MARANATHA PRIVATE SECONDARY SCHOOL EXAMINATION BOARD

2019 MALAWI SCHOOL CERTIFICATE OF EDUCATION MOCK EXAMS

Subject Number :131/I

Time allowed :2hrs

8:00 am – 10:00 am

MATHEMATICS

PAPER I

(100 marks)

1. Factorise completely

(a) $3a^2b + ab - 2b$ **(3marks)**

(b) $12x^2 - 3y^2$ **(3marks)**

2. Given that $f(x) = \frac{5 - 7x}{3}$, calculate $f(2) - f(-\frac{1}{7})$ **(4marks)**

3. Make q the subject of the formula $P=\left(\frac{r}{q+r}\right)^2$

(4marks**)**

4. Simplify $\frac{2\sqrt{5}}{\sqrt{35}}$, giving your answer with rational denominator

(5marks)

5.The third of a geometric progression (GP) is 5 and its common ratio is -2,

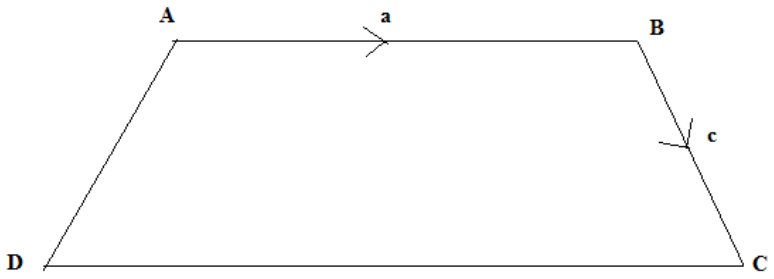
Calculate the sixth term of a GP.

(5marks)

6. Simplify $\frac{a}{a-7} - \frac{7a-35}{a^2-12a+35}$ to lowest term

(5marks)

7.Figure 1 is a quadrilateral ABCD in which **AB**= **a**,**BC**= **c** and **DC** = 3**AB**



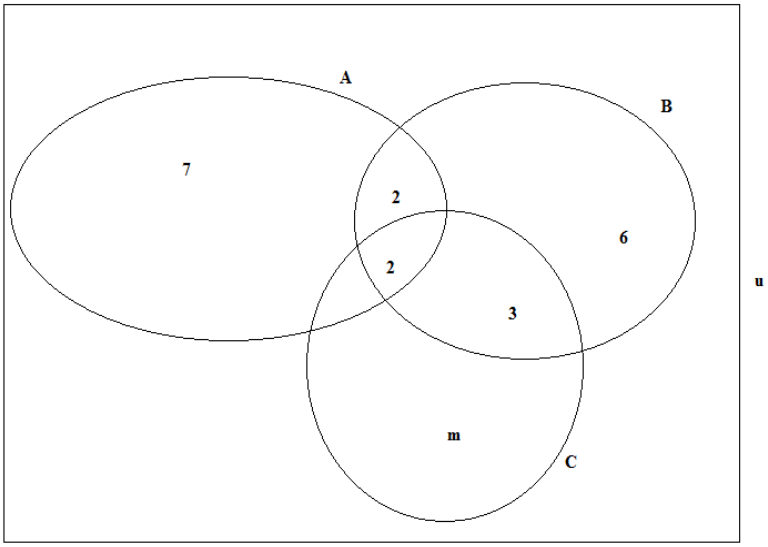
Find (i) AD **(4marks)**

(ii) DC in terms of **a** and **c** **(3marks)**

8.Aquantity p varies directly as the square root of r and inversely as t.When p=2,r=4

and t=3.Calculate the value of t when p=6 and r=16. **(6marks)**

9.Figure 2 is avenndiagram showing number of elements of sets A,B and C



If n(AuBuC)=30,calculate the value of m **(5marks)**

10.The sum of 7 of the angles of a nonagon is 1000^0.The other two angles are equal to each other. Calculate the size of other two angles. **(6marks)**

11.Prove that tangents from an external point drawn to the same circle are equal in length.
(7marks)

12.The following marks were obtained by a class of 20 students in atest,marked out of 30

22 30 12 15 10

15 23 19 26 16

3 20 28 10 11

9 17 18 24 14

Taking 0 as the lowest class limit and using a class width of 10, construct a grouped frequency distribution table for the marks
(4marks)

13.Given that $a\log_{8^2}$ =6 ,calculate the value a **(5marks)**

14. Table 1 shows the speed of a train recorded every 10 seconds.

SPEED (m/s)	200	400	600	800
TIME (s)	10	20	30	40

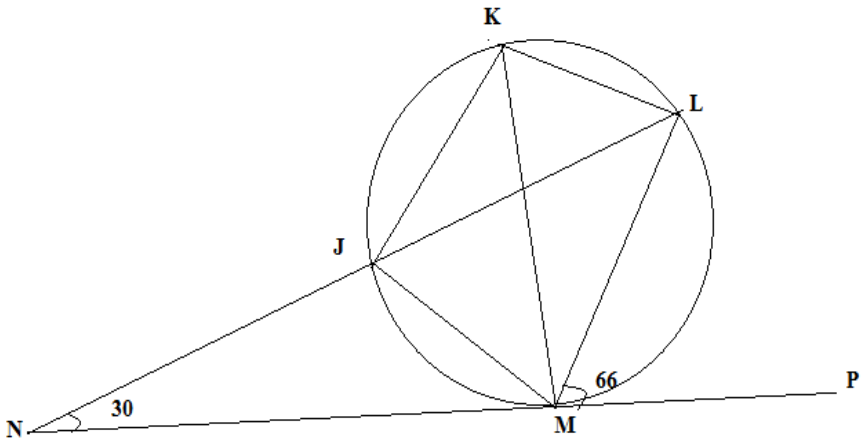
Using a scale of 2 cm to represent 100m s ⁄ on the vertical axis and 2 cm to represent 10 seconds on the horizontal axis, draw a speed-time graph and use it to calculate the acceleration of the train. **(6 marks)**

15.Given that $5\begin{pmatrix} 1 & 4 \\ 3 & -n \end{pmatrix} = \begin{pmatrix} 5 & 20 \\ -15 & 40 \end{pmatrix}$, find the value of n **(4marks)**

16.Evaluate $\frac{ab - b}{ab^2}$ when a=2, and b=-5 (4marks)

17.Figure below shows acircle JKLM, NMP is a tangent to the circle at M and NJL

is astraight line.



calculate angle JML **(6marks)**

19. A pond 12m in diameter, has a shape of a hemisphere and is full of water. The pond is emptied and all the water poured into a cylindrical tank of radius 5m. Assuming there is no loss of water, calculate the height of water in the tank.

(volume of sphere $=\frac{4}{3}Hr^3$) **(6marks)**

20. Using a ruler and pair of compasses only, draw a line **AB** = 10cm and construct a circle with the line AB as a diameter. Mark a point C on the circle such that **AC**=6cm. Join AC and BC. Construct a tangent CP such that angle BCP is acute.

(5 marks)

END OF QUESTION PAPER