FOCUS A365

Another Hanyamfranchise.Com Evaluation Test

FORM 4 TERM 1 MATHEMATICS PP1
EXAMINATIONS 2018

NAME: _____ADM NO: _____ CLASS: _____

INSTRUCTIONS TO CANDIDATES

1. Write your name, school and index number in the spaces provided above.
2. This paper consists of two sections – section 1 and section 2.
3. Answer ALL the questions in section 1 and ONLY FIVE questions in section 2.
4. All answers and working must be written on the question paper in the spaces provided below each question.
5. Show all the steps in your calculations giving tour answers at each stage in space provided below each question.
6. Non programmable silent electronic calculators and KNEC Mathematical tables may be used except where stated otherwise.

SECTION 1 FOR EXAMINER'S USE ONLY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOTAL
Marks																	

SECTION 2

Question	17	18	19	20	21	22	23	24	TOTAL
Marks									

SECTION 1 (50MKS) Answer all questions in this section

1. Solve the inequalities ×+ 5<3×+2≤×+11 and state the integral values (3mks)

2. Without using a calculator evaluate,

$$\frac{-2(5+3) - 9\div 3+5}{-3X-5+-2\ X4}$$

(3 mks)

3. A lampshade in the shape of an open frustrum of a cone. Its top and bottom diameters are 10cm and 20cm respectively and its height 12cm. find the area of the material used to make the lampshade. (3mks)

4. The straight line passing through the points A(-4,-7)and B(X,Y)is perpendicular to the line whose equation is 5y=7-3×. Find the equation of line AB. (3mks)

5. Solve for θ in the equation $2\cos(5\theta - 20)^0 = 1$ for $-180 \leq \theta \leq 180$. (3mks)

6. Simply the expression $\frac{4x^2 - y^2}{2x^2 - 7xy + 3y^2}$ 3mks

7. B is on a bearing of N30^{0}E from A and C is due East of B. the distance from A to B is 600km and the distance from B to C is 400km. Calculate the distance from A to C. (3MKS)

8. A minor arc of a circle subtends an angle of 105^o at the centre of a circle. If the radius of the is 8.4 cm, find the length of the major arc. 3mks

9. A regular polygon has an interior angle of 150^0 and a side of length 10cm.
   a. How many sides does the polygon have? (1mk)

   b. Find the area of the polygon. (2mks)

10. A cockroach followed the following vector paths (2mks)

a= $\begin{pmatrix}2\\1\end{pmatrix}$ b= $\begin{pmatrix}-7\\24\end{pmatrix}$ c=$\begin{pmatrix}15\\-20\end{pmatrix}$ what is:

a) ,its final position from the starting point (1mk)

b) its distance from the starting point (1mk)

11. Solve the simultaneous equations (3mks)

XY=4

X+Y= 5

12. A Kenyan businessman bought goods from Japan worth 2, 950 000 Japanese yen. On arrival in Kenya custom duty of 20% was charged on the value of the goods.

If the exchange rates were as follows

1 US dollar = 118 Japanese Yen

1 US dollar = 76 Kenya shillings

Calculate the duty paid in Kenya shillings (3 marks)

13. The marks scored by a group of students in a test were recorded as shown in the table below.

Marks	30-34	35-39	40-44	45-49	50-54	55-59	60-64
No of students	3	6	5	12	8	9	7

On the grid provided and on the same axes represent the above data using:

a. A histogram (4mks)

b. A frequency polygon (1mk)

14. A test tube is made up of a hemispherical bottom and the cylindrical stem, both of internal radius 0.7cm. calculate the capacity of the test tube given that its height is 12cm (3mks)

15. A salesman is paid a salary of Ksh 15375 per month. He also gets a commission of 4 ½% on the amount of money he makes from his sale. In a certain month he earned a total of Ksh 28875. Calculate the value of his sales that month (3mks)

16. The density of a substance A is given as 13.6g/cm^3 and that of substance B as 11.3g/cm^3. determine correct to one decimal place, the volume of B that would have the same mass as 50cm^3 of A. (3mks)

SECTION 2 (50MKS) Choose any 5 questions.

17. Two friends Ali and Hassan live 40km apart. One day Ali left his house at 9.00Am and cycled towards Hassan's house at an average speed of 15km/hr. Hassan left his house at 10.30Am on the same day and cycled towards Ali at average speed of 25km/hr.
    a. Determine:
        (i) the distance from Ali's house where the 2 friends met (4mks)

        (ii) the time they met (2mks)

        (iii) how far Ali was from Hassan's house where they met. (2mks)

    b. The two friends took 10minutes at meeting point and then cycled to Hassan's house at an average speed of 12km/hr. Find the time they arrived at Hassan's house. (2mks)

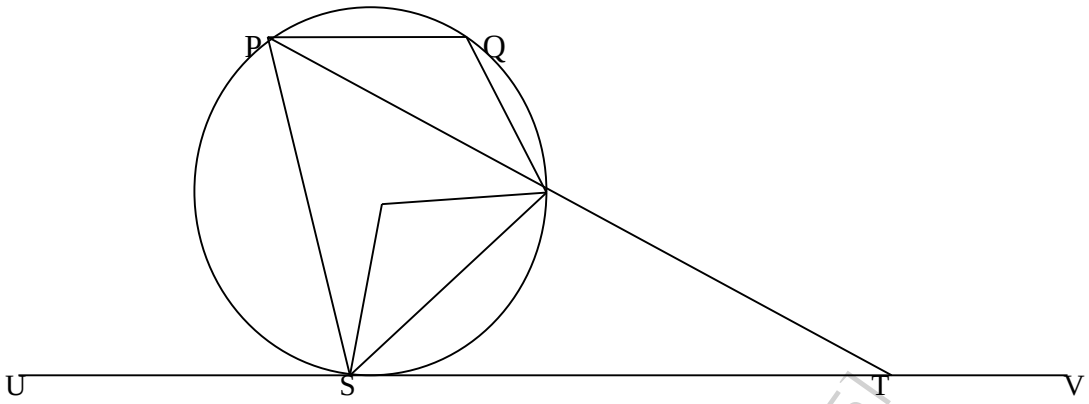
18. ABCD is a quadrilateral with vertices
A(3,1) B(2,4) C(4,3) D(5,1). (1mk)

a. Draw the image A'B'C'D' image of ABCD under the transformation matrix $M\begin{bmatrix}0 & -1\\ 1 & 0\end{bmatrix}$ and write down the co-ordinates (3mks)

b. A transformation represented by $\begin{bmatrix}1 & 0\\ 0 & -1\end{bmatrix}$ maps A'B'C'D' onto A"B"C"D" determine the co-ordinates of the image and draw A"B"C"D" (3mks)

c. Determine the single matrix of transformation which maps ABCD onto A"B"C"D" and describe the transformation (3mks)

19. In the figure below, P,Q, R and S are points on the circle. Line USTV is a tangent to the circle at S, <RST = 50^0 and <RTV = 150^0. PRT and USTV are straight lines.



a) Calculate the size of:

i) < ORS; (2 marks)

ii) < USP; (1 mark)

iii) < PQR (2 marks)

b) Given that RT = 7 cm and ST = 9 calculate to 3 significant figures:

i) The length of line PR; (2 marks)

ii) The radius of the circle. (3 marks)

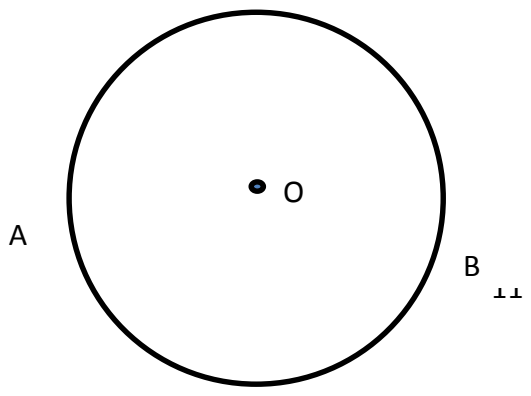
20. A retailer planned to buy X bags of Pakistan rice for a total cost of Ksh 16200. The supplier agreed to offer a discount of Ksh 60 per bag. The retailer was then able to get three extra bags for the same amount of money.
    a. Write an expression in terms of X for the:
       (i) original price per bag (1mk)

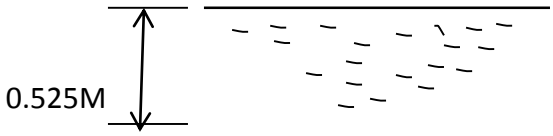
       (ii) price of each bag after the discount (1mk)

    b. Form an equation in X and hence determine the number of bags the retailer bought. (5mk)

    c. Calculate the discount offered to the retailer as a percentage. (3mks)

21. The container of a petrol tanker is cylindrical with its axis horizontal. Its internal length is 7m and its internal diameter is 2.1m. The figure shows the vertical section of the container when the depth of the petrol is 0.525m, AB being the horizontal level of petrol. Calculate:





a. <AOB where O is the centre of the circular section. (3mks)

b. The area of the sector AOB (2mks)

c. The shaded area (3mks)

d. The mass of the petrol in the tanker given that cubic metre of petrol has a mass of 700kg. (2mks)

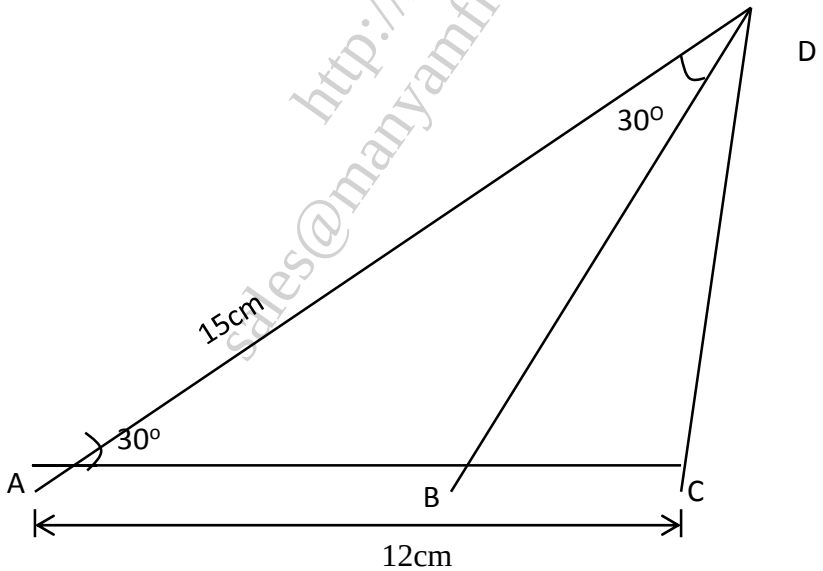
22. (a) a straight line L1 whose equation is 3y-2x = -2 meets the X-axis at **R**. determine the co-ordinates of **R** (2mks)

(b) a second line L2 is perpendicular to L1 at **R**. find the equation of L2 in the form y=mx+c where m, and c are constants (3mks)

(c) a third line L3 passes through (-4,1) and is parallel to L1. Find:
the equation of L3 in the form y=mx+c where m and c are constants (2mks)

(d) the co-ordinates of point **S** at which L3 intersects L2 (3mks)

23. In the figure below AC=12cm, AD=15cm and B is the point on AC.<BAD=<ADB=30^0



Calculate correct to <u>one decimal</u> place:
a, the length of CD (3mks)

b, the length of AB (3mks)

c, the size of <BDC (2mks)

d, the area of the triangle BCD (2mks)

24. The table below shows income tax rates for a certain year.

Monthly income in Ksh	Tax rate in each shilling
0- 10164	10%
10165- 19740	15%
19741-29316	20%
29317-38892	25%
Over 388892	30%

A tax relief of Ksh 1162 per month was allowed.in a certain month of that year, an employee taxable income in the fifth band was Ksh 2108.

a) Calculate

i. The employee total taxable income in that month. 2MKS

ii. The tax payable by the employee in that month. 5MKS

b) The employee income included a house allowance of Ksh 15000 per month. The employee contributed 5% of the basic salary to a co-perative society. Calculate the employees net pay f or that month. 3MKS