

ZOMBA CATHOLIC SECONDARY SCHOOL 2019 MALAWI SCHOOL CERTIFICATE OF EDUCATION

MOCK EXAMINATION

MATHMATICS PAPER II

(100 marks)

Date: 9th April, 2019

Subject Number: M022/II

Time allowed: 1 hr. Min

Instructions

- 1. This paper contains **6 pages**, please check.
- 2. Write your, NAME, ACC. NO and CLASS on top.
- 3. Answer all the fifteen questions.
- 4. Write your answers in the spaces provided for each questions.
- 5. Marks for each question are indicated at the end of each question.
- 6. Write your examination number at the top of this page and of every sheet.
- 7. In the table provided on this page tick against the question number you have answered.
- 8. You should hand in your question paper to the invigilator when time is called to stop writing.

Question Number	Tick if answered	Do not write in these columns			
1					
2					
3					
4					

SECTION A (60 MARKS)

1. a) Simplify $\frac{3\sqrt{2}+1}{\sqrt{3}+\sqrt{6}}$ without using a four figure table or calculator

(b) Solve the equation $2^{2x+1} - 2^{x+1} + 1 = 2^x$

(5 marks) 2. a) **Fig 1** shows a circle FGHJ with centre O. FG is parallel to OH and FOJ is a diameter



If angle HFJ=37°, calculate angle GHF

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(6 marks)

(6 marks)





If the value of the triangle APQ= $x^2 cm^2$ Calculate the value *x*

(5 marks)

3. a) A chord of a circle of radius 15cm is 9cm away from the centre. calculate the length of the chord giving your answer correct to one decimal place

(5 marks)

(b) Given that

$$A = \begin{pmatrix} 3 & 4 \\ 1 & -2 \end{pmatrix} \quad B = \begin{pmatrix} 1 & 3 \\ 6 & 1 \end{pmatrix} C = \begin{pmatrix} 2 & 0 \\ -1 & 4 \end{pmatrix}$$

Find 2(AC –B)

(6 marks)

4. a) In order to be offered a place at Bunda College, a student must pass in three subjects: Mathematics, Agriculture and English. If Chimwemwe has probability of $\frac{1}{4}$ of failing Mathematics, $\frac{1}{3}$ of failing Agriculture and $\frac{3}{4}$ of failing English, calculate the probability that he would be offered a place at Bunda collage (b) Solve the equation $\frac{5x+2}{5x+2} = \frac{x}{5x+2}$ x+1 (4 marks)

(5 marks)

5. a) Figure 3 shows the speed-time graph of a moving object

Velocity (m/s) 0 3 7 11

If the total distance traveled by the object was 180m, calculate the speed V of the object



(5 marks)

(b) The mean data is 57 its sum is 456 if the sum of the squares of deviation of the data is 292. Calculate the standard deviation of the data

(4 marks)

6. a) Given that coordinates of \triangle PQR are P (3, 1), Q (1, 2) and C (3, 5). Calculate the coordinate of the vertices of its image P'Q' and R' if the centre of enragement is (0.0) and scale factor is 3.

(3 marks) (b) Figure 4 is a diagram of a cylindrical flask of diameter 10cm and height 25cm which has hemispherical cup



Calculate the total surface

Area of the flask. Take π =3.14 and sphere S=4

(5 marks)

SECTION B (40 MARKS)

7. Table below shows some values of *x* and *y* for the equation $y = x^3 - 2x^2 - 5x + 6$ for the value of *x* from -3 to 4

Х	-3	-2	-1	0	1	2	3	4
у	-24		8	6		-4	0	18

- (i) Complete the table
- (ii) Using a scale of 2cm to represent 1 unit on the x-axis and 2cm to represent 5 units on the y-axis, draw the graph $y = x^3 2x^2 5x + 6$
- (iii) Use your graph to solve the equation $x^{3}-2x^{2}-2x=0$

(10 marks)

- 8. Naomi has K24, 000 given by her Aunt Lexa to buy skirts and blouses. Skirts cost K2, 400 while blouse cost K1, 200 each in Pep shops. She wants spend at least K4, 800 more on skirts than blouses. she would like to buy at least 4 skirts and 2 blouses
 - (i) If x represents the number of skirts and y represents the number of blouses, write down four inequalities in x and y
 - (ii) Using a scale of 2cm to represent 2 units on both axes, draw the graphs to show the region which represents the four inequalities
 - (iii) Using your graph, find the maximum number of skirts and blouses that Naomi can buy

(10 marks)



Calculate the:

- (i) Length BE
- (ii) Angle between line ED and plane BCDF giving your answer correct to the nearest degree

(10 marks)

 There are Co students at ZCSS open who completed their fees payments. those students fall into at least one of the categories based on their behaviour God fearing (B) Poorly (C) and rudeness (A) Given that

12 students ae rude only 7 students are god fearing only 11 students are poor only 6 students have all behaviour n $(B \cap C \cap A') = x$ n $(A \cap C \cap B') = 2x$ n $(A \cap B \cap C') = 3x$ Use a Venn diagram, calculate the number of students who are rude in this class

11. By using a ruler and a pair of compasses only, construct in the same diagram:

(i) Tringle ABC such that AC=10cm, BC=5 cm and \angle ACB=60°

- (ii) Circum circle the triangle ABC
- (iii) A tangent to the circle at A
- (iv) Measure and state the a cute angle the tangent makes with BA

(10 marks)

END OF QUESTION PAPER Page 10 of 10