Index number _____ sign _____

UNIVERSITY OF GHANA

DEPARTMENT OF TEACHER EDUCATION SCHOOL OF EDUCATION AND LEADERSHIP COLLEGE OF EDUCATION END OF YEAR TWO SEMESTER TWO EXAMINATIONS, 2023/24 B.ED. PROGRAMME

COURSE CODE: **TEUP 304**

COURSE TITLE: **TEACHING AND ASSESSING UPPER PRIMARY MATHEMATICS (ADVANCED)**

Instruction: Answer **all** questions in Section A and any **three** questions in Section B.
Time: 2 hours

SECTION A [25 Marks]

1. Different civilizations used different primitive numeration systems in counting. Which ancient civilization used the base 60, or sexagesimal base?
   A. Egyptians
   B. Greeks
   C. Mesopotamians
   D. Babylonians

2. Which of the following best defines a misconception in mathematics?
   A. A misunderstanding resulting from incorrect information
   B. A correct interpretation of a mathematical concept
   C. A conclusion based on accurate reasoning
   D. A clear understanding of a mathematical process

3. What is the primary purpose of including lesson objectives in a lesson plan?
   A. To ensure the teacher can follow a script during the lesson
   B. To list the materials needed for the lesson
   C. To clearly define what students will learn and achieve by the end of the lesson D. To provide a timeline for when to finish the lesson

4. What type of number is 15 based on its proper divisors (1, 3, 5)?
   A. Perfect
   B. Abundant
   C. Prime
   D. Deficient

Index number _____ sign_____

5. You went to Rome, Italy, on a scholarship basis for your master's degree programme in Upper Primary Education, Mathematics. You were given the Hindu Arabic numeral 1700 to be written in the Roman Numeral. What are you expected to write?
   A. CMDC
   B. DMCC
   C. MDCC
   D. MCCD

6. A student thinks that a fraction with a larger numerator is always larger than a fraction with a smaller numerator, regardless of the denominators. For example, they believe $\frac{3}{5}$ is larger than $\frac{2}{3}$ just because 3 is greater than 2. What error is the student making?
   A. They are not comparing fractions with the same denominators.
   B. They don't understand that fractions can be equivalent.
   C. They incorrectly assume all numerators determine size.
   D. They fail to recognize the significance of denominators in fractions.

7. You have guided your learners in basic five to learn about the approximation of numbers. You have asked them to estimate to the nearest hundred 496 plus 318. What is your expectation from them?
   A. 900
   B. 800
   C. 500
   D. 700

8. Which of the following statements is TRUE about perfect numbers?
   A. A perfect number is greater than the sum of its proper divisors.
   B. A perfect number has only one proper divisor.
   C. A perfect number equals the sum of all its proper divisors.
   D. A perfect number is divisible by 3.

9. Which of the following represent 240,004,395 in expanded notation?
   A. 200,000,000 + 40,000,000 + 4,000,000 + 300 + 90 + 5
   B. 200,000,000 + 40,000,000 + 4,000 + 300 + 90 + 5
   C. 200,000,000 + 40,000,000 + 4,000,000 + 300,000 + 90.000 + 5,000
   D. 200,000,000 + 40,000.000 + 300 + 90 + 5

10. Which of the following is not true of LCM and HCF of any two given numbers?
    A. The highest common factor is either less than or equal to the smaller number
    B. The least common multiple is always greater than the highest common factor
    C. The lowest common multiple is always greater than both numbers
    D. The product of LCM and HCF of the numbers is equivalent to their product

11. What is the primary purpose of diagnostic assessment?
    A. To evaluate student performance after instruction
    B. To assess student knowledge before instruction
    C. To compare student performance to national standards
    D. To assign grades at the end of a term

STUDENT'S ID NO:_____ SIGNATURE: _____

Index number _____ sign_____

12. Prince's user ID is a 5-digit number. The 9 is in the ten thousands place. The 0 is in the ones place. An 8 is in the thousands place. A 4 is in the tens place. A 2 is in the hundreds place. What is Prince's user ID number?
    A. 90,842
    B. 89,204
    C. 98,420
    D. 98,240

13. The LCM of two numbers is always divisible by which of the following?
    A. The difference of the two numbers
    B. The sum of the two numbers
    C. The product of the two numbers
    D. The HCF of the two numbers

14. Which one of these is right procedure of converting a number from base ten to five?
    A. Add 5 to the number repeated and write down the differences in reverse order
    B. Subtract 5 from the number repeatedly and write down the partial sums in reverse order
    C. Divide the number by 5 repeatedly and write down the remainders in reverse order
    D. Repeatedly divide the number by 5 and write down the remainders in order of division

15. Which of the following statements best describes a triangular prism?
    A. It has two triangular bases and three rectangular faces.
    B. It has three triangular faces.
    C. It has a non-uniform cross-section.
    D. It has four faces, all of which are triangular.

16. You have facilitated the multiplication of Whole numbers by using *mental strategies* in basic six. To ensure comprehension, you asked learners to perform the operation 99×5. Which strategy is best for this operation?
    A. Multiplication by Rounding
    B. Multiplication by front – end
    C. Multiplication in stages
    D. Multiplication halving

17. How can a class five learner be able to tell that a given 3-digit number e.g. 792 is divisible by 3 without doing the actual division?
    A. Check if the last digit is 3
    B. Check if the number ends in an even digit
    C. Check if the number contains a 3
    D. Check if the sum of the digits is divisible by 3

Index number _____ sign _____

18. A class six learner carried out an activity for 24 and 36 by expressing each as product of prime factors as follows:
$24 = 2^3 \times 3$
$36 = 2^2 \times 3^2$
She then picked the factors 2^2 *and* 3, and obtained their product $2^2 \times 3$. What does this product refer to?
    A. The LCM of 24 and 36
    B. GCD of 24 and 36
    C. LCD of 24 and 36
    D. HCM of 24 and 36

19. What is the main reason for introducing children to shape and space in early education?
    A. To help them develop adequate spatial skills.
    B. To improve their mathematical calculation skills.
    C. To prepare them for standardized tests.
    D. To encourage them to memorize geometric formulas.

20. Your learners in basic four performed this operation $\frac{3}{5} - \frac{1}{2} = \frac{2}{3}$. As a class teacher, you were upset and concluded that this could only be a misconception. What could be the course of this misconception?
    A. Misapplication of algorithms
    B. Misapplication of place values
    C. Misapplication of the concept of fractions
    D. Misapplication of the meaning of fractions

21. Why is it important to know what data is being collected before gathering it?
    A. To ensure the data is easy to organize
    B. To make the data collection process faster
    C. To ensure the data is visually appealing
    D. To avoid collecting irrelevant or incorrect information

22. You were teaching Chances in basic six. You brought a bag that contains five red and seven black balls of the same size. You asked a learner to pick one red ball from the bag. You also asked another to pick one red ball from the bag. What is the chance of picking a black ball?
    A. $\frac{1}{7}$
    B. $\frac{7}{12}$
    C. $\frac{1}{5}$
    D. $\frac{5}{12}$

23. What is the most efficient mental strategy to add 29 + 43?
    A. Round 29 to 30, add 30 + 43, then subtract 1
    B. Add 29 and 43 by writing it down
    C. Subtract 10 from 43, then add to 29
    D. Break both numbers into 20 and 9, and 40 and 3, then add separately

Index number _____ sign_____

24. Find the total surface area of a square shaped box having a length of 2 m for its side.
    A. 24 m^2
    B. 28 m^2
    C. 32 m^2
    D. 48 m^2

25. When teaching the concept of angles, which activity would best help learners understand the amount of turn made about a point?
    A. Measuring the length of various line segments.
    B. Tracing the edges of a rectangular box.
    C. Folding paper to create shapes.
    D. Turning the minute hand of a clock while keeping the hour hand fixed.

Index number _____ sign _____

SECTION B

ANSWER THREE QUESTIONS FROM THIS SECTION.

1a. 1. A teacher is helping a class four pupil understand three different ways to solve subtraction problems. The teacher presents the following problem to the pupil: 15marks

"In a basket, there are 15 apples. After giving some apples to her friends, there are 9 apples left. How many apples did she give away?"

How can the teacher assist the pupil to solve this using three subtraction strategies?

1b. Explain the concept of remediation in mathematics education and describe its importance in addressing students' misconceptions 10marks

2a. Show and explain how you would help a pupil in class 6 to find $\frac{3}{5} \times \frac{3}{4}$ using concrete materials or semi concrete models. 12marks

2b. Explain how you would introduce the concept of three-dimensional shapes to primary school students. Provide at least two activities that engage students in exploring solid shapes. 13marks

3a. Teachers are required to utilize base five materials, in facilitating pupils' addition and subtraction strategies. In not more than five steps show how you would use an identified base five material to teach: 18marks

(i) $32_{\text{five}} + 14_{\text{five}}$

(ii) $41_{\text{five}} - 22_{\text{five}}$

3b. Describe the process of measuring length using both direct and indirect comparisons. 7marks

4a. You taught the multiplication of integers. Your learners in basic six are confused about multiplying two negative integers to get a positive integer. Use a number line to explain to your learners that $-2 \times -3 = 6$. 18marks

4b. What best mental strategy would you expect your learners in basic four to use in solving this problem 99×6? Use it to solve the problem above. 7marks

sign _____

5a. Divide $\frac{3}{10}$ by $\left(\frac{1}{4} of \frac{3}{5}\right)$. 7marks

5b. Prepare a thirty-minute micro teaching lesson plan on the strand: Number with sub strand: Counting. Content Standards: B5.1.1.3 Demonstrate an understanding of factors, multiples of numbers including composite, even, odd and prime numbers from 1 to 100. Indicator: B5.1.1.3.2 Generate and identify prime numbers and composite numbers between 1 and 100 using the Sieve of Eratosthenes. State clearly the teaching and learning activities in order to develop the core competencies in your learners. 18marks