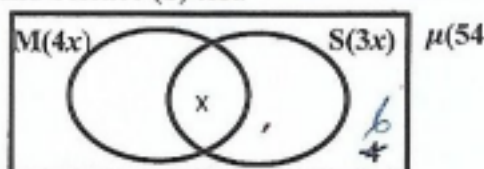


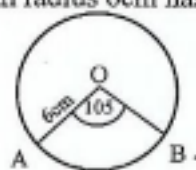
Answer four questions only
All questions carry equal marks

All workings must be clearly shown. Marks will **not** be awarded for correct answers without corresponding working.

1. (a) In a school canteen, rice and banku are served on a daily basis. Out of 40 students, 15 take rice only, 5 eat both meals and 5 students also decide not to eat any food.
(i) Draw a Venn diagram to represent the information above.
(ii) Find the number of students who eat banku only.
- (b) The Venn diagram below shows the number of students who passed in a Mathematics (M) and Science (S) test.



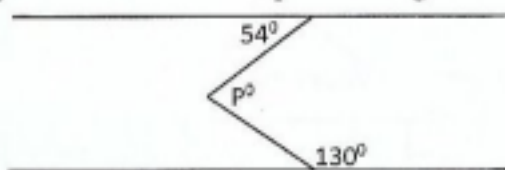
- (i) How many students passed both subjects?
(ii) Find the probability of meeting a student who passed in one subject only.
(iii) What percentage of the students failed the test?
- (c) The product of two numbers is $20\frac{5}{7}$. If one of the numbers is $6\frac{2}{3}$. Find the other number.
- (d) The sector of the circle below with radius 6cm has an angle of 105° at the centre. Calculate
(i) Perimeter
(ii) Area
(Take $\pi = \frac{22}{7}$)
2. (a) (i) Simplify: $\frac{0.5 \times 10^2 \times 0.12 \times 10^{-2}}{0.25 \times 10^4 \times 0.6 \times 10^{-2}}$
(ii) Evaluate $(\frac{1}{5} + 2\frac{1}{2}) \div \frac{1}{6} \times 3\frac{2}{3}$
- (b) (i) Copy and complete the table below which shows the probability of Samson going to school on each weekday.



Weekday	Probability of going to School	Probability of staying at home
Monday	0.2	
Tuesday		0.3
Wednesday		0
Thursday	0.6	
Friday		0.9

- (ii) From 6(a)(i) above, on which day is Samson most likely to go to School?
(iii) On which day is Samson most likely to stay home?

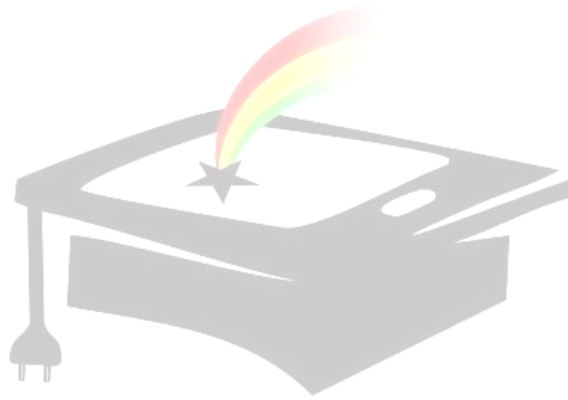
- (c) Three bells toll at intervals of 10 minutes, 15 minutes and 20 minutes. If they toll together at 11: 00am. When next do they toll together again?
- (d) (i) Simplify $\frac{0.0225 \times 0.0256}{0.0015 \times 0.48}$ leaving your answer in standard form.
 (ii) Find the value of p in the diagram below.



3. (a) Using a ruler and a pair of compasses only construct:
 (i) triangle XYZ such that the length XY = 10cm, angle XYZ = 30° and length YZ = 9cm;
 (ii) perpendicular from Z to meet line XY at P;
 (iii) measure the following:
 (α) length PZ;
 (β) angle XYZ
- (b) From 3(a) above, calculate correct to the nearest whole number, the area of triangle XYZ.
- (c) Find the truth set of $2 - (x + 3) = \frac{1}{2}x + 1$
- (d) The temperature during an Autumn morning went up from - 3°C to 6°C
 (i) By how many degrees did the temperature rise?
 (ii) During the afternoon the temperature then fell by 8 degrees from 6°C. What was the temperature at the end of the afternoon?

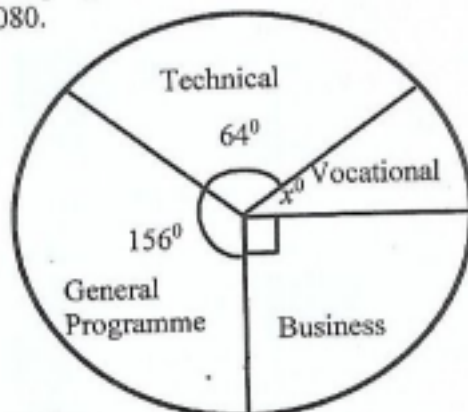
4. (a) (i) Copy and complete the following table for the relation $2y + 3x = 6$
- | | | | | | | | | |
|---|-----|-----|-----|---|---|---|---|---|
| X | - 3 | - 2 | - 1 | 0 | 1 | 2 | 3 | 4 |
| Y | | | | | | | | |
- (ii) Using a scale of 2cm to 1 unit on the x – axis and 2cm to 2 units on the y – axis, draw the graph of the relation $2y + 3x = 6$.
- (iii) Use your graph to find;
 (α) x when y = -1
 (β) y when x = 4.6
- (b) Make R the subject of the relation $U = \frac{1}{M} + \frac{1}{R}$
- (c) What principal will amount to € 2,160 in 5years at 15% per annum simple interest?
- (d) Simplify $\frac{x-2y}{3} + \frac{x+4y}{4}$

Turn over



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5. (a) The pie chart shows angles representing the number of candidates who applied for admission into four programmes at a Senior High School. The number of pupils who applied were 1, 080.



- (i) Find the angle x .
- (ii) How many candidates applied for the business programme?
- (iii) Correct to the nearest whole number, the percentage of the number of applicants who applied for General Programme
- (b) Mr. Amoakohene withdrew some money from the bank. He used $\frac{3}{4}$ of it to pay his rent and gave $\frac{1}{5}$ to his children. If he had GH¢ 150.00 left, how much did he take from the bank?
- (c) Find the value of m if $324.39 + 18.974 - m = 315.35$
- (d) Given that $P = \begin{pmatrix} 3x-5 \\ y+6 \end{pmatrix}$ and $q = \begin{pmatrix} -3 \\ 8 \end{pmatrix}$, find the value of x and y if $p = q$
6. (a) (i) Using a scale of 2cm to 2units on both axes, draw on a graph sheet two perpendicular axes ox and oy such that $-10 \leq x \leq 10$ and $-12 \leq y \leq 12$.
- (ii) Plot the points $A(2,2)$, $B(6,2)$ and $C(4,6)$.
- (i) Find a clockwise rotation of 90° of $\triangle ABC$ about the origin such that $A \rightarrow A_1$, $B \rightarrow B_1$ and $C \rightarrow C_1$
- (iv) Using y -axis as a mirror line, reflect $\triangle ABC$ such that $A \rightarrow A_2$, $B \rightarrow B_2$ and $C \rightarrow C_2$.
- (b) Find the equation of the line passing through points $A(-2, -1)$ and $B(-3, -5)$
- (c) From 6(b) above, find the magnitude of the line AB .
- (d) Given that $\overrightarrow{AB} = \begin{pmatrix} 5 \\ 6 \end{pmatrix}$ and $\overrightarrow{BC} = \begin{pmatrix} 10 \\ -6 \end{pmatrix}$, find the $|\overrightarrow{AC}|$

END OF ESSAY TEST

**DO NOT TURN OVER THIS PAGE
UNTIL YOU ARE TOLD TO DO SO**

**YOU WILL BE PENALIZED SEVERELY IF YOU ARE
FOUND LOOKING AT THE NEXT PAGE BEFORE
YOU ARE TOLD TO DO SO**

PAPER 1
OBJECTIVE TEST

1 hour

Answer all the questions on your Objective Test answer sheet.

1. Use 2B pencil throughout
2. On the pre-printed answer sheet, check that the following details are **correctly** printed:
Your **surname** followed by your **other names**, the *Subject Name*, your *Index Number*,
Centre Number and the *Paper Code*.
3. In the boxes marked *Candidate Number*, *Centre Number* and *Paper Code*, **reshade** each of the shaded spaces.
4. An example is given below. This is for a candidate whose name is winner Seyram BABANAWO. Her index number is 772384188 and she is writing the examination at Centre Number 77234. She is offering Mathematics 1 and the Paper Code is 4510.

**BEST BRAIN EXAMINATION KONSORTIUM
SPECIAL PRIVATE MOCK FOR BECE CANDIDATES
OBJECTIVE ANSWER SHEET.**

CANDIDATE NAME: BABANAWO SEYRAM WINNER	SUBJECT: MATHEMATICS
--	--------------------------------

1. Use HB Pencil Press firmly	First mark completely
2. Answer each question by choosing one letter and then, shade through the letter chosen like this [A] <input checked="" type="checkbox"/> [C] [D] [E]	4. If only four alternative answers are given for each question, ignore the letter E.
3. If you want to change an answer, rub out your	5. Your question paper may have fewer than 60 Questions.

CANDIDATE NUMBER								
7	7	2	3	8	4	1	8	8
[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]
[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]	[7]	[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]	[8]	[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]	[9]	[9]	[9]	[9]	[9]

CENTRE NUMBER				
7	7	2	3	4
[0]	[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]	[1]
[2]	[2]	[2]	[2]	[2]
[3]	[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]	[9]

PAPER CODE			
4	5	1	0
[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]
[2]	[2]	[2]	[2]
[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]

For Supervisors Only.
If candidate is absent shade this space

Answer all questions

Each question is followed by four options 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. An example is given below.

What is the smallest number which is divisible by 16 and 20?

- A. 80
- B. 40
- C. 120
- D. 160

The correct answer is 80, which is lettered A and therefore answer space A would be shaded.

A B C D

Think carefully before you shade the answer spaces. Erase completely an answer you wish to change. Do all rough work on this question paper.

Now answer the following questions

1. Simplify $\frac{x+1}{4} - \frac{3y}{5}$

- A. $\frac{5x+5+12y}{20}$
- B. $\frac{22xy}{20}$
- C. $\frac{5x-12y+5}{20}$
- D. $\frac{3y+x+1}{20}$

2. If $M = \{a, b, c, d, e\}$, how many subsets has the set M?

- A. 4
- B. 8
- C. 16
- D. 32

3. Find the set of integers within the interval $-3 < x \leq 0$

- A. $\{-3, -2, -1\}$
- B. $\{-2, -1, 0\}$
- C. $\{-3, -2, -1, 0\}$
- D. $\{-2, -1\}$

4. Adu took 6 from a number, then he multiplied the answer by 10 and got 18. What is the number?

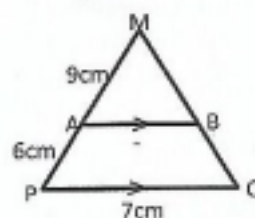
- A. 4.2
- B. 8
- C. 9
- D. 7.8

5. The sum of the interior angles of an octagon is

- A. 720°
- B. 1440°
- C. 1080°
- D. 900°

In the diagram below, ΔMPQ is an enlargement of ΔMAB . AB is parallel to PQ , $|AP|=6\text{cm}$, $|AM|=9\text{cm}$ and $|PQ|=7\text{cm}$.

Use it to answer questions 6 and 7.



6. Find the scale factor if $|AM| \rightarrow |PM|$ and $|AB| \rightarrow |PQ|$.

- A. $\frac{2}{3}$
- B. $\frac{5}{3}$
- C. $\frac{4}{3}$
- D. $\frac{7}{3}$

7. Calculate the length of AB

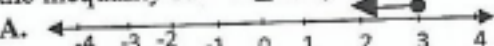

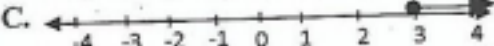
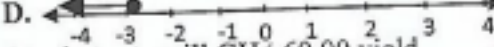
- A. 5cm
- B. 4.2cm
- C. 4cm
- D. 3cm

8. Evaluate $9 - 3(4 - 6) - 10$

- A. -2
- B. -7
- C. 5
- D. 13

9. Expand and simplify $(a - b)(a + b)$

- A. $a^2 + b^2$
- B. $a^2 + 2ab - b^2$
- C. $a^2 - b^2$
- D. $a^2 - 2ab - b^2$

10. Find the H.C.F of $2^3 \times 3$, 2×3^2 and 3×5 .
- A. 2
B. 3
C. 9
D. 18
11. What is the place value of 6 in 34.621?
- A. Hundredth
B. Thousandth
C. Thousands
D. Tenth
12. Which of the following angles can be trisected?
- A. 30°
B. 60°
C. 80°
D. 90°
13. Mr. Sey paid 15% Value Added Tax on an article that cost GH¢ 450.00. How much did he pay to buy the article?
- A. GH¢ 545.00
B. GH¢ 550.50
C. GH¢ 503.00
D. GH¢ 517.50
14. Find the image of the point (5, -4) under a reflection in the line $x + y = 0$
- A. (-5, 4)
B. (4, -5)
C. (-5, -4)
D. (-4, 5)
15. Illustrate on a number line, the solution to the inequality $3x - 9 \geq 12(x - 3)$.
- A. 
- B. 
- C. 
- D. 
16. At what rate will GH¢ 60.00 yield GH¢ 100.00 after 12 months?
- A. 66.67%
B. 70%
C. 87.9%
D. 97.5%
17. Find the image of the point (6, 3) when translated by the vector $\begin{pmatrix} -4 \\ -4 \end{pmatrix}$
- A. $\begin{pmatrix} 2 \\ -4 \end{pmatrix}$
B. $\begin{pmatrix} -10 \\ -4 \end{pmatrix}$
C. $\begin{pmatrix} -2 \\ -2 \end{pmatrix}$
D. $\begin{pmatrix} 10 \\ 4 \end{pmatrix}$

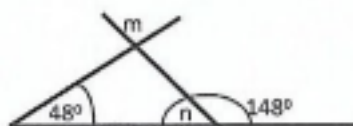
18. If a square of side 4cm is enlarged by a scale factor of 3, find the area of the enlarged square.
- A. 48cm^2
B. 256cm^2
C. 114cm^2
D. 121cm^2
19. The probability of picking at random an 'E' from the word 'UNNECESSARY' is
- A. $\frac{3}{11}$
B. $\frac{4}{11}$
C. $\frac{1}{11}$
D. $\frac{2}{11}$
20. Expand and simplify $(2t - 5)(t - 4)$
- A. $2t^2 - 3t + 20$
B. $2t^2 + 3t - 20$
C. $2t^2 - 13t + 20$
D. $2t^2 - 8t + 15$
21. In an enlargement length $|PQ| = 6\text{cm}$ and the length of its image $|P_1Q_1| = 2\text{cm}$. Calculate the scale factor
- A. $\frac{1}{3}$
B. $\frac{1}{2}$
C. 2
D. 3
22. Simplify $\frac{p+2q}{3} \div \frac{(p-q)(p+2q)}{6}$
- A. $\frac{p-q}{2}$
B. $\frac{p+q}{3}$
C. $\frac{3}{p+q}$
D. $\frac{2}{p-q}$
23. Evaluate 4.9×0.18
0.21
- A. 0.042
B. 0.42
C. 4.20
D. 42.0
24. Factorise completely the expression: $7x - 21 + 2xy - 6y$
- A. $(y+3)(2x-7)$
B. $(y-3)(2x+7)$
C. $(x+3)(2y+7)$
D. $(x-3)(2y+7)$

Turn over

25. What distance will a car travelling at 60 km/h cover from 11:15pm to 12:45pm?
 A. 75km
 B. 80km
 C. 90km
 D. 95km
26. Solve the inequality $\frac{1}{2}(3x - 1) - 7 > 2x - 1$
 A. $x > -14$
 B. $x > -13$
 C. $x > 13$
 D. $x < -13$

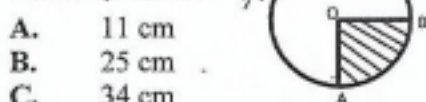
Use the diagram below to answer questions 27 and 28

27. What is the value of the angle marked n?
 A. 42°
 B. 52°
 C. 32°
 D. 62°



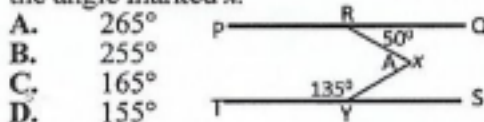
28. Find the angle marked m.
 A. 100°
 B. 115°
 C. 125°
 D. 135°
29. If $1:w$ is equivalent to $1\frac{2}{3} : 5$, find w.
 A. 3
 B. 2
 C. 2.76
 D. 1.67

30. Calculate the perimeter of the shaded quadrant of the circle of radius 7cm below. (Take $\pi = \frac{22}{7}$)



- A. 11 cm
 B. 25 cm
 C. 34 cm
 D. 36 cm
31. Three friends shared an amount of GH¢ 910, 800.00 in the ratio 4:3:2. Find the highest share.
 A. GH¢ 202, 400.00
 B. GH¢ 303, 600.00
 C. GH¢ 404, 800.00
 D. GH¢ 455, 400.00

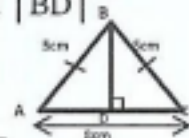
32. In the diagram below, $PQ \parallel TS$. Angle $QRA = 50^\circ$ and angle $TYA = 135^\circ$. Find the angle marked x.



- A. 265°
 B. 255°
 C. 165°
 D. 155°

33. A refrigerator costing GH¢ 2000.00 is sold at a discount of 2%. Find the discount on 15 of such refrigerators.
 A. GH¢ 40.00
 B. GH¢ 400.00
 C. GH¢ 600.00
 D. GH¢ 800.00

34. In triangle ABC, $|AB| = |BC| = 5\text{cm}$ and $|AC| = 8\text{cm}$. Find $|BD|$
 A. 3cm
 B. 4cm
 C. 9cm
 D. 33cm



35. Factorize $4ab^2 - 20ba^2$
 A. $4a(b^2 - 5b)$
 B. $4b(b - 5a)$
 C. $4ab(b - 5a)$
 D. $4ab(a - 5b)$
36. Kofi deposited GH¢ 500, 000.00 with a bank for 2 years at a rate of 10% per annum. Find the simple interest
 A. ¢ 10, 000.00
 B. ¢ 20, 000.00
 C. ¢ 50, 000.00
 D. ¢ 100, 000.00

37. Make T the subject of the relation,

$$l^2 = \frac{4\pi^2 T}{g}$$

- A. $T = \frac{gl}{2\pi}$
 B. $T = \frac{gl^2}{2\pi}$
 C. $T = \frac{l^2}{4g\pi^2}$
 D. $T = \frac{gl^2}{4\pi^2}$

38. The image of x in the mapping $x \rightarrow 3x + 2$ is 11. Find x
 A. -3
 B. -2
 C. 3
 D. 4

39. The exterior angle of a regular polygon is 36° ; find the number of sides.
 A. 7
 B. 8
 C. 9
 D. 10

40. How many edges has a square pyramid?
 A. 6
 B. 8
 C. 12
 D. 1

END OF PAPER