SECONDARY END TERM 1 EXAM 2017

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MATHEMATICS

Form 2

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MATHEMATICS

TERM I - 2017

FORM TWO JOINT EXAMINATION TERM I - 2017

KENYA CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS

TIME: 2 HOURS

INSTRUCTIONS

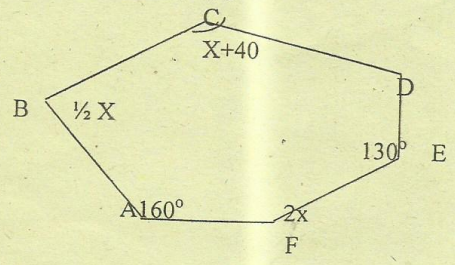
1. Answer all the questions in section I and any five in section B
2. Show all your workings in the spaces provided

1. Without using mathematical tables or calculators, evaluate. (3mks)

$$\sqrt[3]{\frac{0.064 \times 0.125}{0.008 \times 0.001}}$$

2. Evaluate $\dfrac{\frac{3}{4} + 1\frac{5}{7} \div \frac{4}{7} \text{ of } 2\frac{1}{3}}{(1\frac{3}{7} - \frac{5}{8}) \times \frac{2}{3}}$

3. The figure below shows a polygon ABCDEF with the interior angles indicated, find the value of the greatest angle in the polygon. (3mks)



4. Evaluate

$$\left(\frac{27}{64}\right)^{-1/3} \times \left(\frac{2}{3}\right)^{2} \div \left(\frac{1}{16}\right)^{-1/4}$$

5. Three similar 21 Inch television sets and five similar 17 Inch television cost sh 129,250. The difference between the cost of the two 21 Inch television sets and four 17 inch television set is Ksh 22,000. Calculate the price of a 21 – Inch television set and of 17 – Inch television set. (3mks)

6. Use tables of cubes, square roots and reciprocals to evaluate

$$\frac{3}{(0.3375)^{3}\sqrt{337.5}}$$

(4mks)

7. A farmer has enough feed to last his 10cows for 20 days, if he sells 2 cows, how long will the feed last. (2mks)

8. Use Logarithms to evaluate

$$\sqrt[4]{\frac{2849 \times 0.00574}{36.89}}$$

(4mks)

9. A spherical metal balls has a density of $10g/cm^3$, if it has a radius of 3.5cm, find the mass of the ball in kilograms. (3mks)

10. Anthong sold a T.V set on behalf of a shop owner. He allowed a discount of 12 ½ % and was paid a commission of 2% on his sale. Given that the marked price of the t.v set was Ksh 7,800, find the amount the shop owner received. (3mks)

11.Simplify the expression.

$$\frac{X-2}{X} - \frac{3x+2}{4x}$$

b. Hence solve the equation

$$\frac{x-2}{x} - \frac{3x+2}{4x} = \frac{1}{2}$$

(3mks)

12. The G.C.D of three numbers is 30 and their L.C.M is 900. Two of the numbers are 60 and 150, what are the other possible numbers (use factor method) (4mks)

13. Using a ruler and a pair of compasses only construct triangle ABC such that AB= 4cm, AC=8cm, and <BAC = 30°

(2mks)

b. By dropping a perpendicular from C to AB produced, determine the height of triangle, hence find its area.

(2mks)

14. A man is now three times as old as his daughter. In twelve years time he will be twice as old as his daughter. Find their present ages (3mks)

15. Starting from now, the minute hand of a class is showing 21 minutes past noon.

(a) Find the angle through which the minute hand has moved (1mk)

(b) Given that the minute hand is 8cm long, calculate the length of the ark it describes in that time.

(2mks)

16The number 5.8 1 contains an integral part and a recurring decimal. Convert the number into an improper fraction hence into a mixed number (2mks)

17. A Jua kali artisan made an article and sold it to a wholesaler at a profit of 20%. The wholesaler sold the article to a retailer at a profit of 30%. The retailer finally sad the article to a consumer at a profit of 50%.

(a) If it cost the artisan sh 500 to make the article, find how much the customer paid for it. (3mks)

(b) A customer paid sh 1560 for another article. Determine how much the wholesaler has paid for it (3mks)

c. During a clearance sale, the retailer reduced his prices by 10% Find the percentage profit the retailer made on an article which had cost the artisan sh 1,000 to make. (4mks)

18. The angle of elevation of the top of a vertical tower from a point is 30°. The angle of elevation of the top of the tower from another point Q which is nearer the foot R of the tower is 45°. The distance between P and Q is 20 metres and the points P, Q and R are on the same straight line on level ground.

a) Using a scale of 1cm to represent 5m, draw an accurate scale drawing to represent the above information. (4mks)

(b) Use your scale drawing to determine

(i) The height of the tower. (2mks)

(ii) The distance QR (2mks)

(iii) The distance PR (2mks)

19. A model of a cylindrical tank is made in such a way that it is similar in shape to the actual tanks to be constructed. The curved surface area of the model is $440cm^2$ and that of proposal tank is $110m^2$.

(a) Given that the height of the model is 4cm, calculate the height of the actual tank in metres.(4mks)

(b) Calculate the volume of the model given that the diameter of the actual tank is 7m. (3mks)

(c) Find the volume scale factor and hence calculate the volume of the actual tank in cubic metres. (3mks)

20) A line L passes through points (-2, 3) and (-1, 6) and perpendicular to a line P at (-1, 6)

(a) Find the equation of L . (2mks)

(b) Find the elevation of P in form ax + by = c where a, b and c are constants (2mks)

© Given that another line Q is parallel to L and passes through points (1, 2) Find the x and y – intercepts of Q (3mks)

(d) Find the point of intersection of lin[illegible] (3mks)

21. The points A(2,6) B(1,1), C(3,4) and D([illegible].3)

(a) Are the vertices of quadrilateral ABCD. plot the points A, B C and D on graph paper and join them to form quadrilateral ABCD (2mks)

(b) Locate and write down the coordinates of points A' B' C' and D' the images of A, B,C and D respectively under a rotation of positive 90° about the origin. On the same grid draw the image, quadrilateral A'B'C'D'

(3mks)

(c) Locate and write down the coordinates of the points A", B", C" and D" which are the images of A', B', C' and D' respectively under a reflection in the x-axis. On the same grid, draw the second image quadrilateral A"B"C"D"

(3mks)

(d) Quadrilateral A"B"C"D" is the image o f ABCD under a reflection and state its equation. (2mks)