

REGISTRATION NUMBER		CENTRE NAME	
CANDIDATE'S FULL NAME			
WEST MATHEMATICS TEACHERS' PEDAGOGIC GROUP GENERAL CERTIFICATE OF EDUCATION MOCK EXAMINATION ORDINARY LEVEL			
CANDIDATE IDENTIFICATION NUMBER	SUBJECT CODE	PAPER NUMBER	
	0570	2	
SUBJECT TITLE: MATHEMATICS		EXAMINATION DATE: MARCH 2020	

Two and a Half hours

Enter the information required in the boxes above.

This paper is arranged in two sections, A and B. Answer ALL questions in Sections A and B.

Section A: Answer ALL questions in the spaces provided. The mark allocation for each question is indicated.

Section B: All questions in Section B carry equal marks.

You are reminded of the necessity for good English and orderly presentation in your answers.

In calculations, you are advised to show all the steps in your working, giving your answer at each stage.

Calculators are allowed.

Turn Over

FOR EXAMINERS' USE ONLY	
Marked by:	SCORE
Signature: Date:	
Checked by:	
Signature: Date:	

SECTION A

ANSWER ALL 15 QUESTIONS IN THIS SECTION.

1. Evaluate;

(i) $-6 + 12 \times 2 \div 4$

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(ii) 4.5×0.02 leaving your answer;

(a) in standard form.

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(b) correct to one significant figure.

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(6 marks)

2. A man borrows 150,000 FCFA from a bank at 5% compound interest per annum. Find the compound interest paid after 2 years.

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(6 marks)

3. Solve for x , the equation $\frac{1}{x+2} - \frac{1}{x} = 2$.

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(5 marks)

4. Given the vectors $OA = 4i - j$, $OB = -3i - 4j$ and $OC = 5i + tj$. Find:

(a) $OA - 2OB$.

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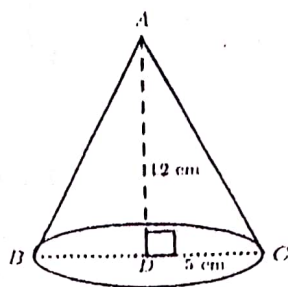
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(b) The value of the scalar t for which OC is parallel to $OA - 2OB$.

(6 marks)

5. The figure below shows a solid cone of radius 5 cm and a vertical height of 12 cm.



Calculate, leaving your answer in terms of π ,

(a) its base area.

(b) the total surface area of the cone.

(6 marks)

6. Given the series $2 + 6 + 10 + \dots$, find;

(a) the next two terms,

(b) the sum of the first n terms of the series.

(5 marks)

7. Given that the line joining the points $(3a, 4)$ and $(2a, -3)$ has gradient 2.

(a) Find the value of the constant a .

(b) Hence, determine the equation of the line.

(6 marks)

8. Calculate the value of the constant k , given that the determinant of the matrix $\begin{pmatrix} -1 & 1 \\ 4 & k \end{pmatrix}$ is zero.

(4 marks)

9. Solve the system of equations;

$$3p - 2m = -8$$

$$p - 8m = 1.$$

(6 marks)

10. Given the propositions;

P : Mary will go to the palace.

Q : Mary will see the Fon.

(a) Using logical symbols such as $\wedge$, $\vee$, $\implies$, $\iff$, $\sim$, etc, write down the following statements in terms of P and Q .

(i) Mary will go to the palace and she will see the Fon.

(ii) Mary will not see the Fon.

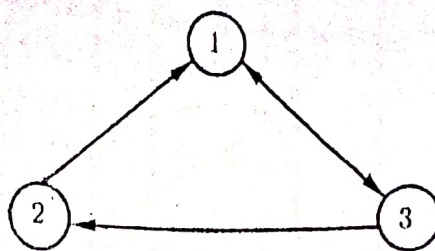
(iii) If Mary goes to the palace, then she will see the Fon.

(b) Write the following compound statements in ordinary English.

(i) $P \vee Q$

(ii) $P \iff Q$

(5 marks)



Given the directed graph (diagraph), $D = (V, A)$ of the network shown above.

(a) List the elements of the sets:

(i) V

(ii) A

(b) State;

(i) the number of vertices in the network,

(ii) the number of regions in the network.

(6 marks)

12. The function $f(x)$ is defined as follows: $f: x \mapsto -x^2 + 1$.

(a) Find $f(1)$.

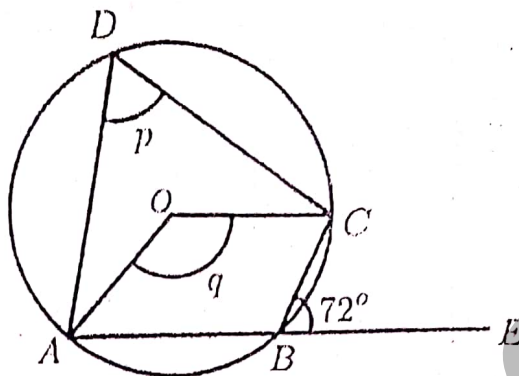
(b) Factorise the function $f(x)$ completely.

(5 marks)

13. The expression $x^3 + bx + c$ leaves a remainder 1 when divided by $(x - 1)$. When the same expression is divided by $(x + 1)$, the remainder is 3. Find the values of b and c .

(5 marks)

14. In the figure below, O is the centre of the circle and ABE is a straight line. Given that angle $CBE = 72^\circ$, find, giving reasons for your answers.



- (i) Angle p .

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- (ii) Angle q .

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(5 marks)

15. Two quantities p and q are such that p is inversely proportional to q^2 . Given that $p = 48$ when $q = \frac{1}{2}$. Find;

- (a) an equation relating p and q ,

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- (b) the value of p when $q = 2$.

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(5 marks)

SECTION B
ANSWER ALL FOUR QUESTIONS IN THIS SECTION.
EACH QUESTION CARRIES 15 MARKS

1. (i) A motorcycle costs 440,000 FCFA on cash payment. Ngong bought his own on hire purchase, thus: he paid a deposit of 40% of the cash payment price followed by 22 monthly instalments of 15,000 FCFA each. Find;
- (a) the amount he paid as deposit,
 - (b) the amount he paid for the 22 months,
 - (c) the total amount paid for the motorcycle,
 - (d) how much more he paid for the motorcycle. Hence, express this extra cost as a percentage of the cost on cash payment.
- (ii) A man spends $\frac{2}{5}$ of his salary on accommodation and half of the remainder on food. What fraction of the salary is left for other purposes?
- (iii) A right-angled triangle has hypotenuse x , and the other sides have equal lengths of 2 units. Find the value of x .

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2. (i) In a class of 35 students, at the end of the year, every student passed at least one of the three subjects: Economics (E), History (H) and Geography (G). It is known that;
- 17 passed in History,
 - 22 passed in Economics,
 - 12 passed in Economics and Geography,
 - 9 passed in History and Geography,
 - 7 passed in Economics only and
 - 3 passed all three subjects.
- (a) Represent this information on a Venn diagram.
- From the Venn diagram, find how many students passed;
- (b) History and Economics,
 - (c) History only,
 - (d) Geography.
- (ii) The functions f and g are defined on $\mathbb{R}$, the set of real numbers as:

$$f : x \mapsto 2(x - 7)$$

$$g : x \mapsto \frac{1}{2}(x - 6)$$

Evaluate;

- (a) $f(6)$,
- (b) $f^{-1}(x)$,
- (c) solve for x in $f(x) = g(x)$.

3. (i) Using 2 cm to represent 1 unit on the x-axis and 1 cm to represent 1 unit on the y-axis, draw the graph of $y = 7 - 3x - 2x^2$ for $-4 \leq x \leq 2$. From your graph, find the gradient of the tangent to the curve at the point where the curve cuts the y-axis.

- (ii) Using a pencil, ruler and a pair of compass only.

- Construct an equilateral triangle ABC of side 6 cm.
- Construct a line through A to meet BC at D such that angle $ADC = 90^\circ$.
- Construct the angle bisector of angle ABC to meet AD at O.
- Draw a circle with centre O and radius OD.
- Name the circle and state its radius.

4. (i) The marks obtained, out of 100 by 60 students in a Geography test are arranged in a grouped frequency table as follows:

Marks (x)	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Frequency (f)	2	4	8	11	13	8	5	6	3	0

- State the modal class of the distribution.
 - Estimate to one decimal place, the mean of the distribution.
- (ii) A bag contains 7 white balls and 3 red balls of identical shapes and sizes. Two balls are selected at random and without replacement from the bag.
- Draw a tree diagram to illustrate all the possible outcomes.
Find the probability that the two balls selected are;
 - all red,
 - all of the same colour,
 - a red and a white ball in that order.