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-SECOND SEMESTER EXAMINATION, SEPT./OCT. 2023

29TH SEPTEMBER 2023   COLLEGE GEOMETRY   12:00 PM – 12:30 PM

This paper consists of two sections, A and B. Answer ALL the questions in Section A and TWO questions from Section B. Section A will be collected after the first 30 minutes.

SECTION A
(20 MARKS)

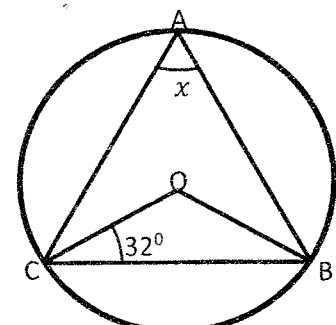**Answer ALL the questions in this Section.**

Items 1 to 20 are stems followed by four options lettered A to D. Read each item carefully and circle the letter of the correct or best option.

1. If two lines are parallel and a transversal intersects them, what is the sum of adjacent angles on the same side of the transversal? .... degrees
   A. 90
   B. 120
   C. 180
   D. 360

2. What is the volume of a cube whose length is $1cm$?
   A. $1cm^3$
   B. $2cm^3$
   C. $3cm^3$
   D. $4cm^3$

3. If a rectangle has a perimeter of 25 units and one of its sides is 5 units long, what is the length of its longer side? .... units
   A. 5
   B. 7.5
   C. 10
   D. 15

4. If the volume of a cube is 125 cubic units, what is the length of one of its sides? .... units
   A. 5
   B. 10
   C. 15
   D. 25

5. What is the volume of a cylinder with a height of 10cm and base radius of 4cm? [Take $\pi = \frac{22}{7}$].
   A. 40 cm³
   B. 125 cm³
   C. 251 cm³
   D. 352 cm³

6. The area of a rectangular sheet is 108m². If the length of the sheet is three times its breadth, what is the breadth of the rectangle?
   A. 6cm
   B. 18cm
   C. 36cm
   D. 108cm

7. Which of the following formulas' is used to find the **total** surface area of a closed cylinder?
   A. $\pi r^2 + 2\pi r h$
   B. $2\pi r^2 + 2\pi r$
   C. $2\pi r(r + 2h)$
   D. $2\pi r(r + h)$

8. A toolbox with a lid has dimensions 16cm by 12cm by 10cm. Calculate the **total** surface area of the box.
   A. $240cm^2$
   B. $320cm^2$
   C. $384cm^2$
   D. $944cm^2$

9. In a parallelogram, the measure of one angle is 120 degrees. What is the measure of the adjacent angle? .... degrees
   A. 30
   B. 60
   C. 90
   D. 120

10. Given that P divides the line AB, A (-1, 2) and B (3, 4) externally, in the ratio 1: $\frac{3}{2}$. Find the coordinates of P.
    A. (11, 8)
    B. (8, 11)
    C. $(1\frac{2}{5}, 3\frac{1}{5})$
    D. $(3\frac{1}{5}, 1\frac{2}{5})$

11. A closed rectangular metal pillar is 19m long, 11m wide and 45m high. Calculate the minimum amount of metal used to make the pillar.
    A. $75m^2$
    B. $704m^2$
    C. $1064m^2$
    D. $9405m^2$

12. Which one of the following solids has a uniform cross-section?
    A. Cone
    B. Prism
    C. Pyramid
    D. Sphere

13. For any triangle with vertices A, B and C, the construction of $\triangle ABC$ is possible if: ....
    A. AB + BC < AC
    B. AB + BC = AC
    C. AB + BC > AC
    D. $AB + BC \leq AC$

14. Given that $A(11,1)$ and $B(2,7)$ are two points on a line. Find the coordinates of the point, which divides AB internally in the ratio 2:1.
    A. (5, 5)
    B. (2, 5)
    C. (7, 11)
    D. (11, 9)

15. A sphere of radius r cm has the same volume as a cylinder of radius 9 cm and height 12 cm. Find the value of r.
    A. 3 cm
    B. 6 cm
    C. 8 cm
    D. 9 cm

16. In a cyclic quadrilateral ABCD (all vertices lie on the circumference of a circle), if angle A is 60 degrees and angle B is 120 degrees, what can you conclude about angles C and D? Angle C is
    ....
    A. 60 degrees and angle D is 120 degrees.
    B. 120 degrees and angle D is 60 degrees.
    C. 30 degrees and angle D is 150 degrees.
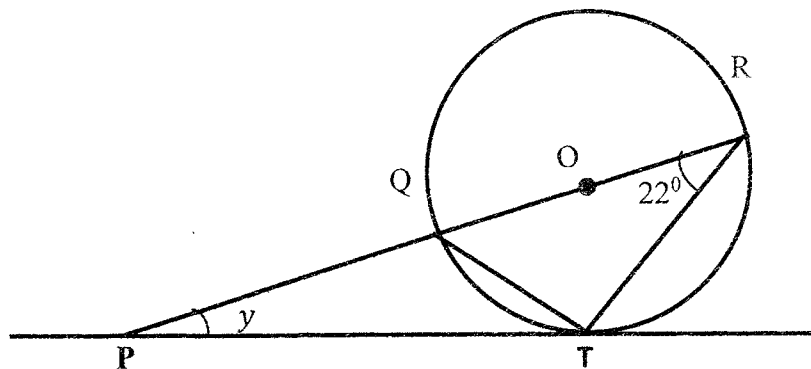   D. 150 degrees and angle D is 30 degrees.

17. Given that O is the center of the circle and angle OCB = 32°. Find the angle marked x in the diagram.

    A. 32°
    B. 58°
    C. 116°
    D. 232°
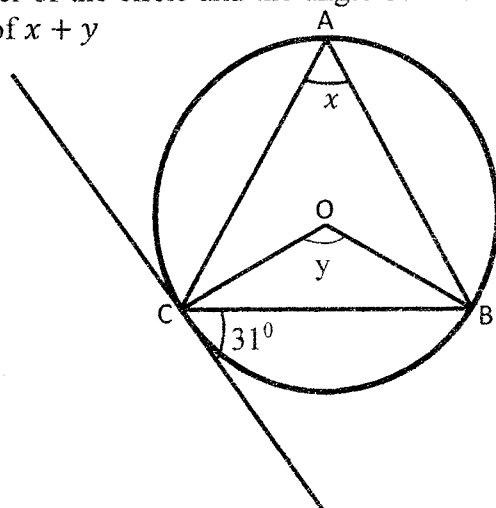
18. In the diagram, O is the centre of the circle QRT and PT is a tangent to the circle at T, calculate the angle y.

A. $22°$
B. $46°$
C. $68°$
D. $112°$

19. Given that O is the center of the circle and the angle between the tangent and the chord CB is $31°$.Calculate the value of $x + y$

A. 59^0
B. 62^0
C. 93^0
D. 186^0

20. In the diagram below, A, B, C and D are points on the circle with Centre O. If $< ABC = 112^0$, Find the angle of the minor sector, AOC.

A. 68^0
B. 112^0
C. 136^0
D. 2486^0