FREE VIRTUAL MOCK EXAMINATION (4)
MAY 2020
MATHEMATICS
ESSAY and OBJECTIVE
2 Hours

2&1

Name: ……

Index Number……

GB ASSESSMENT TEST (GBAT)

FREE VIRTUAL MOCK EXAMINATION (4)

May 2020 **MATHEMATICS 2 & 1** **2 hours**

All answers must be provided on clean sheet of papers (Answer booklet).

Write your name and index number on the sheets.

This examination consists of two papers; Paper 1 and Paper 2. Answer four questions only. All questions carry equal marks.

Answer all questions in your answer booklet.

Credit will be given for clarity of expression and orderly presentation of materials.

DESIST FROM REFERING TO BOOKS BEFORE PROVIDING ANSWERS

#COVID-19. STAY HOME. STAY SAFE.

MATHEMATICS 1 hour

[60 marks]

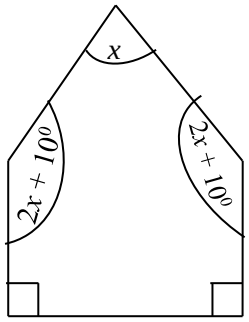
Answer **four** *questions in all. All questions carry equal marks.*

1. (a) Three bells toll at interval of 15 minutes, 20 minutes and 25 minutes respectively. If they all toll together at 9:00am, when next do they toll together again?

   (b) The height of an isosceles triangle is 3cm. Find the third side if the length of the two equal sides is 5cm.

   (c) A box of pens cost GH¢ 6.50 and a box of pencils cost GH¢ 4.00. Kweku gets 15% commission on each box of pen sold and 10% commission on each box of pencil sold. Calculate Kweku's total commission if he sells 20 boxes of pens and 35 boxes of pencils.

   (d) Find the value of x in the diagram below.



2. (a) Bottle A can hold 3L more juice than bottle B. Bottle D can hold 5L more juice than bottle A. Bottle C can hold 3L less juice than bottle A.

   i. Which two bottles contain the same amount of juice?

   ii. How much more juice can bottle D contain than bottle B.

   (b) Mrs. Sefa bought a three – bedroom apartment from Quobby and sons limited at GH¢ 65,000. She agreed to pay 15% as deposit and 10% simple interest per annum in twelve monthly installments of the balance. Calculate the amount paid by Mrs. Sefa for the three-bedroom apartment.

   (c) The scores obtained by pupils in an athletics competition are as follows

5	8	9	3	6
3	4	9	5	6
4	8	7	3	5
7	9	8	4	5

   i. Represent this information on a bar chart

   ii. How many pupils took part in the competition

3. (a) Evaluate and leave your answer in a standard form. $\frac{1\frac{2}{5}-2\frac{1}{3}}{2-\frac{1}{4}}$

(b) The height of a square pyramid is 15cm. If the length of the side of the base is 8cm. Find the volume of the pyramid.

(c) Using a pair of compasses and a ruler only

i. Construct triangle ABC such that $|AB|$ = 8cm, $|BC|$ = 8cm and angle ABC = 60°.

ii. Construct the bisector of angle BAC to meet $|BC|$ at D. Measure $|AD|$.

iii. Construct the perpendicular bisector of $|AB|$ to meet $|AD|$ at O.

(d) i. Using O as center and radius OD, draw a circle to touch the three sides of the triangle.

Ii . What type of triangle is triangle ABC?

4. (a) Using a scale of 2cm to 2units on both axis, draw perpendicular axes OX and OY on a graph sheet.

i. On the same graph mark the x-axis from -10 to 10 and the y-axis from -12 to 12. Plot the point A (0,10), B (-6, -2), C (4, 3), and D (-3, -11).

ii. Use the ruler to join the point A to B and also C to D

(b) i. Draw the line x = -2 to meet AB at P and CD at Q

ii. Use protractor to measure angles BPQ and PQC

(c) i. What is the common name given to angles BPQ and PQC?

ii. State the relationship between lines AB and CD.

iii. Find the equation of the line passing through the points C and D.

(d) The area of a trapezium is 94 cm^2. If the parallel sides are of lengths 9cm and 12cm, calculate the perpendicular distance between them.

5. (a) Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. What are the marks obtained by these two students?

(b) i. Make u the subject in the relations s = $\left(\frac{2u+at}{2}\right)$t

ii. Find the value of u when s = 8, a = 3 and t = 2

(c) The difference in the measures of two complimentary angles is 12°. Find the measure of the angles?

(d) i. Tickets numbered 1 to 20 are mixed up and drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?

ii. Find the sum of 3451, 0.0142, 845.28 and 27.4 correcting your answer to five significant figures.

6. (a) The average test mark for a class of 20 students is 65. Twum's mark was recorded as 35 instead of 55. What is the correct average mark for the test?

(b) i. What is 5% of (25% of GH¢ 1,600)

ii. If $5e^2 : 16 = 125:4$, find the value of **e** given that $e > 0$

(c) X, Y and Z are points in the Cartesian plane. The coordinator of X are (2,4), $\overrightarrow{YX} = \begin{pmatrix} 3 \\ -4 \end{pmatrix}$ and $\overrightarrow{XZ} = \begin{pmatrix} 1 \\ 8 \end{pmatrix}$

Calculate i. the coordinator of Y and Z

ii. the magnitude $\overrightarrow{YZ}$.

(d) Find the truth set of the equation

$$\frac{5x-2}{6} - \frac{2x-3}{4} - \frac{x-1}{2} = \frac{1}{4}$$

END OF PAPER

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 1 HOUR

OBJECTIVE TEST

Write your name and index number in ink in the spaces provided above

1. Use **2B** pencil throughout.

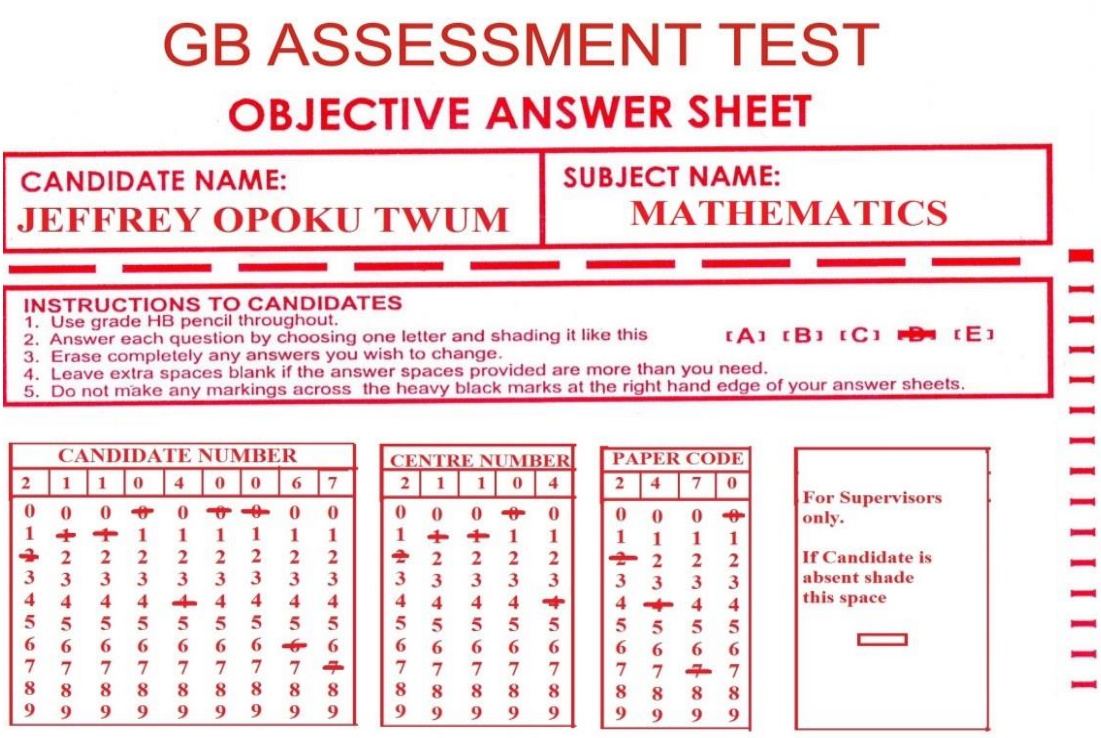
2. On the pre-printed answer sheet, check that the following details are correctly printed:

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 Name*, *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 Jeffrey Opoku Twum, whose Index Number 0211040067.

He is writing the examination at Centre Number 21104 and offering Integrated Science 1 and the Paper code is 2470.



GB ASSESSMENT TEST

OBJECTIVE ANSWER SHEET

CANDIDATE NAME: JEFFREY OPOKU TWUM

SUBJECT NAME: MATHEMATICS

INSTRUCTIONS TO CANDIDATES
1. Use grade HB pencil throughout.
2. Answer each question by choosing one letter and shading it like this [A] [B] [C] [D] [E]
3. Erase completely any answers you wish to change.
4. Leave extra spaces blank if the answer spaces provided are more than you need.
5. Do not make any markings across the heavy black marks at the right hand edge of your answer sheets.

CANDIDATE NUMBER: 2 1 1 0 4 0 0 6 7

CENTRE NUMBER: 2 1 1 0 4

PAPER CODE: 2 4 7 0

For Supervisors only.

If Candidate is absent shade this space

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

1. Find the G.C.F (H.C.F.) of 2 x 3^3 x 5 and 2^2 x 3.
   A. 6
   B. 36
   C. 72
   D. 91

2. Triangle EHF is an enlargement of triangle OPS with scale factor 2. If the area of triangle EHF is 64cm^2. Find the area of triangle OPS.
   A. 256 cm^2
   B. 32 cm^2
   C. 24 cm^2
   D. 16 cm^2

3. A bucket contains 68 pebbles, 10 are brown, 24 are violet, 12 are wine and the rest are orange. A pebble is picked at random from the bag. What is the probability that it is not violet?
   A. $\frac{5}{34}$
   B. $\frac{3}{17}$
   C. $\frac{6}{17}$
   D. $\frac{11}{17}$

4. Find the value of $p^3 + pr^2$ when p = -2 and r=1
   A. -10
   B. 10
   C. -6
   D. 6

5. Find the Least Common Multiple (L.C.M) of $2^2 \times 5 \times 7$ *and* $2 \times 5^2 \times 7$.
   A. 700
   B. 900
   C. 1400
   D. 500

6. Express 6dm 74cm in decameter
   A. 674dm
   B. 51.2dm
   C. 0.062dm
   D. 6.074dm

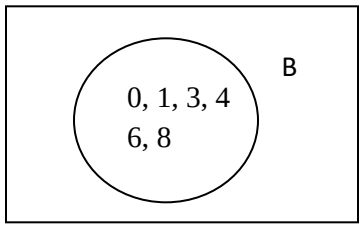
7. A circle of diameter 14cm is cut from a square of side 14 cm. Find the remaining area. $\left[take\ x = \frac{22}{7}\right]$
   A. 42 cm^2
   B. 84 cm^2
   C. 105 cm^2
   D. 126 cm^2

8. Factorize the expression $5x^2 + 13x - 6$
   A. (5x + 3) (x-2)
   B. (5x-2)(x+3)
   C. (5x-3)(x+2)
   D. (5x+2)(x-3)

9. A lady starts walking from a point S and walks 12km on bearing of 025^0. What is the bearing of the lady from where she walked?
   A. 205^0
   B. 350^0
   C. 115^0
   D. 255^0

10. Find 37½% of 6.34, correct to 2 decimal places
   A. 2.37
   B. 2.38
   C. 2.40
   D. 3.38

11. Given that U ={whole numbers from 0 to 10}, find B^1 from the Venn diagram below;



   A. {2, 5, 7, 9, 10}
   B. {2, 5, 6, 8, 10}
   C. {0, 1, 3, 4, 5}.
   D. {2, 5, 7, 9}

12. The ratio 4:6 is equivalent to y: 9, what is the value of y?
   A. 4
   B. 5
   C. 6
   D. 7

13. Simply $\frac{2}{3}+\frac{2}{5}-\frac{7}{15}$

A. $\frac{11}{15}$

B. $\frac{3}{5}$

C. $\frac{2}{5}$

D. $\frac{23}{15}$

14. Evaluate $8^2 \div (32 \div 2) - 2 (3 - 5)$

A. -2

B. 4

C. 8

D. 16

15. Maame bought 150 oranges at GH₵12.00 and sold them at 6 for 30Gp. Find her profit or loss

A. GH₵4.50 profit

B. GH₵4.50 loss

C. GH₵7.50 profit

D. GH₵7.50 loss

16. If the perimeter of a square is 48 cm, find the area of the square.

A. 12 cm^2

B. 24 cm^2

C. 128 cm^2

D. 144 cm^2

17. Express 1.05 as a percentage.

A. 55%

B. 75%

C. 105%

D. 125%

18. Simplify $\frac{2^2 \times 3^2}{4^2 \times 3^3}$

A. $\frac{1}{12}$

B. $\frac{1}{6}$

C. $\frac{1}{4}$

D. $\frac{1}{3}$

19. A DVD player which was selling for GH₵ 300.00 attracted a Value Added Tax (VAT) of 15% of the selling price. How much will a customer pay altogether for the DVD player?

A. GH₵ 45.00

B. GH₵ 225.00

C. GH₵ 315.00

D. GH₵ 345.00

20. Find the median of the numbers -8, 6, 3, -3, 0, -2, 1, -4, -6

A. -3

B. -2

C. -1

D. 0

21. Express 0.000512 in standard form

A. 5.12×10^{-5}

B. 5.12×10^{-5}

C. 5.12×10^{4}

D. 5.12×10^{-4}

22. Factorize completely the expression

2my - mq + 2ny – nq

A. (m + n) (2y + q)

B. (m + n) (2y - q)

C. (m - n) (2y - q)

D. (m - n) (2y + q)

23. What is the largest prime factor of 225?

A. 3

B. 5

C. 15

D. 17

24. Find the image of -4 under the mapping

$x \rightarrow 2 (x + 4)$

A. 0

B. 2

C. 6

D. 12

25. If, u = $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$ and v= $\begin{pmatrix} 4 \\ -1 \end{pmatrix}$, calculate 3u –v

A. $\begin{pmatrix} -13 \\ 7 \end{pmatrix}$

B. $\begin{pmatrix} -13 \\ 5 \end{pmatrix}$

C. $\begin{pmatrix} -5 \\ 7 \end{pmatrix}$

D. $\begin{pmatrix} 5 \\ 5 \end{pmatrix}$

26. The perimeter of a rectangle is 58cm. If the length is 18cm find it width.

A. 22cm

B. 20cm

C. 11cm

D. 5.5cm

27. The mean of eight numbers is 11. When another number is added the new mean is 12. Find the number added.
    A. 20
    B. 21
    C. 28
    D. 38

28. If R^1 is the image of $r(-2, 4)$under a clockwise rotation through anticlockwise quarter turn about the origin, find the coordinates of R^1.
    A. (4, 2)
    B. (4, -2)
    C. (-4, 2)
    D. (-4, -2)

29. Evaluate 23.01 + 6.892 – 11.478
    A. 18.424
    B. 184.28
    C. 1842.4
    D. 1.8428

30. If $(23\times 82) \times 79 = 148994, find\ the\ exact$ value of $(2.3 \times 82) \times 79$
    A. 1.48994
    B. 14.8994
    C. 148.994
    D. 14899.4

31. If the gradient of a line is $\frac{-2}{3}$ and it passes through the point (1, 1), find the equation of the line.
    A. 3y = -2x +5
    B. y = 2x + 5
    C. 3y = -2x - 5
    D. -3y = 2x +5

32. The simple interest on GH¢ 40.00 for 2years is GH¢12.00. Find the rate per anum.
    A. 5%
    B. 10%
    C. 15%
    D. 20%

33. List the elements of the set $\{-3 \leq m \leq 1\}$, where m is an integer
    A. $\{-1, 0, 1, 2\}$
    B. $\{-2. -1,0, 1, 2, 3\}$
    C. $\{-3, -2, -1, 0, 1\}$
    D. $\{0, 1, 2\}$

34. The exterior angle of a regular polygon is 72^0. Find the number of sides.
    A. 4
    B. 5
    C. 6
    D. 8

35. Find the gradient of the line 7y –x = 0
    A. $\frac{1}{7}$
    B. -1
    C. $\frac{-1}{7}$
    D. -7

36. A rectangle has a perimeter of 55cm. If the ratio of the length of the rectangle to the width is 6:5, what is the length of the rectangle?
    A. 12cm
    B. 15cm
    C. 25cm
    D. 30cm

A trader bought 480 apples for GH₵1400.00 and sold them at 3 for GH₵ 10.00. Use this information to answer question 37 and 38.

37. How much did she get from selling all the apples?
    A. GH₵ 1500.00
    B. GH₵ 1600.00
    C. GH₵ 2240.00
    D. GH₵ 300.00

38. If 30 of the apples got spoilt and she sold the rest at the same price, find her profit
    A. GH₵ 100.00
    B. GH₵ 150.00
    C. GH₵ 200.00
    D. GH₵ 300

39. Make a the subject of the relation b = 2a + 3
    A. a = $\frac{3b}{2}$
    B. a = $\frac{b+3}{2}$
    C. a = $\frac{b-3}{2}$
    D. a = $\frac{3-b}{2}$

40. The curved surface area of a cylinder 5cm high is $110cm^2$. Find the radius of its base. [take $\pi = \frac{22}{7}$]
    A. 2·6cm
    B. 3·5cm
    C. 3·6cm
    D 7·0cm