EDUCATION-NEWS CONSULT
DEC 2024 BECE MOCK
END OF TERM EXAM (2025 BECE)
MATHEMATICS
2 HOURS

Name.....
Index Number.....

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EDUCATION-NEWS CONSULT MOCK – DECEMBER 2024 EDITION FOR 2025 BECE

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SPECIAL PERFORMANCE BOOSTER – MOCK 3

DECEMBER 2024 **MATHEMATICS** **2HRS**

Do not open this booklet until you are told to do so. While you are waiting, read and observe the following instructions carefully. Write your name and index number in ink in the spaces provided above.
This booklet consists of two papers; **I** and **II**. Answer Paper **2** which comes first in your answer booklet and Paper **1** on your Objective Test answer sheet. Paper **2** will last for **1** hour, after which the answer book let will be collected. Do not start Paper until you are told to do so. Paper **1** will last 60 minutes.

VERY IMPORTANT INSTRUCTIONS TO YOU IF YOU WANT TO PASS THIS PAPER

1. Read through the questions, brainstorm and plan your answers before you finally answer them. This is one of the good ways to manage your time in an exam and to do well.
2. Clearly use simple but detailed sentences and provide the best answers possible at all times.
3. Write answers that provide additional information. If you just list answers or provide one to three worded answers where explanations are required, your will score very low marks or nothing at all.
4. Do well to explain your answers to help earn full marks and give one example at least. Check your units of measurement, spellings, grammar, update answers and read over your work before submitting your script.
5. Write question numbers boldly, start every new major question (answers) on a new page.
6. Do not rewrite the full question before answering. Only write the question number that corresponded to the answer.
7. Show workings in all instances in section B if the question involves calculations.

PAPER 2 - ESSAY
[60 MARKS]

Answer **four** *questions* **only**. **All** *questions carry* **equal** *marks. All workings* **must** *be clearly shown. Marks will* **not** *be awarded for correct answers without corresponding working.*

1. (a) Mr. intends to pay his electricity bills annually. His previous readings indicate that he consumes GH₵ 217.00 worth of electricity monthly. How much will his annual electricity bill be?
(b) Using the lattice method, find the product of six thousand and five, and two thousand six hundred and eight.
(c) Simplify $\frac{5}{7} + 3\frac{1}{5} - 2$.

2. In a survey conducted at Makola Market, $\frac{1}{4}$ of traders who sell tomatoes also sell onions, $\frac{2}{5}$ sell only tomatoes while $\frac{11}{20}$ sell onions.
(b) What fraction of traders sell tomatoes?
(c) What fraction of traders sell only one commodity?
(d) Find the number of traders involved in the survey if 5 traders sell neither of the two commodities.

3. (a) Three friends James, John and Joshua are farmers in Bekwai village. In the 2022 farming season, John weeded 1.235 acres of land more than Joshua and James also weeded 0.537 acres more than John. If the total acres of land weeded by the three friends is 19.057, find correct to two decimal places, the acres of land weeded by (i) Joshua (ii) James.

(b) Simplify $\sqrt{12} + \frac{6}{\sqrt{3}}$.

4. (a) Akweley worked on her Maths project for $\frac{3}{4}$ of an hour on Tuesday and $\frac{5}{6}$ of an hour on Wednesday. She spent Thursday finishing her English homework.
(i) How long did Akweley work on her Maths project?
(ii) How much longer did She work on the project on Wednesday than on Tuesday?
(iii)If she spent 2 hours all together on school work over the 3 days, how long did she spend on her English?

(b) A coconut vendor bought 300 pieces of coconut from a farm gate at a total cost of GH₵ 450.00. He sold all of them at 3 for GH₵ 5.00 Find the:
(i) total selling price of all the coconuts;
(ii) percentage profit.

5. (a) Give two descriptions of the same problem given below in different contexts to show the commutative property of multiplication. "*There are 3 bags with 6 plums in each bag. How many plums are there in all?*

(b) A snail seller had 2 baskets full of snails, basket T contains 187 snails. She sold 92 snails from T and 69 snails from U. The number of snails left in the two baskets were found to be the same, how many snails were in basket U?
(c) If $\sqrt{3} = 1.7321$ and $\sqrt{2} = 1.4142$ find the value of $\sqrt{24}$ correct to 2 decimal places.

6. The table below has relations $y = \frac{1}{2}x - 4$ and $y = -x + 2$.

x	-4	-3	-2	-1	0	1	2	3	4
$y = \frac{1}{2}x - 4$		-5.5					-3		
$y = -x + 2$	6				2				

(a) (i) Copy and complete the missing numbers on the table.
(ii) Using a scale of 2 cm to 1 unit on both axes, draw two perpendicular axes OX and OY.
(iii) On the same graph sheet, mark the x-axis from -5 to 5 and y-axis from -6 to 6.
(b) Plot on the same graph the ordered pair (x, y) from the relations and join with a straight edge.
(c) Using the graph, determine the point of intersection between the two relations.

END OF ESSAY TEST

PAPER 1
OBJECTIVE TEST

Answer All Questions

Each question is followed by four options lettered A to D. Find out the correct option for each question and shade in pencil on your answer sheet the answer space which bears the same letter as the option you have chosen. Give only one answer to each question.

1. What is 1.0000687 in 2 significant figures?
A. 1
B. 1.00007
C. 1.00006
D. 1.0001

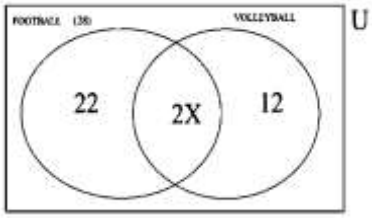
2. The standard form representation of 167.362 is
A. 16.7362×10^2
B. 1.67632×10^2
C. 1.67362×10^2
D. 1.67362×10^{-2}

3. Which of the following represents the relationships between a natural number (N), a whole Number (W) and an integer (Z)?
A. $N = W = Z$
B. $N \subset W \subset Z$
C. $N = W \subset Z$
D. $N \cup W = Z$

4. One of the following is an irrational number.
A. $\sqrt{120}$
B. $\sqrt{324}$
C. $\frac{2}{3}$
D. $16^{\frac{1}{2}}$

5. If $x = 18y$ find the least value of y such that x is a perfect square number.
A. 3
B. 14
C. -2
D. 2

Use the information on the Venn diagram below to answer questions 6 to 8.



6. How many students play only one game?
A. 22
B. 12
C. 6
D. 34

7. How many students play both games?
A. 3
B. 6
C. 12
D. 22

8. How many students play volleyball?
A. 12
B. 15
C. 22
D. 18

9. Kwame is expected to arrange chairs in a conference room, such that there are 14 rows and 17 columns. How may chairs will he need for this?
A. 328
B. 238
C. 176
D. 31

10. A cuboid contains some oranges, the width had 11 oranges, the breadth had 23 oranges and there were 48 oranges vertically upwards. What is the total number of oranges in the cuboid?
A. 12,144 oranges
B. 82 oranges
C. 301 oranges
D. 1,632 oranges

11. The sum of the surds $\sqrt{4a}, 5\sqrt{a}$ *and* $\sqrt{9a^3}$ will produce
A. $10a\sqrt{a}$
B. $7 + 3a\sqrt{a}$
C. $(7 + 3a)\sqrt{a}$
D. $5\sqrt{5a} + \sqrt{9a^3}$

12. Amina used 2 loaves of bread to make sandwiches. If she made equal numbers of 5 different types of sandwiches, what percentage of a loaf of bread did she use for each type of sandwich?
A. 40%
B. 20%
C. 30%
D. 25%

13. If the point A is plotted $(-3,4)$away from the origin, calculate its distance from the origin.
A. 20 units
B. 1 unit
C. 5 units
D. 6 units

14. Rounding 274.65894 to the nearest tenths will yield a result of
A. 270.65894
B. 270
C. 274.66
D. 274.7

15. John purchased 9.25m of cloth for GH₵ 425.5. Calculate the cost price per metre.
A. GH₵ 46.00
B. GH₵ 3,933.56
C. GH₵ 0.02
D. GH₵ 20.00

16. What is the value of $15 - 4 \times 2 + 3$?
A. 10
B. 25
C. –5
D. 4

17. If $x = 4\ and\ y = 2$, what is $xy + x^2 - y^2$?
A. 16
B. 20
C. 17
D. 28

18. In the relation $y = 2x - 4$, what is the value of y when $x = 3$?
A. 4
B. 6
C. 2
D. –2

19. Abu scored 65% on a science test with 60 questions. How many questions did he answer wrongly?
A. 30
B. 45
C. 39
D. 21

20. A story book has 300 leaves. If a student reads 20 pages a day, how many days will he take to complete reading the book?
A. 15 days
B. 30 days
C. 20 days
D. 60 days

21. Given that $\sqrt{a} = 2.134$ what is the value of $2\sqrt{25a}$?
A. 10.67
B. 21.34
C. 4.268
D. 1.067

22. Three-fifth of students in a school are girls, $\frac{5}{9}$ of these girls are in the lower classes. What fraction of girls are studying in the lower classes?
A. $\frac{1}{3}$
B. $\frac{27}{25}$
C. $\frac{5}{9}$
D. $\frac{3}{5}$

23. The floor of a rectangular banquet has an area of $3600m^2$. what is its width if it has length of 90m?
A. 4m
B. $40m^2$
C. $50m^2$
D. 40m

24. What is the product of $25.67\ and\ 36.1$?
A. 926.687
B. 0.71108
C. 1.4063
D. 92.67

25. Writing 602.5400728 to four significant figures will yield
A. 602.50
B. 6254.00
C. 602.54
D. 620.54

26. Given that m and n are the number of tubers of yams packed in rows and columns on a shelf. If $m = 123\ and\ n = 321$, how many tubers of yams are packed on the shelf?
A. 39,438
B. 198
C. 39,483
D. 444

27. Ben buys 3 packs of buns, each pack has 4 buns, while Mina buys 4 packs of buns, each pack has 3 buns. Which of them have more buns?
A. Ben
B. Mina
C. Both have the same number of buns.
D. Each of them has less.

28. Simplify $\frac{10}{\sqrt{5}}$.
A. $\sqrt{2}$
B. 2
C. $2\sqrt{5}$
D. $\frac{\sqrt{50}}{5}$

29. A decimal representation to hundredths of $\frac{48}{7}$ is
A. 6.857
B. 0.686
C. 6.85
D. 6.86

30. Which of the following represents the distributive property?
A. $2x + y = y + 2x$
B. $5 \times 10x = (5 \times 8x) + (5 \times 2x)$
C. $(6x + 5) + 4x = 6x + (5 + 4x)$
D. $16 - 2x = 2x - 16$

31. What do the sets A$\{prime\ numbers\}$ and B$\{even\ numers\}$ have in common?
A. A multiple of 2.
B. Natural numbers between 2 and 10.
C. A composite number
D. Whole numbers greater than 1

32. A stadium holds 50,000 people. The stadium is divided into 250 different seating sections. How many seats are in each section?
A. 200
B. 500
C. 20
D. 50

33. Which operation property is portrayed in the expression $(x + y) + z = x + (y + z)$?
A. Distributive
B. Commutative
C. Associative
D. None of the above.

34. If set A has 10 members and set B has 15 members, and they share 5 members, how many unique elements are in the union of both sets?
A. 25
B. 15
C. 10
D. 20

35. There are 40 match sticks in a box. How many match sticks will a dozen match boxes have?
A. 160
B. 240
C. 480
D. 400

36. There are 78,640 students in a school. If they are allowed to sit in pairs how many desks will be needed to accommodate all of them?
A. 156,280
B. 39,320
C. 38,230
D. 156,820

37. What is the magnitude of the line that joins the points $(2, -1)$ and $(-2, 2)$ on the Cartesian plain?
A. 4 units
B. 5 units
C. 3 units
D. 7 units

Use the information provided below to answer questions 38 to 40.

Kwame was asked to draw two lines, $y = 2x - 1$ *and* $y = -\frac{1}{2}x + 4$ *on the same graph sheet.*

38. What is the value of y for $y = 2x - 1$ when $x = -3$?
A. – 7
B. – 6
C. 7
D. 6

39. Find the value of y for $y = -\frac{1}{2}x + 4$ at the point where $x = 4$.
A. – 2
B. 6
C. – 6
D. 2

40. What is the point of intersection of the two lines?
A. $(3, 2)$
B. $(2, 3)$
C. $(-2, 3)$
D. $(2, -3)$