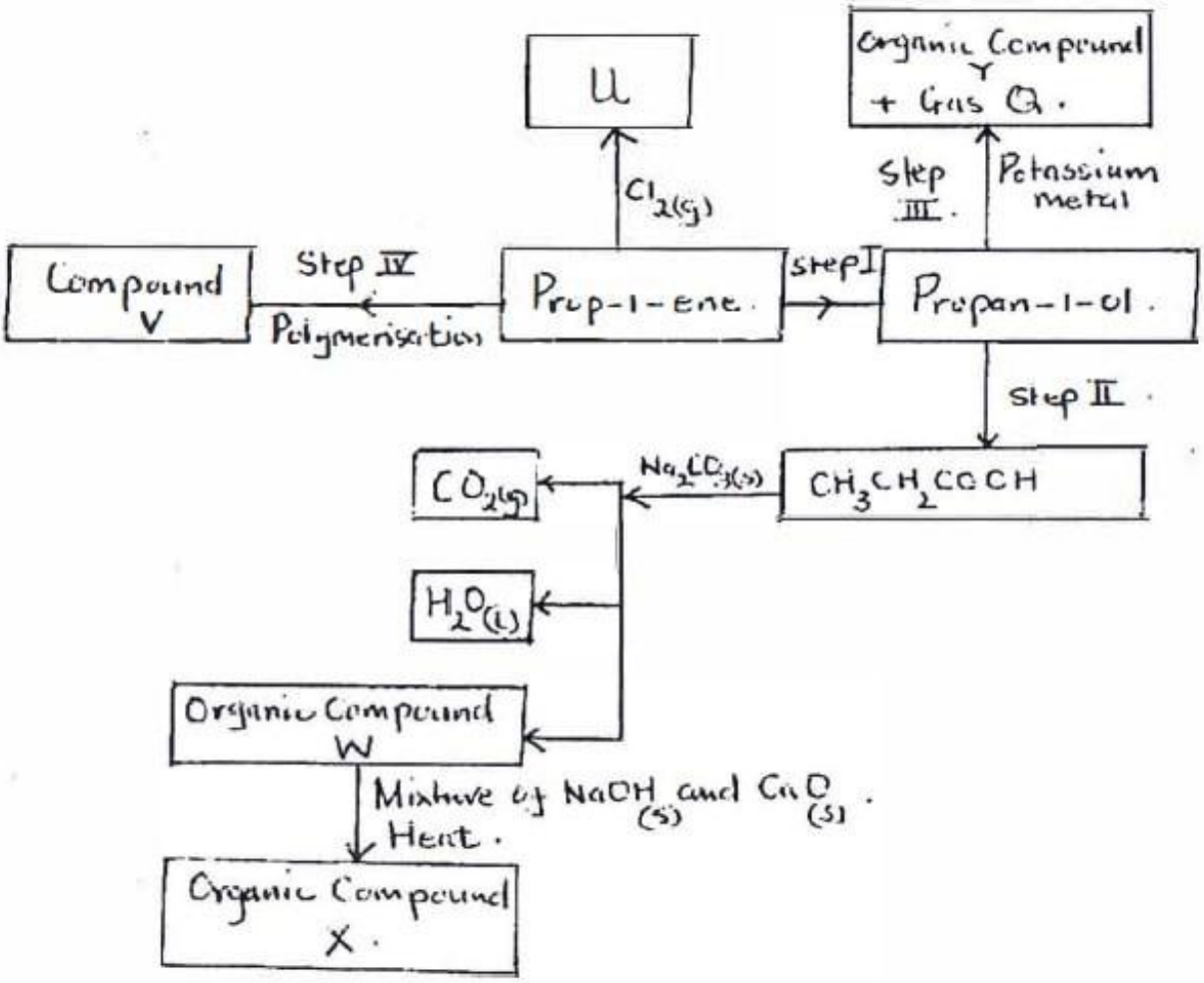
	E^{o} (volts)
$\frac{1}{2}R_{2(g)} + e^{-} \rightleftharpoons R^{-}_{(aq)}$	+ 2.87
$T^{2+}_{(aq)} + 2e^{-} \rightleftharpoons T_{(s)}$	+ 0.34
$U^{+}_{(aq)} + 2e^{-} \rightleftharpoons \frac{1}{2}U_{2(g)}$	0.00
$V^{2+}_{(aq)} + 2e^{-} \rightleftharpoons V_{(s)}$	-2.38
$W^{2+}_{(aq)} + 2e^{-} \rightleftharpoons W_{(s)}$	-2.90

i. What is the E0 value of the strongest reducing agent? {1 mark}
ii. Which element is likely to be Hydrogen? Give a reason for your answer. {2 marks}
iii. Draw in the space provided below, a labelled diagram of the electrochemical cell that would be obtained when half-cells of elements T and V are combined. {3 marks} iv. On the diagram (iii) above:
    I. draw an arrow showing direction of flow of electrons. {1 mark}
    II. Label by naming the anode and cathode of the electrochemical cell.{1 mark}
v. Determine the E0 value of the electrochemical cell constructed in (iii) above.{2 marks}

c. 1.48 g of Copper metal were deposited when current was passed through aqueous Copper (II) Sulphate for 2 hours 30 minutes during purification of Copper in electrolysis. Determine the amount of current used. (Cu= 63.5, IF= 96500 C) {3 marks}

5.

a. The following scheme represents various reactions starting with pro-1-ene. Use it to answer the questions that follow.



i. Write the chemical name of Organic compound X. {1 mark}

ii. Write the formula of organic compound Y. {1 mark}

iii. State one reagent that can be used in:

I. Step I {1 mark}

II. Step II {1 mark} iv. Name compound V and state one of its use. {1 mark}

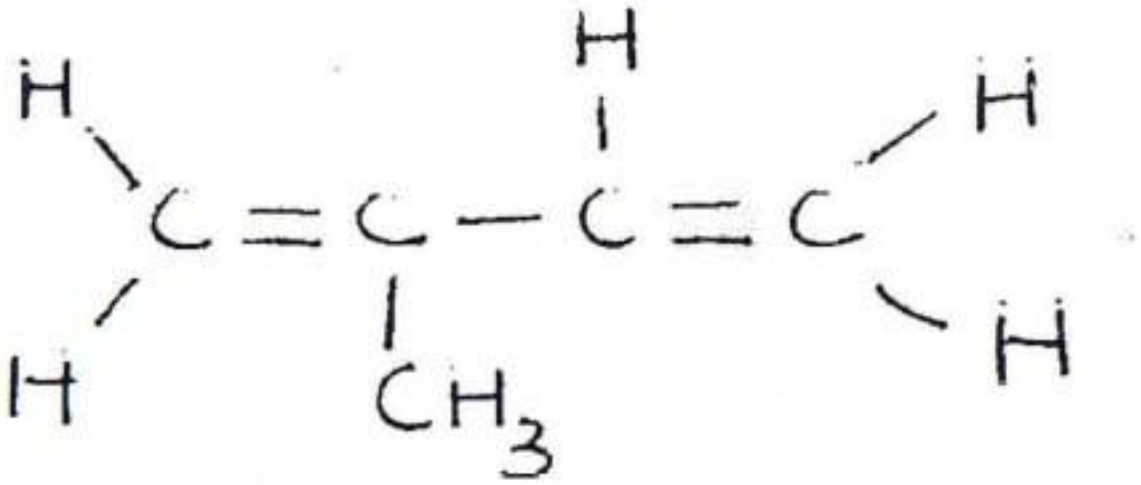
v.

I. Name gas Q. {1 mark}

II. Write the equation of the reaction in step III {1 mark}

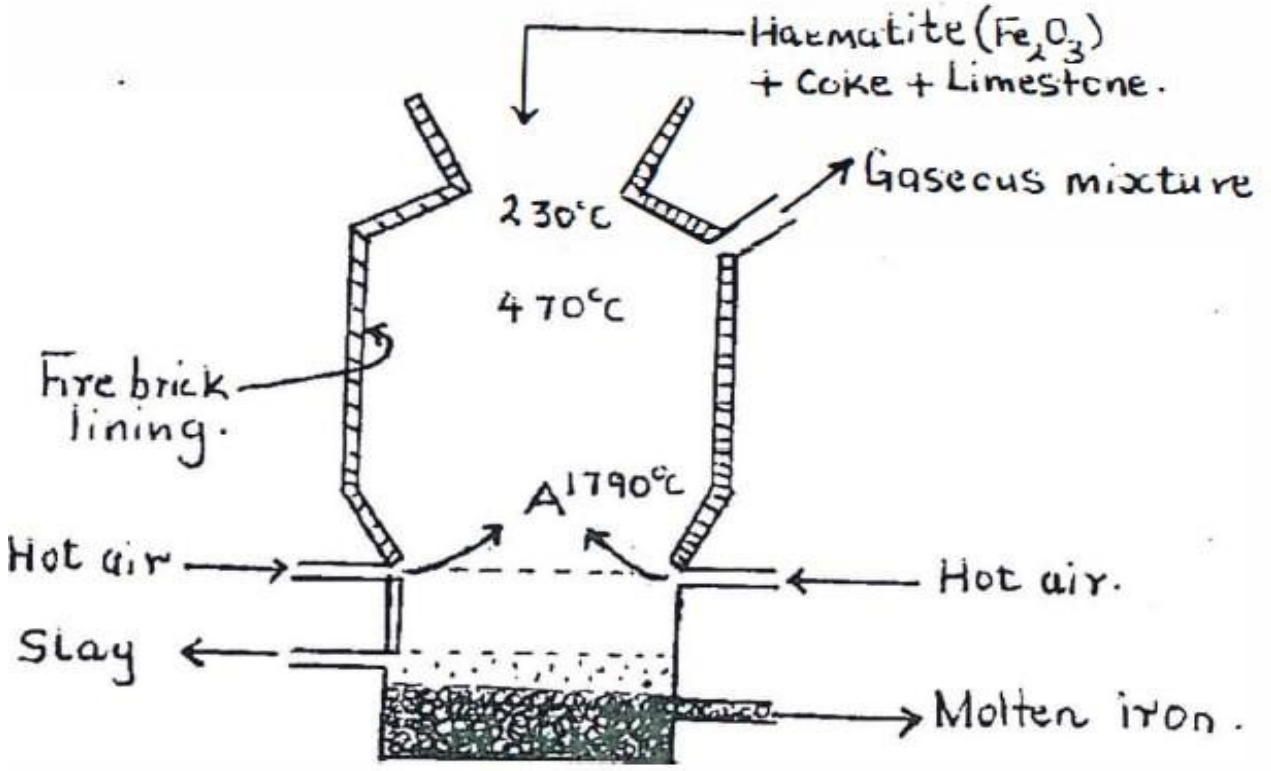
III. Name organic compound Y. {1 mark}

b. The structure shown below represents the monomer of natural rubber.



Using two monomers of the above structure, show how the monomer polymerises. {1 mark }

6. Below is a simplified diagram of a blast furnace used in the extraction of iron from its ores. Study it and answer the questions that follow.



a. Name one other iron ore material that can be used in the blast furnace. {1 mark}
b. The iron obtained from the blast furnace has a melting point of 1200°C while that of pure iron is 1535°C. Explain. {1 mark}
c. What is the purpose of limestone in the blast furnace? {1 mark}
d. State one physical property of molten slag other than density that allows it to be separated from molten iron as shown in the diagram above. {1 mark}
e. State one use of fire-brick lining in the blast furnace. {1 mark} f.
    i. Name one of the reducing agents used to reduce iron {III) oxide to iron metal in the blast furnace. {1 mark}
    ii. Using the named reducing agent in f(i) above and iron (III) oxide, write an equation involving this reaction. {1 mark}
g. Explain why the temperature in the region marked A is higher than that of the incoming hot air. {1 mark}

h.

i. What name is given to the 90- 95% pure iron obtained from the blast furnace? {1 mark

ii. lron from the blast furnace contains about 5% carbon. State how the carbon content is reduced. {1 mark}

7.

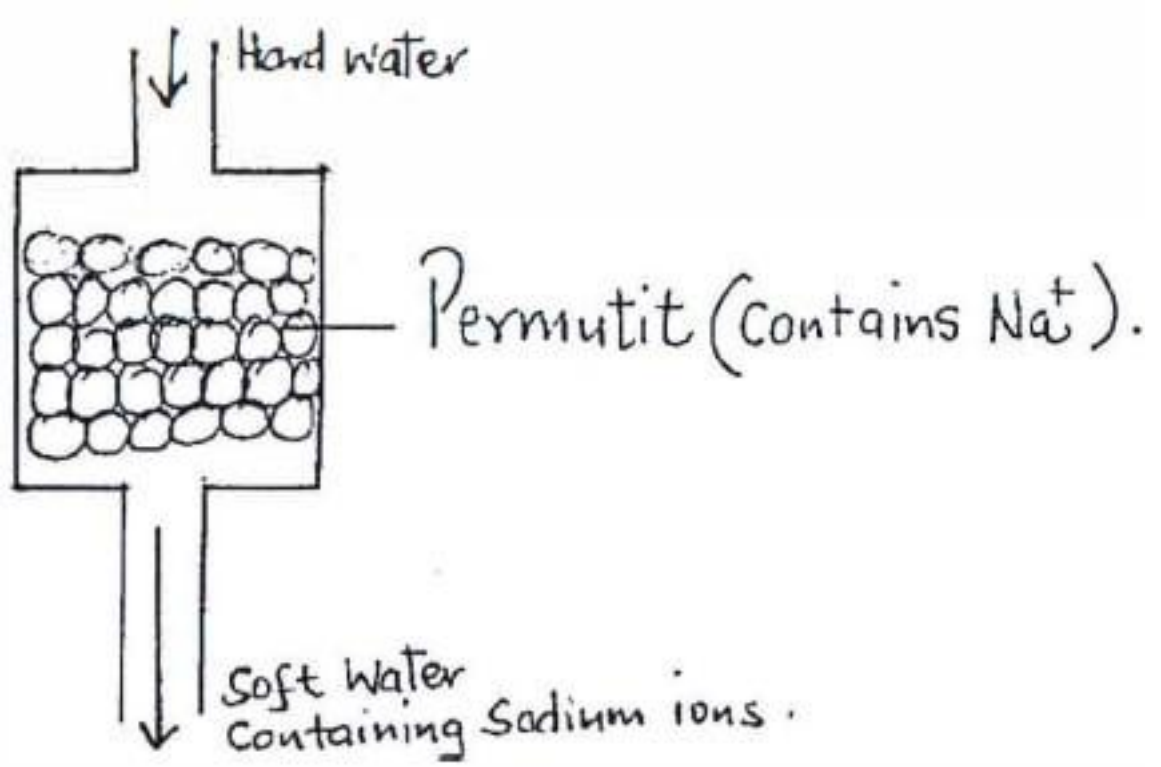
a. A sample of water containing 0.001 moles of calcium hydrogencarbonate was added to 90 cm^3 of 0.01M calcium hydroxide.

i. Write an equation for the reaction that took place. {1 mark}

ii. Calculate the number of moles of calcium ions in 90 cm3 of 0.01M calcium hydroxide. {1 mark}

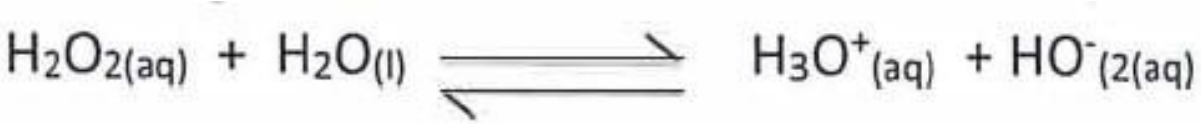
iii. What would be observed if soap solution was added dropwise to a sample of the water that had been added to calcium hydroxide. Give a reason. {2 marks}

b. The column below was used to soften hard water.



i. Explain how the hard water was softened as it passed through the column.{1 mark} ii. After sometime the material in the column is not able to soften hard water. How can the material be regenerated? iii. State one disadvantage of using hard water in boilers. {1 mark}

c. Identify the reagent that acts as a base in the equation below. Give a reason. {2 marks} {1 mark}



CHEMISTRY PAPER 3 - 2021 K.C.SE Prediction Set 1

1. You are provided with:
   - Solution A, Dilute hydrochloric acid.
   - Solution B, made by dissolving 0.5g of sodium hydroxide in water and made to 250cm^3 of solution. Solid C, Magnesium ribbon. Phenolphthalein
   - indicator.
   -

You are required to:

i. Standardize solution A. ii. Determine the rate of reaction between solution A and magnesium.

PROCEDURE I:

i. Measure exactly 1 Ocm3 of solution A using a burette and transfer into a 250ml volumetric flask. Top up to the mark using distilled water and shake thoroughly. Label this solution D.

ii. Drain the remaining solution A in the burette, rinse the burette thoroughly and fill the burette with solution D.

iii. Pipette 25cm^3 of solution B into a conical flask. Add three drops of phenolphthalein indicator. iv. Titrate solution D with solution B. Record your results in the table below. Repeat procedures (i) to (iv) to complete the table.

	1	2	3
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of solution D used (cm^3)			

(3 marks)

a. Calculate the average volume of solution D used.(show your working) (1 mark)
b. Write an equation for the reaction that took place. (1 mark)
c. Calculate the molarity of sodium hydroxide solution.(Na =23,0=16,H=l) (1 mark)
d. Calculate the number of moles of sodium hydroxide reacted. (1 mark)
e. Calculate the number of moles of hydrochloric acid in 250cm3 of solution D. (2 marks).
f. Calculate the m9larity of hydrochloric acid in solution A. (1 mark)

PROCEDURE II:

i. Cut solid C into equal pieces, each 2cm long.(I mark)
ii. Using a burette, measure 12cm3 of solution A, into a clean boiling tube.
iii. Drop one piece of solid C into the boiling tube containing solution A and start the stopwatch immediately. Stop the stopwatch when all solid C has just disappeared (dissolved).

Record your results in the table below.

iv. Repeat steps (ii) and (iii) above using 10.0cm^3, 8.0cm^3, 6.0cm^3 and 4.0cm^3 of solution A. Top up each with distilled water to make12.0cm3 of solution, using a 10.0cm^3 measuring cylinder and complete the table below. (4marks)

	Volume of Solution A (cm^3)	Volume of distilled water (cm^3)	Concentration of Solution A (moles/dm^3)	Time (s)	$1/t$ (S^{-1})

I	12	0			
II	10	2			
III	8	4			
IV	6	6			
V	4	8			

(4 marks)

a. Calculate the concentration of each of the solution and and complete the table. Show your working. (2marks)

b. Plot a graph of $^{1}/_{t}$ (y-axis) against the concentration of solution A. (3marks)

c. From the graph, determine the time taken for the reaction to reach completion when 1.5 moles of solution A are used. (2 marks)

d. Comment on the shape of the graph. (1 mark)

2. You have been provided with solid Q, Which is a mixture of two compounds.

You are required to carry out the test below and record your observations and inferences in the spaces provided below.

PROCEDURE

i. Put a spatulaful of mixture Q in a boiling tube.

ii. Add about $7cm^3$ of distilled water to the mixture and shake thoroughly. Filter the mixture. iii. Wash the residue with distilled water and keep both the residue and the filtrate.

Observation	**Inference**
1 mark	1 mark

iv. Divide the filtrate into four portions

Observation	**Inference**
1 mark	1 mark

v Add 5 drops of acidified 2M barium chloride t o the first portion.

Observation	**Inference**
1 mark	1 mark

vi. Add 3 drops of 2M lead (II) nitrate solution to the second portion.

Observation	**Inference**
1 mark	1 mark

vii. Add 2M sodium hydroxide to the third portion dropwise until in excess.

Observation	**Inference**
1 mark	1 mark

viii. Add 2M ammonia solution to the fourth portion drop wise until in excess.

Observation	**Inference**
1 mark	1 mark

ix. Scrape the residue from the filter paper and transfer it into a boiling tube.

x. Add some dilute 2M Nitric (V) acid while shaking until all the solid dissolves.

xi. Divide the solution into three portions. xii. To the first portion add 2M sodium hydroxide a few drops till in excess.

Observation	Inference
1 mark	1 mark

To the second portion add a few drops of 2M ammonia solution till in excess.

Observation	Inference
1 mark	1 mark

xiii.

Observation	Inference
1 mark	1 mark

walimuepublishers@gmail.com

AGRICULTURE PAPER 1 - 2021
K.C.SE Prediction Set 1

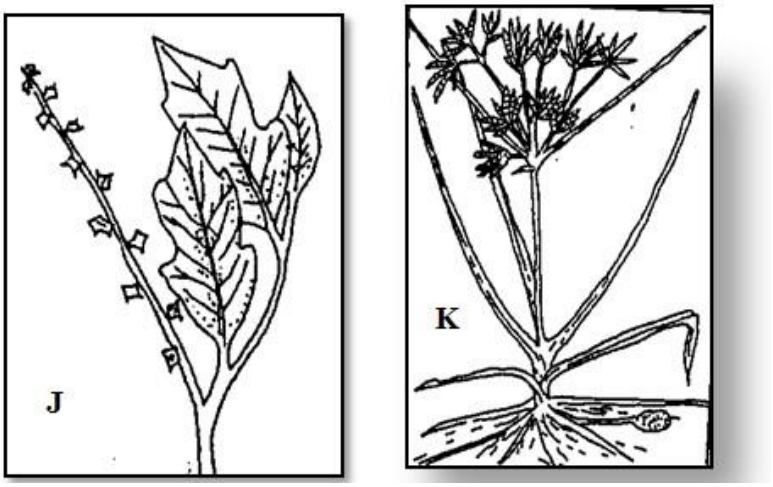
SECTION A (30 MARKS)

*Answer **ALL** questions in this section.*

1. Give **four** methods of applying fertilizers to crops. (2 marks)
2. State **four** beneficial biotic factors that influence agriculture. (2 marks)
3. Give **four** branches of Agriculture. (2 marks)
4. State **four** advantages of co-operative land tenure system. (2 marks)
5. State **four** benefits of organic mulch in crop production. (2 marks)
6. State **four** conditions under which shifting cultivation is practiced. (2 marks)
7. Give **four** effects of mass wasting. (2 marks)
8. Give **four** factors that affect the rooting of cuttings. (2 marks)
9. Name **four** details that are included in a farm marketing record. (2 marks)
10. Give **four** examples of product-product relationships in the management of agricultural enterprises. (2 marks)
11. State **three** entries that are made in a journal. (1½ marks)
12. Give **two** reasons for cutting back pyrethrum. (1 mark)
13. State **three** parameters used to indicate national development. (1½ mark)
14. State **four** symptoms of viral diseases in crops. (2 marks)
15. Give **four** reasons for draining land as part of land reclamation. (2 marks)
16. State **two** reasons for topping a pasture. (1 mark)
17. State **two** advantages of metal pipes over plastic pipes in piping water in the farm. (1 mark)

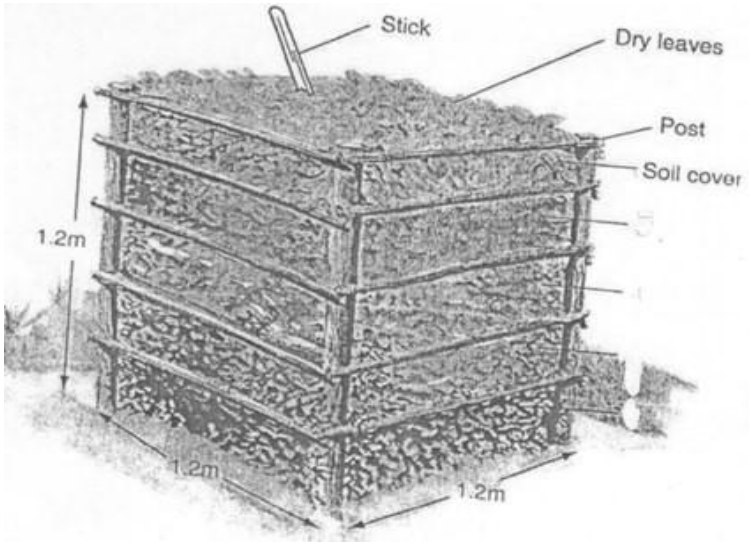
SECTION B (30 MARKS) *Answer **ALL** questions in this section.*

18. Study the following weeds and answer questions that follow.



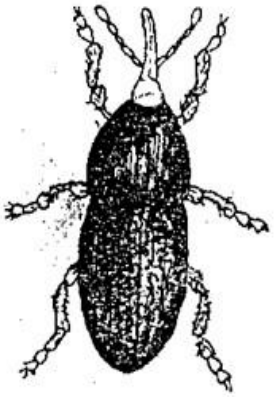
a. Give the identity of weeds J and K. (2 marks)
b. What makes weed K difficult to control? (1 mark
c. Give the economic importance of weed J. (1 mark)
d. State **one** reason that makes weeds excellently adapted to various environments. (1 mark)

19. Study the diagram below of a method of compost making and answer the questions that follow.



a. Identify the methods of compost making. (1 mark)
b. State **four** factors to consider when siting the structure. (2 marks
c. What is the function of the following materials in preparation of compost manure
i. Top soil (1 mark) ii. Wood ash (1 mark)

20. Two maize pests are shown in the diagram below. Study them and answer questions that follow.

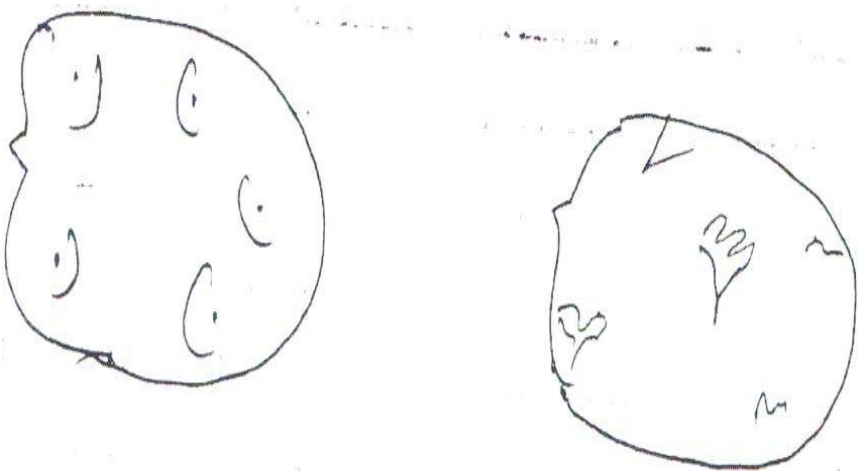


A

B

a. Identify the pests in the diagram labeled A and B. (1 mark)
b. At what stage of maize production does each pest damage the crop? (2 marks)
c. Give **one** way of controlling each of the pests in the field. (2 marks)

21. The diagram below represents a vegetative material used to prepare a certain crop. Study them and answer the questions that follow.



i. Give the name of the material illustrated above. (1 mark)
ii. Give the name of the preparation done on the material to make it ready for planting. (1 mark
iii. State **three** advantages of carrying out the practice in (ii) above before planting. (3 marks)

SECTION C (40 MARKS)

*Answer **ANY TWO** questions from this section in the spaces provided*

22.

a. Describe the growing of dry bean seeds under the following subheadings.

- Selection and preparation of planting materials (3 marks)
- Planting (4 marks)
- Weeding (3 marks)

b. Describe the environmental conditions that may lead to low crop yields. (10 marks) 23.

a. Explain **six** factors considered in designing a crop rotation programme. (6 marks)

b. Explain the factors that influence the type of irrigation to be used in a farm. (8 marks)

c. Explain **six** post-harvest practiced carried out on production of maize. (6 marks) 24.

a. Explain **five** advantages of budgeting in farming. (10 marks)

b. Explain **five** various types of risks and uncertainties. (5 marks)

c. Describe the importance of pruning perennial crops. (5 marks)

walimuepublishers@gmail.com

AGRICULTURE PAPER 2 - 2021 K.C.SE
Prediction Set 1

SECTION A (30 MARKS)

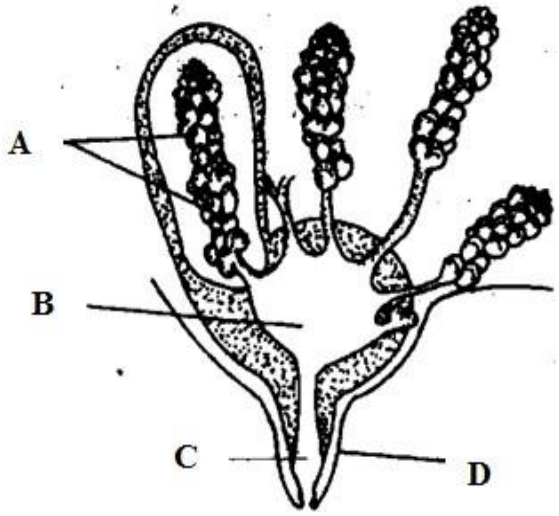
*Answer **all** the questions in this section in the spaces provided.*

1. Give **three** factors that affect the quality of honey. (1½ marks
2. State **three** conditions that make a cow to withhold milk during milking. (1½ marks)
3. State **four** signs of furrowing observed in pigs. (2 marks)
4. Give **three** factors that may make birds to lay eggs on the floor in a deep litter. (1½ marks)
5. Give **three** characteristics of clean and high quality milk. (1½ mark)
6. Outline **four** control measures of round worms. (2 marks)
7. State **four** signs of liver fluke infestation in cattle. (2 marks)
8. Give **four** reasons of breeding in cattle. (2 marks)
9. List **four** methods of preserving fish. (2 marks)
10. Name **two** classes of livestock feedstuffs. (1 mark)
11. Give **two** roles of ovaries in cows' reproductive system. (1 mark)
12. Give **two** reasons for flushing in sheep. (1 mark)
13. Give **four** reasons for treating timber used in construction of farm buildings. (2 marks)
14. State **four** factors that influence the daily water intake in an animal. (2 marks)
15. Name **two** functions of a clutch in the tractors transmission system. (1 mark)
16. Give **four** characteristics of a good calf pen. (2 marks)
17. State **four** factors that influence the choice of the poultry system of rearing to use. (2 marks)
18. State **four** routine management practices carried out on a replacement stock that is a heifer. (2 marks

SECTION B (20 MARKS**)**

*Answer **ALL** questions in this section in the spaces provided.*

19. The diagram below is a cross section of part of a cow's udder.

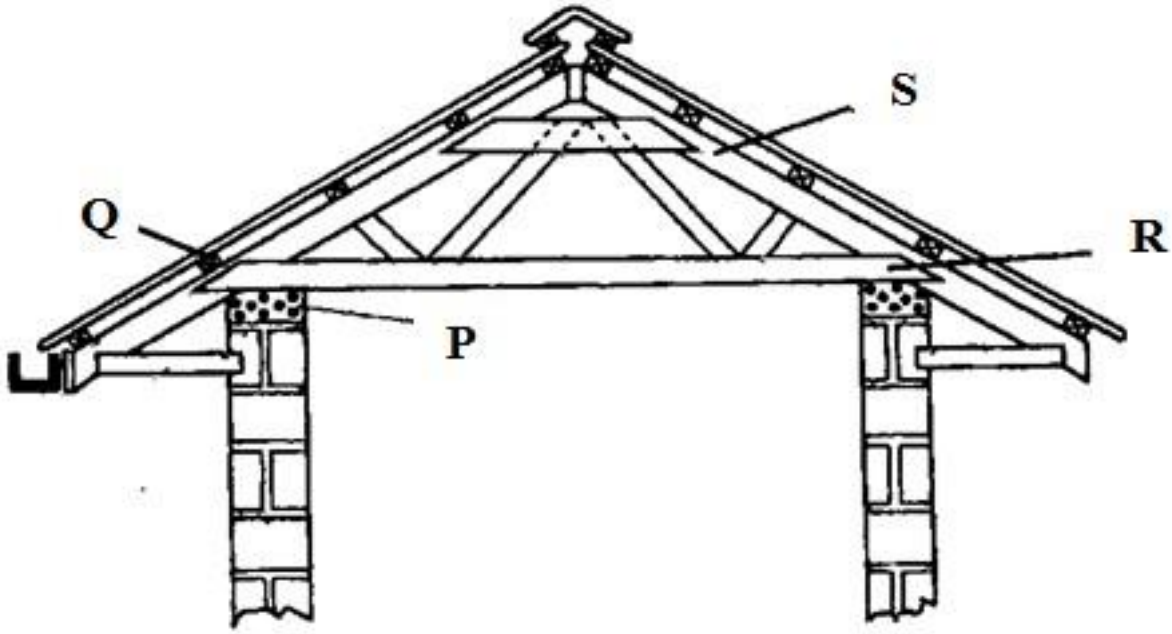


a. Name the parts marked A, B, C and D. (2 marks)
b. Name **two** hormones that control milk let down in a dairy cow. (2 marks
c. What is a dry cow therapy? (1 mark)

20. The diagram below shows the head of a chicken having symptoms of a poultry disease

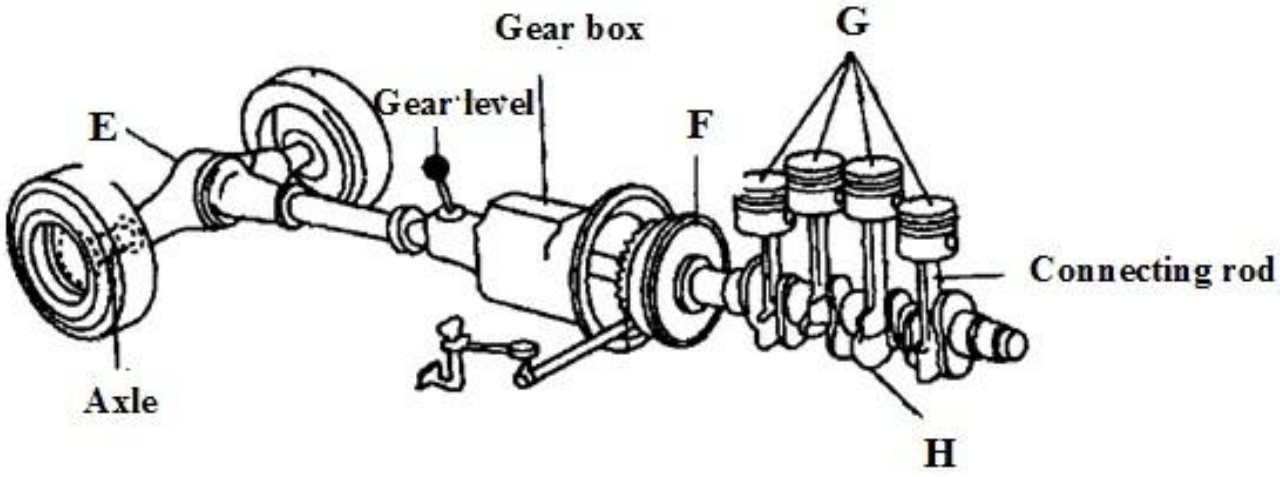
a. Identify the disease. (1 mark)
b. Give **two** reasons why the disease is of economic importance. (2 marks)
c. Outline **two** methods of controlling the above disease. (2 marks)

21. The following diagram shows parts of a roof. Study it carefully and answer the questions that follow.



a. Name the parts labeled P, Q, R and S. (2 marks)
b. State the functions of P and Q. (2 marks)
c. Give **two** chemical preservatives for treating timber before use in the construction of farm structures. (2 marks

22. Below is a diagram of power transmission system of tractor engine.
Study it and answer the question that follows.



a. Name the parts labeled E, F, G and H. (2 marks)
b. State the functions of E and H. (2 marks)

SECTION C (40 MARKS)

*Answer **ANY TWO** questions from this section.*

23.

a. Describe **five** pre-disposing factors of livestock diseases. (5 marks)

b. Describe **six** mechanical methods of controlling ticks. (6 marks)

c. Describe the factors that affect milk composition of a cow. (9 marks) 24.

a. State **five** advantages of farm mechanization. (5 marks)

b. Explain **five** advantages of using a mould board plough in seed bed preparation. (5 marks)

c. Describe the use of various materials in construction of a Kenya Top bar hive. (5 marks)

d. Outline the care and maintenance of a tractor water cooling system. (5 marks)

25.

a. State **four** physical characteristics of a dairy cow. (4 marks)

b. State **nine** factors to consider when selecting livestock for breeding. (9 marks)

c. Describe milk fever in dairy cattle under the following sub-headings.

i. The cause of the disease (1 mark)

ii. Symptoms of the disease (4 marks) iii. Control measures (2 marks)

walimuepublishers@gmail.com

BUSINESS STUDIES PAPER 1 - 2021 K.C.SE
Prediction Set 1

Answer all questions in the spaces provided

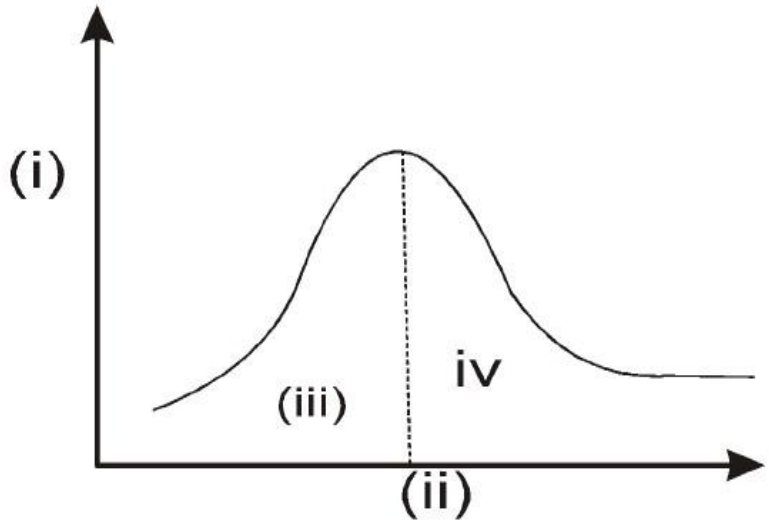
1. List **four** physical resources that a business can use to ehnace its operations (4 marks)
2. Outline **four** reasons that justify entrepreneurship in a country (4 marks)
3. Outline **four** attributes of an office secretary (4 marks)
4. Outline **four** circumstances under which a credit note can be issued (4 marks)
5. Highlight **four** challenges facing
6.
7. co-operative societes in Kenya (4 marks)
8. State **four** benefits a business may get by adopting containerisation (4 marks)
9. Outline **four** advantages of E-mail as means of communication (4 marks)
10. Outline **four** factors which may limit the effectivenes of a warehouse (4 marks)
11. Differentiate between a movement along a supply curve and shift of a supply curve
12. State **four** ways in which production in Kenya effects the environment (4 marks)
13. Distinguish between monopoly and monopolistic competition markets (4 marks)
14. Highlight **four** factors that may influence a producer in choosing a channel of distribution (4 marks)
15. Outline **four** limitations of using National income statistics to measure standards of living in acountry (4 marks)
16. State the efecct of each of the follwoing transactions on a balance sheet total. Use increase, decrease and No effect (4 marks)

Transaction	**Effect**
a. Brought in the business a personal car	
b. Took home some goods for family use	
c. Sold some old furniture for cash	
d. Paid a creditor by cheque	

17. The following information was extracted from Kariuki Enterprise for the month ended 31st Augsut 2015

    Gross profits 24000
    Total expenses 80000
    Total revenue income 10% of sales
    Mark up percentage 25%
    Prepare a profit and loss Account for the months (4 marks)
18. Outline **four** factors that influence the amount held in liquid form (4 marks)
19. Outline **four** features of economic resources (4 marks)
20. Outline **four** disadvantages of division of labor (4 marks)
21. Ouline **four** advantages of government involvement in business activities (4 marks)
22. State f**our** circumsatnces that may influence an Insurance company to re-insure itself (4 marks)

23. Explain the following terms as used in product promotion
    i. Competitive advertising (2marks)
    ii. Celebrity advertising (2 marks)
24. The diagram below shows the relationship between population trend and income per head



Name the labelled parts (4 marks)

25. Give in statement from the business transactions in the accounts below (4 marks)

Capital A/C	
	Jan 1 cash 100,000

Cash A/C	
Jan 1 Capital 100 000	Jan 2 Bank 50,000
	Jan & stationery 10,000

Bank A/C	
Jan 2 cash 50 000	Jan 10 Stationery 4000

Stationary A/C	
Jan 8 Cash 10,000	
Jan 10 Bank 4000	

26. In the spaces provided state the source document for each of the books of original entry (4 marks)

Book of original entry	**Source document**
i. Cash receipt Journal ii.	
Return inwards Journal ii.	
Purchases Journal iv. Sales	
Journal	

27. The cost of consumer goods and services for a representative basket of an average family is given below

Year	Prices	C.P.I
2000	1000	100
2001	1069	-
2002	1162	-
2003	1200	-
2004	1325	

Determine the consumer price indices using 2000 as base year (4 marks)

BUSINESS STUDIES PAPER 2 - 2021
K.C.SE Prediction Set 1

a. Explain **five** importance of trade within a country (10 marks)

b. With **five** features differenmtiate between a cooperative society and a public Limited Company (10 marks)

2.

a. On 1st December 2015, Mumbi traders had shs. 125,000 in hand and a a bank overdraft of shs 97,000

During the month, the following transactions took place

Dec 2: Cash sale banked shs. 335,260

3: Bought goods in cash shs. 10,500

9: Paid Njeru a creditor shs. 190,000 by cheque in full settlement of his account after deducting 5% cash discount

13: Received a cheque for sh. 158,400 from Maro after allowing her a cash discount of shs. 1,600

16: Paid salaries shs. 36,000 in cash

24: Withdrew shs. 100,000 from bank for office use

29: Nyangau, a debtor paid her account of 175,000 by cheque less 10% cash discount

31: Deposited all the cash into bank except shs. 33,490

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

b. Explain **five** purpose of public finance 3.

a. Explain **four** reasons why entrepreneurs observe ethics in their business (10 marks)

b. Explain **five** factors that contribute to income disparity in Kenya (10 marks) 4.

a. Explain **five** circumstance under which a manufacturer wpould prefet to sell his products direct to consumers instead of selling through middlemen

b. Explain **five** importances of development planning 5.

a. Explain **five** advantages of free trade (10 marks)

b. Explain **five** reasons why the government protect consumers (10 marks) 6.

a. The following information ws extracted from the books of Sahara traders fro the year ended 30 th April, 2013

	Shs.
Sales	480000
Opening stock 1/5/2012	80,000
Closing stock 30/4/2012	120,000
Gross profit margin	25%

Prepare

i. Trading account for the period ended 30th April 2013 (6 marks)

ii. Calculate rate of stock turnover (4 marks)

b. The size of population of a country A has been declining. Explain five possible causes that may have contributed to the decline (10 marks)

HISTORY PAPER 1 - 2021 K.C.SE Prediction Set 1

INSTRUCTIONS

*ANSWER **ALL** QUESTIONS IN SECTION A, **THREE** QUESTIONS IN SECTION B AND **TWO** QUESTIONS IN SECTION C.*

SECTION A (25 MARKS)

Answer all questions in this section

1. Name the **branch** of history that deals with traditions, values and cultural practices of people. (1 mk)
2. Name the **only** southern Cushites group remaining in Kenya. (1 mk)
3. Give **two** age sets among the Nandi in the pre-colonial period (2 mks)
4. Apart from Vasco de gamma, name **two** other Portuguese generals who conquered the East African Coast. (2 mks)
5. State the **main** way through which one qualifies to be a Kenyan citizen by their birth. (1 mk)
6. Give **one** economic factor that promotes national unity in Kenya. (1 mk)
7. State **two** functions of a constitution. (2 mks)
8. What is direct or pure democracy? (1 mk)
9. Apart from the Nandi, which other **two** communities resisted British invasion in Kenya. (2 mks)
10. Who introduced settler farming in Kenya. (1 mk)
11. Name **two** nationalists outside central Kenya who were detained at Kapenguria in 1952. (2 mks) 12. Give the **main** political challenge that faced Mzee Jomo Kenyatta immediately after independence. (1 mk)
13. State **two** electoral offences that are applicable to a voter. (2 mks)
14. Mention the **document** in which African socialism as a national philosophy was expounded. (1 mk)
15. State **two** ways through which the government has encouraged the preservation of African culture since independence. (2 mks)
16. Name **two** members of the county executive committee. (2 mks)
17. Give the **main** function of the commission on revenue allocation in Kenya. (1 mk) **SECTION B(45 MARKS)**

Answer three questions only from this section.

18.

a. State **five** results of the settlement of Luo during pre-colonial period. (5 mks)

b. Describe the **social** organization of the Maasai in the 19th (10 mks) 19.

a. State **five** reasons why the Portuguese built Fort Jesus in 1593. (5 mks)

b. Explain **five** results of the coming of Christian missionaries to Kenya. (10 mks) 20.

a. State **three** roles of Mekatilili wa Menza in the Agiriama resistance against the British. (3 mks)

b. Explain **six** effects of the Wanga collaboration against invasion in western Kenya. (12 mks) 21.

a. State **five** factors that prompted the colonial government to construct the Kenya –Uganda railway. (5 mks)

b. Explain **five** factors that intensified African Nationalism in Kenya after 1945. (10 mks)

SECTION C (30MKS)

Answer two questions only from this section.

22.

a. Give **three** ways in which education promotes national unity in Kenya. (3 mks)

b. Explain **six** factors that undermine National unity in Kenya. (12 mks) 23.

a. State **five** characteristics of a good constitution (5 mks)

b. Explain **five** reasons why human rights are important in Kenya. (10 mks) 24.

a. State **three** ways in which the High court supervises the work of the subordinate courts. (3 mks)

b. Explain **six** functions of the cabinet in Kenya. (12 mks)

walimuepublishers@gmail.com

HISTORY PAPER 2 - 2021 K.C.SE Prediction Set 1

INSTRUCTIONS

- ANSWER *ALL* QUESTIONS IN SECTION A
- ANSWER *THREE* QUESTIONS IN
- SECTION B ANSWER *TWO* QUESTIONS

IN SECTION C.

SECTION A (25 MARKS)

Answer all questions from this section.

1. Give **two** disadvantages of using electronic sources to study history and government. (2 mks)
2. Who was the **architect** of the theory of Evolution? (1 mk)
3. Mention **one** river associated with early agriculture in Mesopotamia. (1 mk)
4. Give **two** roles of the takshifs during the Trans-Saharan trade. (2 mks)
5. What is the **main** limitation of use of airships in transport? (1 mk)
6. Give **two** disadvantages of use of radio. (2mks)
7. State **two** political effects of industrial revolution in Europe. (2 mks)
8. Identify the **main** factor that contributed to the growth of Athens in ancient Greece. (1 mk)
9. Name the **main** symbol of unity among the shona in the 19th Century. (1 mk)
10. State **two** ways in which the partition of Africa affected Europeans. (2 mks)
11. What was the **name** of the company that administered Zimbabwe on behalf of Britain? (1 mk)
12. Apart from Nelson Mandela, mention **any other** Nationalist in South Africa. (1 mk)
13. Identify **two** reasons why United States of America was reluctant to join the First World War on the side of Allies. (2 mks)
14. Give **two** specialized agencies of the United Nations which deals with provision of loans to member countries. (2 mks)
15. Identify **two** organs of economic community of west African States (ECOWAS) (2 mks)
16. Identify the **main** principle of the Arusha declaration of 1967. (1 mk)
17. Give **one** major political party in India. (1 mk)

SECTION B (45 MARKS)

Answer any three questions only from this section.

18.

a. What **three** challenges did the early man face as he lived in caves. (3 mks)

b. Explain **six** effects of development of early agriculture in Egypt. (12 mks) 19.

a. State **three** factors that facilitated the acquisition of slaves during the Trans-Saharan trade. (3 mks)

b. Explain **six** factors that led to the decline of Trans-Saharan trade. (12 mks) 20.

a. What **five** factors characterized industrialization in Britain. (5 mks)

b. Explain the **problems** facing industrialization in South Africa. (10 mks) 21.

a. Identify **five** factors that enabled Europeans to easily conquer Africa during the scramble for Africa. (5 mks)

b. Explain **five** reasons why assimilation failed in Senegal. (10 mks)

SECTION C (30 MARKS)

Answer any two questions from this section.

22.

a. State **five** peace treaties signed between Allies and the central powers to bring peace in Europe. (5 mks)

b. Explain **five** social effects of World War II. (10 mks) 23.

a. State f**ive** reasons why Pan Africanism became more active in Africa after 1945. (5 mks)

b. Explain **five** functions of the United Nations Security Council. (10 mks) 24.

a. Mention **three** ways of becoming a member of parliament in Britain. (3 mks)

b. Explain **six** functions of the president in USA. (12 mks)