UNIVERSITY OF GHANA

DEPARTMENT OF TEACHER EDUCATION
SCHOOL OF EDUCATION AND LEADERSHIP
COLLEGES OF EDUCATION
END OF SEMESTER TWO EXAMINATIONS FOR LEVEL 300, 2023/2024
B.ED. PROGRAMME
COURSE CODE: **TEJS 328**
COURSE TITLE: **TEACHING AND ASSESSING JUNIOR HIGH SCHOOL MATHEMATICS (ADVANCED)**

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

Time: 2 hours

SECTION A

[25 Marks]

1. One of the following is used to evaluate, measure, and document the academic readiness, learning process, and skill acquisition _____
   A. Profile dimensions
   B. Table of specifications
   C. Assessment tools
   D. Indicators

2. The curriculum has general aims, specific aims and core competencies. Which one of them intends to develop individuals to become mathematically literate?

   A. Core competencies
   B. Teaching assessment
   C. General aims
   D. Specific aims

3. The curriculum has been designed using unique features to make referencing easy. How do you describe the unique features of the topics the content is organized?

   A. The strands

   B. Sub-strands

   C. Content standards

   D. Indicators

4. The ability to understand, judge, do, and use mathematics in a variety of intra- and extra-mathematical contexts and situations in which mathematics plays or could play a role is called

   _____

   A. aim.

   B. objective.

   C. Skill

   D. competency.

5. Point A with coordinates (5, 8) on a Cartesian plane is rotated in an angle of 270° clockwise. Find the coordinates of the image formed after rotation.

   A. (-8, -5)

   B. (-8, 5)

   C. (-5, 8)

   D. (5, 8)

6. Find the value of $\log_5\left(\dfrac{1}{25}\right)$.

   A. -5

   B. -2

   C. 1

   D. 5

7. Your JHS learner found out that all the following are factors that can change the monetary value of an article except _____.

    A. Inflation
    B. Depression
    C. Interest
    D. Depreciation

8. What will be your response to the inquiry from your learners on the shape of the faces of a cube?

    A. Circle
    B. Triangle
    C. Square
    D. Pentagon

9. Which one of the following is a transformation that flips?

    A. transformation
    B. Translation
    C. Rotation
    D. Reflection

10. What is the response to finding the volume of a cone which has a diameter of 56cm and a height of 10cm?

    A. $7213cm^3$
    B. $9213cm^3$
    C. $10213cm^3$
    D. $8213cm^3$

11. A form of tax which is deducted from work salary before the salary is paid to the employee is called

    A. Custom tax
    B. Income tax
    C. Exercise duty
    D. Tariff

12. The process of dividing or splitting a sum of money into much smaller units of money is known as

    A. division of money.
    B. breaking down of money
    C. discoloration of money
    D. Decomposition of money.

13. Martin wanted to buy a new car from Vanskey company. The car, costs $60. The campaign is offering a discount of 30% on all the cars price. But they only charges 10% service tax, find the final amount to be paid by Martin.

    A. $ 48.2
    B. $ 47.3
    C. $ 46.2
    D. $ 33.5

14. If Theodosia borrowed a sum of $46,500 for a period of 21 months at 20% per annum, how much simple interest will she pay?

    A. $26160
    B. $16802
    C. $16800
    D. $12567

15. John buys some products for $ 10000 and pays 7% tax. He sells the same product for $ 14000 and charges 10% tax. Find the VAT paid by John.

    A. $ 810
    B. $ 700
    C. $ 610
    D. $630

16. Robert purchased a car worth $ 48,000 he borrowed the money from the bank at 10% per annum for a period of 4 years. How much amount does he have to pay after the period?

    A. $ 4,800
    B. $ 5,300
    C $ 19,200
    D $ 67,200

17. Calculate the surface area of a hollow cylinder closed at one end if the base radius is 3.5 cm and the height 8cm. ($\pi = \dfrac{22}{7}$)

    A. 214.5cm²
    B. 176.4cm²
    C. 124.4cm²
    D. 77cm²

sign _____

18. Daniel paid $ 25 for a T-shirt at a sale, while the price tag was $ 20. Find the tax rate in percentage.

    A. 25%
    B. 50%
    C. 70%
    D. 75

19. Tracing the path or locus of points that move in such a way that its distance from given lines (say AB and BC) are equal is called _____

    A. bisector of angle ABC.
    B. perpendicular bisector of AB and BC
    C. Circumference
    D. Parallel lines

20. Cheops pyramid in Egypt has a base measuring about 755ft × 755 ft. and its height is around 480 ft. Calculate its volume.

    A. 570025 ft^3
    B. 190008.33 ft^3
    C. 91204000 ft^3
    D. 4365738 ft^3

21. Which one of these statements is not true about two similar triangles?

    A. They are congruent in all parts.
    B. They have three pairs of corresponding equal angles.
    C. The three ratios of corresponding sides are equal.
    D. The ratios of their corresponding sides are constant.

22. A driver is paid Ghc198 per a basic 36 hours' week and overtime is paid at time and a half. Calculate the total wage for a 42½-hour week.

    A. Ghc251.63
    B. Ghc252.50
    C. Ghc250.63
    D.Ghc53.63

23. The base radius of a cone is 7cm and its slant height is 25cm. Calculate the volume of the cone, take $\pi = \dfrac{22}{7}$.

    A. 550cm³
    B. 1223cm³
    C. 552cm³
    D. 1232cm³

24. The volume of a cube is 27 cm³, find the total area of its faces.

    A. 9cm³
    B. 54cm³
    C. 81cm³
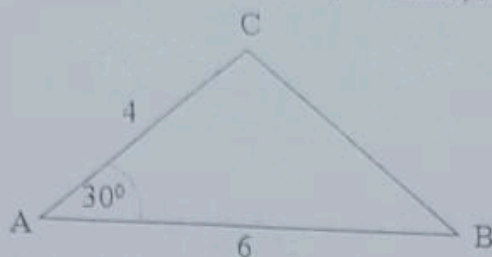   D. 36cm³

25. A prism with volume 64cm³ is reduced by a scale factor ½. What is the volume of the reduced prism?

    A. 16cm³
    B. 18cm³
    C. 8cm³
    D. 32cm³

SECTION B

Answer any three questions in this section. Each question carries 25 marks

1a. In $\triangle ABC$, $\angle A = 30°$, $|AB| = 6$ units, $|AC| = 4$ units, Find the area of $\triangle ABC$.   5marks

1b. Adwoa wants to deposit ¢500 in her savings bank account. She has twenty ¢50 notes, ten ¢100 notes, fifty ¢10 notes. How will you help Junior High School pupils identify the possible denominations that Adwoa can choose to make the deposit?   10marks

1c. Lead your Junior High School pupils to identify two differences between the following.   10marks
   i) wage and salary
   j) rhombus and parallelogram

2a. The curved surface area of a cylinder 5 cm high is 110cm², find the radius of its base [take $\pi = \dfrac{22}{7}$]   6marks

2b. Give three (3) properties of "translation" which lead pupils to discover for themselves in a mathematics lesson on the topic "rigid motion".   9marks

2c. Using two strategies, explain to a JHS student that $3^0 = 1$ 10marks

3a. A manufacturer printed the price of his goods as $120 per article. He allowed a discount of 30% to the wholesaler who in turn allowed a discount of 20% on the printed price to the retailer. If the prescribed rate of sales tax on the goods is 10% and the retailer sells it to the consumer at the printed price, then find the value-added tax paid by the wholesaler and the retailer.   10marks

3b. Explain the meaning of the numbers "-1" and "4" of the point (-1, 4) to a JHS pupil.   10marks

3c. Explain what Assessment in mathematics is   5marks

4a. Show, in sequences how you would lead a JHS pupil to discover the following rule of indices: $a^m \times a^n = a^{m+n}$. 10marks

4b. Find the area of an isosceles trapezium with the length of each leg 13 units and the base lengths 22 units and 12 units.

4c. Explain the term Micro teaching as applied in your training as a teacher 5marks

5a. The volume of a liter of water is 1000 cm³. Describe briefly an activity you would do to help a JHS class acquire the concept of an amount of liter of water. 10marks

5b. ⇨ Boateng wants to buy a Can that can hold 2 gallons of oil. The radius of the can is 5 inches. Help Boateng find the height of the Can he has to buy if 1 gallon = 231 cubic inches 10marks
. [Hint: The Can is in the form of a cylinder]

5c. Explain the concept of remediation in mathematics education and describe its importance in addressing students' misconceptions