FREE VIRTUAL MOCK EXAMINATION (5)
MAY 2020
MATHEMATICS
ESSAY and OBJECTIVE
2 Hours

2&1

Name: ……

Index Number……

GB ASSESSMENT TEST (GBAT)

FREE VIRTUAL MOCK EXAMINATION (5)

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 EDUCATED.

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MATHEMATICS 1 hour

[60 marks]

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

1. (a) In a class of 30 students, (x + 10) study Algebra, (10x+3) study statistics, 4 students study both Algebra and statistics, 2x study only Algebra and 3 study neither Algebra nor statistics. Each student study at least one of the two subjects.

   i. Illustrate the information on a Venn diagram

   ii. How many students study;

   α. Algebra

   β. Only statistics

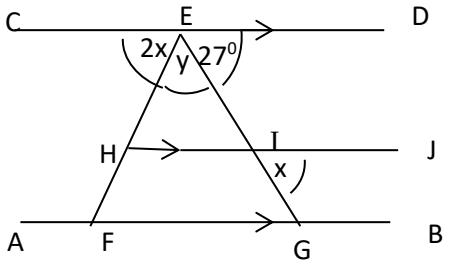
   iii. If a student is chosen at random from the class, what is the probability that he or she studies statistics?

   (b) Make v the subject of the relation

   $KE = \frac{1}{2}mv^2$

   (c) Simplify $\frac{2^8 \times 3^7}{3^5 \times 2^5}$ and leave your answer in standard form.

   (d)



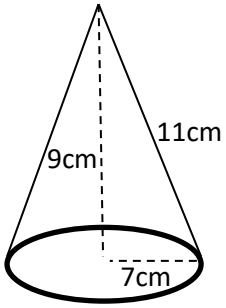
In the diagram above, CD // AB, angle IED = 27^0

i. Calculate angle EGB

ii. Find x and y

iii. What type of triangle is triangle EHI?

2. (a) Consider the cone shown below



Calculate the (i) Curved surface area

(ii) Volume [take $\pi = {}^{22}/_{7}$]

(b) Find the quotient of 4296 and 4

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

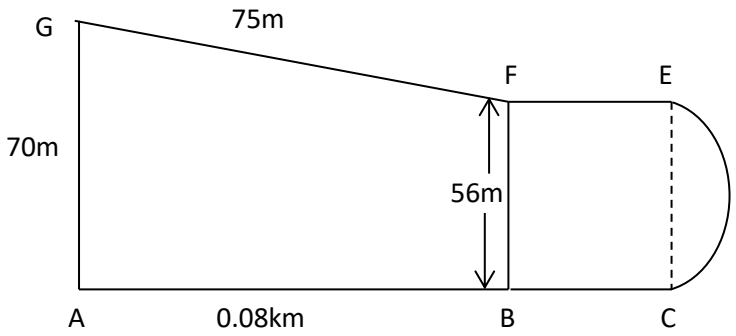
i. Pentagon ABCDE such that $|AB|$= 6cm, ∠ABC = ∠BAD = 120^0, $|BC|$= 3.5cm and |AD| = 4cm

ii Construct the locus L_1 of points equidistance from A and B to meet $|AB|$ at O, such that $|OD|$= 8cm

iii. Measure α. $|CE|$and $|DE|$

β. ∠ADE and ∠BCE

3. (a)



The diagram above represents a plot of land which is made up of a trapezium, a square and semi-circular shape at the end.

Calculate (i) The perimeter of the plot of land

(ii) The total area of the plot of land

(b) Find the truth set of $\frac{1}{2}(y - 2) + 4 \geq \frac{5}{6}(2y - 1)$, and illustrate the answer on a number line.

(c) Osei is 5years older than Nayeram. If Nayeram is 15 years old, find the sum of their ages.

(d) Evaluate $a^2 b^3 – (ab)^2$ if a = -2 and b = 3

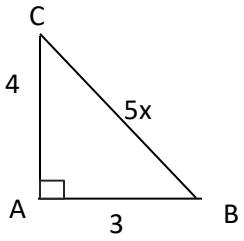
4. (a) Using a scale of 2 cm to 2 units on both axes, draw on a graph sheet two perpendicular axes OX and OY for the intervals $-14 < x \leq 14$ and $-6 \leq y \leq 14$. Mark the origin 0. Draw

i. ΔABC with vertices A (4, 8), B (4, 10) and C (6, 10)

ii. The image of $\Delta A_1 B_1 C_1$ of ΔABC using the y-axis as a mirror line where $A \rightarrow A_1$, $B \rightarrow B_1$, and $C \rightarrow C_1$.

iii. The image of $\Delta A_2 B_2 C_2$ of $\Delta A_1 B_1 C_1$ under anti clockwise rotation of 90º about the origin where $A_1 \rightarrow A_2$, $B_1 \rightarrow B_2$ and $C_1 \rightarrow C_2$.

(b) In the triangle below, BAC is 90^0. $|AB|$ = 3cm, $|AC|$ = 4cm and $|BC|$ = 5x. Solve for x.



(c) Simplify $(2x – 4)^2 – (x + 5)^2$.

(d) Find the place value of 2 in the sum of 284687.3 and 258.4689.

5. (a) Given that a= $\begin{pmatrix} 2x+1 \\ y+3 \end{pmatrix}$ and b = $\begin{pmatrix} 4 \\ 4 \end{pmatrix}$,find x and y if b is twice of a

(b) Frank and Hayford shared an amount of GH¢ x, in the ratio 5:4 respectively. If Hayford received GH¢ 8000. Express Frank's share as a percentage of the total amount shared. [Correct to 2 decimal places]

(c) Find the Highest Common Factor (H.C.F) of 88, 143 and 165.

(d) X and Y are subsets of a universal set

μ = {x: $0 \leq x \leq 12$} such that

x = {counting numbers} and

y = {odd numbers}

(i) List the elements of

α. μ, X, Y

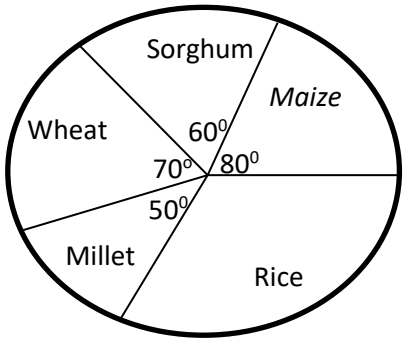
β. $(X \cup Y)^1$

¥. (X n Y)

(ii) If a number is taken at random from the universal set, what is the probability of selecting an even number?

6. (a) The pie chart below shows the distribution of cereals on a farm.

Use it to answer the questions that follow.



i. What angle represents the number of rice on the farm?

ii. If there are 250 millets on the farm, what is the total number of cereals on the farm?

iii. What percentage of the total number of cereals is rice?

(b) The sum of three consecutive odd numbers is 33. Find the odd numbers. [Take the last odd number as 2x-1]

(c) i. Convert 25.67g to kg.

ii. Factorize completely -pq – pr + mq + mr

(d) The ratio of the inside radius to the outside radius of a metal pipe is 3: 4 respectively. If the inside radius is 7cm and the height of the pipe is 28cm. Calculate the

i. volume of the pipe

ii. cross-sectional area of the pipe [Take $\pi = \frac{22}{7}$]

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.

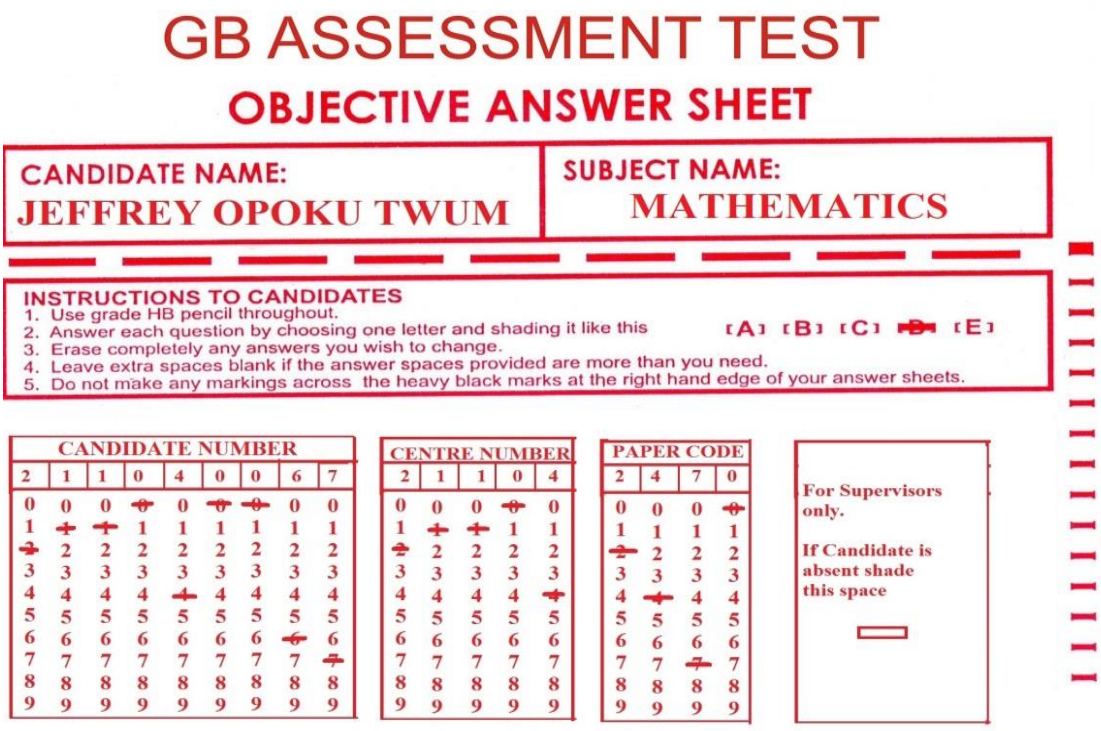
2. On the pre-printed answer sheet, check that the following details are correctly printed:

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. What is the cardinality of the set of odd positive integer less than 10?
   A. 10
   B. 5
   C. 3
   D. 20

2. A group of 7 friends are having lunch together. Each person eats at least ¾ of the pizza. What is the smallest number of whole pizza needed for lunch?
   A. 28
   B. 7
   C. 6
   D. 5

3. Liverpool FC won W games and lost L games. What fraction represents their lost games?
   A. $\frac{W}{L}$
   B. $\frac{(W-L)}{W}$
   C. $\frac{L}{(W+L)}$
   D. $\frac{(W+L)}{W}$

4. Evaluate $\frac{30-(-6)+(-4)}{-2-2}$
   A. 8
   B. -8
   C. 10
   D. -6

5. Which of the following has the greatest value?
   A. 4
   B. 300%
   C. 1/0.1
   D. 5 X 0.5

6. Expand -3(-4x – 1)
   A. 12x + 3
   B. -12x – 3
   C. 12x – 3
   D. -12x + 3

7. The side of a square is 60dm. Find its perimeter in meters.
   A. 24m
   B. 240m
   C. 2400m
   D. 24000m

8. The height of an isosceles triangle is the same as one of its slanted sides. Find its perimeter if its base is 5cm.
   A. 15cm
   B. (x + 5) cm
   C. (3x + 5) cm
   D. (2x + 5) cm

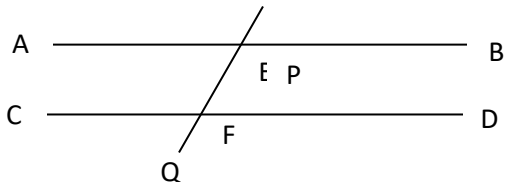
9. Evaluate 28% of 450 minus 45% of 200
   A. 25
   B. 36
   C. 216
   D. 252

10. Abigail rejects 0.08 of the questions as substandard. How many questions did she examine to reject 200 substandard questions
   A. 1200
   B. 2400
   C. 1400
   D. 2500

11. What should be added to 3/8 to get -1/24?
   A. $\frac{-5}{12}$
   B. $\frac{-7}{23}$
   C. $\frac{31}{72}$
   D. $\frac{2}{33}$

12. If the image of x of a function defined by $x \rightarrow 2^x + 1$ is 3, find x
   A. 1
   B. 9
   C. 16
   D. 3

13.

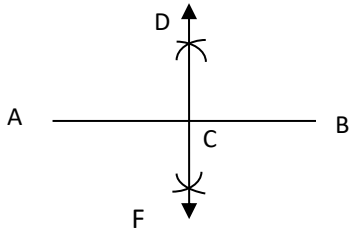


If < BEF = 3x + 30º
< EFD = 2x +20º, find the value of x

A. 28º
B. 24º
C. 26º
D. 22º

14. The sum of three consecutive even numbers is 54. Find the sum of the first two numbers
A. 16
B. 34
C. 38
D. 40

15. Which construction is shown below?



A. the bisector of angle ACD
B. the midpoint of $\overline{DF}$
C. the perpendicular bisector of $\overline{AB}$
D. a perpendicular line to $\overline{AB}$ from point D

16. 7:2 is equivalent to
A. 28 : 40
B. 42 : 71
C. 72 : 42
D. 63 : 18

17. If the cost of 6 cans of magic malt is GHC 21, what is the cost of 4 cans of magic malt?
A. GH¢ 12
B. GH¢ 14
C. GH¢ 10
D. GH¢ 8

18. The total surface area of a cylinder is
A. $2\pi rh$
B. $2\pi r^2h$
C. $2\pi (r + h)$
D. $2\pi r (r + h)$

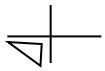
19. In a throw of a dice, what is the probability of getting a number greater than 5?
A. 1/2
B. 1/3
C. 1/5
D. 1/6

20. If A={2,3,5,7} and B = {4,5,6,7}. Find A n B
A. {2,3,4,5,6,7}
B. {2,5,6,7}
C. {5,7}
D. {7}

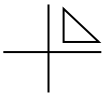
21. How many lines of symmetry has a rhombus
A. 0
B. 1
C. 2
D. 3

22. In which side of the cartesian plane will the image of the figure below fall when it is reflected in the line y=0

A.

B. 

C.

D. 

23. Find the average speed of a car that travels 12km in3 hours.
A. 4 m/s
B. 15m/s
C. 9m/s
D. 1.1m/s

24. Find the image of the point (-6, 3) when it is translated by the mapping. $\binom{x}{y} \rightarrow \binom{2x-1}{y}$
A. (-13, 3)
B. (13, 3)
C. (-11, 3)
D. (11, 3)

25. Solve for x in the equation 2x + 4 = 5-x
A. 1/3
B. 3
C. 1
D. 9

26. Simplify (3x) +5
   A. 3x + 5
   B. 8x
   C. 5
   D. x + 5

27. Triple 27 and decrease it by 15 divided by 3
   A. 13
   B. 22
   C. 10.8
   D. 76

28. The sum of two numbers is 23. What are the expressions for both numbers?
   A. X = Y
   B. X= 23 + Y
   C. X = 23 - Y
   D. X= 23 – X

29. Zinc and Copper are melted in the ratio 9:11. What is the weight of melted mixture, If 28.8kg of zinc has been consumed in it.
   A. 50kg
   B. 60kg
   C. 64kg
   D. 70kg

30. A triangle with no side and angle equal is
   A. isosceles
   B. right angled triangle
   C. scalene
   D. equilateral

31. With the help of a ruler and a compass, it is possible to construct
   A. 50º
   B. 65º
   C. 37.5º
   D. 40º

32. If $2^x = (6/3)^2$
   A. 0
   B. 1
   C. 2
   D. 13

33. Round 6248562 to the nearest hundred thousand
   A. 6200000
   B. 6250000
   C. 6300000
   D. 6000000

34. The factors of x^2 -5x+6 are
   A. (x+2) (x-3)
   B. (x-2) (x+3)
   C. (x+2) (x+3)
   D. (x-2) (x-3)

35. If two angles, A and B add up to 180, then A and B are said to be
   A. complementary
   B. supplementary
   C. alternate
   C. vertically opposite

36. The number of sides of a regular polygon is 5. Find its interior angle
   A. 108^0
   B. 180^0
   C. 60^0
   D. 120^0

37. $6^3 \times 8^2$ is equivalent to
   A. $2^5 \times 3^3$
   B. $2^9 \times 3^3$
   C. $2^8 \times 3^6$
   D. $2^2 \times 3^2 \times 5$

Use the information below to answer questions 38 – 40
In a class of 30 students, 5 study Mathematics only, 8 study English only and 3 study neither Mathematics nor English. Each student studies at least one of the two subjects.

38. How many students study Mathematics?
   A. 5
   B. 14
   C. 19
   D. 22

39. How many students study English?
   A. 8
   B. 14
   C. 19
   D. 22

40. How many students study exactly one of the two subjects?
   A. 13
   B. 14
   C. 27
   D. 30