Candidate's Index Number
Signature:

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

COLLEGES OF EDUCATION
FOUR-YEAR BACHELOR OF EDUCATION (B. ED)
FIRST YEAR, END-OF-FIRST SEMESTER EXAMINATION, APRIL 2019

APRIL 8, 2019   ALGEBRA I   2:00 PM – 2:40 PM

This paper consists of TWO sections, A and B. Answer all the questions in section A and THREE questions from Section B. Section A will be collected after the <u>first 40 minutes</u>.

SECTION A
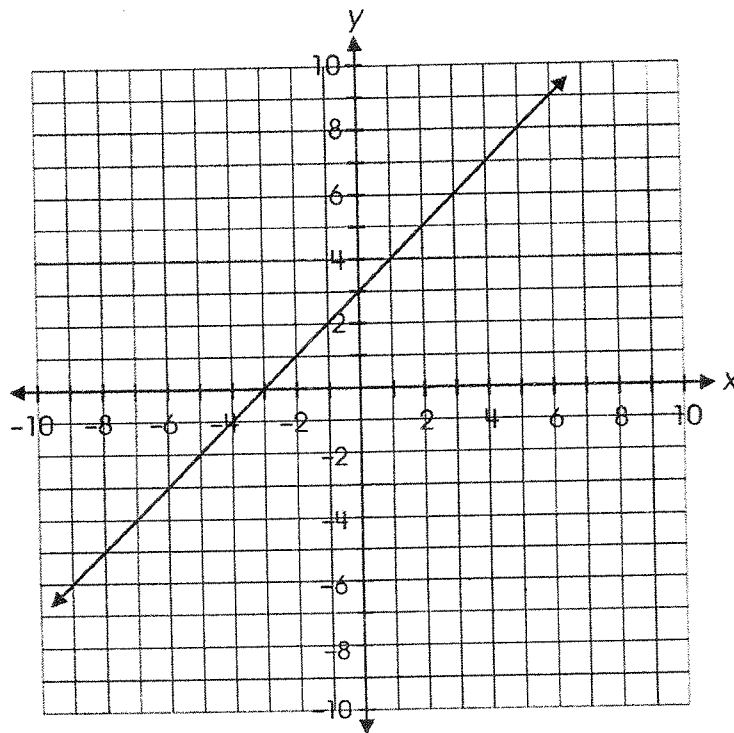Answer all the questions in this section on the question paper.

For items 1 to 20, each stem is followed by four options lettered A to D. Read each item carefully and circle the letter that corresponds to the correct or best option.

1. The empty set is a set with _____
   A. a single element.
   B. an infinite number of elements.
   C. no elements.
   D. zero (0) as its only element.

2. What percent of 72 is 54?
   A 50%
   B 66¾%
   C 75%
   D 85%

3. If $f(x) = -x^2 - 7x - 4$, evaluate $f(-3)$.
   A. -21
   B. -16
   C. 8
   D. 26

4. Which of the following represents the truth set of the inequality: $5m \leq -30$?
    A. $\{m : m \leq -6\}$
    B. $\{m : m \geq -6\}$
    C. $\{m : m \leq 6\}$
    D. $\{m : m \geq 6\}$

5. Which of the following is the truth set of $1 - 4y \leq 17$?
    A. $\{y : y \leq -4\}$
    B. $\{y : y \geq -4\}$
    C. $\{y : y \leq 4\}$
    D. $\{y : y \geq 4\}$

6. Find the base, n, for which $102_n = 51_{ten}$.
    A. 7
    B. 8
    C. 13
    D. 49

7. If $2^{5x} = \frac{16}{2^{1-x}}$, find the absolute value of x.
    A. -4
    B. $\dfrac{-4}{9}$
    C. $\dfrac{4}{9}$
    D. 4

8. Given that $\log_{10} 2 = 0.3010$ and $\log_{10} 3 = 0.4771$, evaluate $\log_{10} 72$.
    A. 0.9030
    B. 0.9542
    C. 1.8572
    D. 1.9275

9. The perimeter of a triangle is 240m. The sides are in the ratio 3:4:5. Calculate the length of the longest side.
    A. 60 m
    B. 70 m
    C. 80 m
    D. 100 m

10. A motorist travelled 20km at an average speed of 15km/h. If he/she made a return journey at an average speed of 30km/h, find the average speed of the whole journey.
    A. 22.5 kmh^{-1}
    B. 20kmh^{-1}
    C. 15 kmh^{-1}
    D. $13\frac{1}{3} kmh^{-1}$

11. In a sports contingent, there are 25 players in the football team and 18 players in the hockey team. Four players play both football and hockey. Find the number of players in the contingent.
    A. 21
    B. 35
    C. 39
    D. 43

12. Find the value of x such that $365_7 + 43_x = 217_{ten}$.
    A. 5
    B. 6
    C. 7
    D. 8

13. It takes four cooks 4 hours to bake 4 cakes. Assuming no change of rate, how many hours will it take 8 cooks to bake 8 cakes?
    A. 1
    B. 2
    C. 4
    D. 8

14. Find the truth set of the following equation: $7y - 3 + 2y = 7y - 9$
    A. $\{y : y = -6\}$
    B. $\{y : y = -3\}$
    C. $\{y : y = 3\}$
    D. $\{y : y = 6\}$

15. Find the solution(s) to the equation: $\sqrt{x+4} = x - 2$.
    A. 0 only
    B. 5 only
    C. 0 and 5
    D. No solutions

16. What is the value of x when $\dfrac{x}{6} + 10 = 15$?
    A. $x = 30$
    B. $x = 40$
    C. $x = 50$
    D. $x = 60$

17. The ratio of boys to girls in a class is 3: 4. The class has 35 students. How many boys and girls are in the class?
    A. 15 boys and 20 girls
    B. 20 boys and 15 girls
    C. 25 boys and 10 girls
    D. 10 boys and 25 girls

The graph below represents a linear equation. Use it to answer questions **18** and **19**.

18. What is the value of y-intercept?
   A. -3
   B. -2.
   C. 2
   D. 3

19. Determine the equation of the line.
   A. $y = -3x + 2$
   B. $y = -2x + 3$
   C. $y = -x + 2$
   D. $y = x + 3$

20. After all the taxes are withheld, Kofie's take-home pay is about 70% of his total earnings. Estimate his take-home pay if his total earnings for the pay period is Gh¢2,160.00.
   A. Gh¢900.00
   B. Gh¢1,200.00
   C. Gh¢1,555.20
   D. Gh¢3000.00