

JULY, 2021
EBS 143
GEOMETRY AND TRIGONOMETRY
2 HOURS

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, JULY/AUGUST, 2021

JULY 26, 2021 GEOMETRY AND TRIGONOMETRY 2:00 PM – 2:30 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.

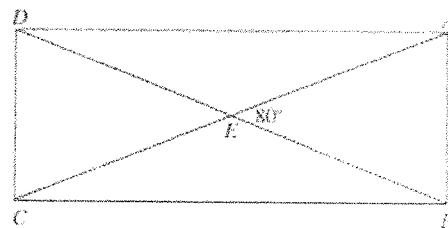
SECTION A

Answer ALL the questions in this Section.

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

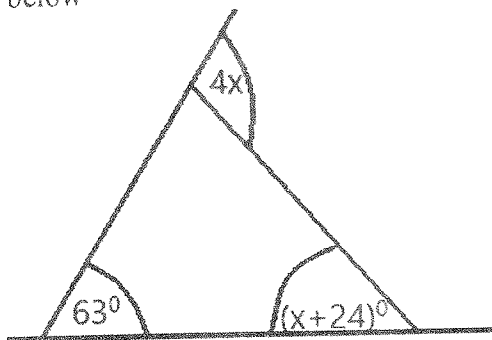
1. A solid figure with uniform cross sectional area is called
A. cone.
B. pyramid.
C. sphere.
D. prism.
2. A surveyor measures the angle of elevation of the top of a perpendicular building as 19° . He moves 120m nearer the building and finds that the angle of elevation is now 47° . Determine the height of the building.
A. 129.68m.
B. 41.32m.
C. 60.85m.
D. 56.74m.
3. A cylinder has diameter of 4cm and height of 5cm. what is the volume of the cylinder?
A. 20.9cm^3
B. 62.9cm^3
C. 83.8cm^3
D. 125.7cm^3

4. Given that $\cos(A) = \frac{5}{13}$ and that $0^\circ < A < 90^\circ$. Find $\sin(A)$.
- $\frac{12}{5}$
 - $\frac{12}{13}$
 - $\frac{13}{12}$
 - $\frac{5}{12}$
5. The lines $2y - kx + 2 = 0$ and $y + x - \frac{k}{2} = 0$ intersect at $(1, -2)$. Find the value of k .
- 1
 - 2
 - 1
 - 2
6. If $P(\frac{a}{3}, 4)$ is the mid-point of the line segment joining the points $Q(-6, 5)$ and $R(-2, 3)$, then the value of a is
- 4
 - 12
 - 12
 - 6
7. What is the diagonal length of a TV screen whose dimensions are $80\text{cm} \times 60\text{cm}$?
- 10cm
 - 100cm
 - 20cm
 - 1000cm
8. Find the ratio in which the point $(2, 7)$ divides the line joining the points $(8, 9)$ and $(-7, 4)$
- 2:3
 - 3:2
 - 1:2
 - 2:1
9. The length of the minute hand of a clock is 14 cm . Find the area swept by the minute hand in 5 minutes. [take $\pi = \frac{22}{7}$]
- 25.6667cm^2
 - 51.3333cm^2
 - 44.0000cm^2
 - 88.0000cm^2



10. In the rectangle above, if $\angle AEB = 80^\circ$, then $\angle DAC =$
- 10°
 - 40°
 - 50°
 - 80°
11. If a pole 6m high casts a shadow $2\sqrt{3}$ m long on the ground, then the sun's elevation is
- 60°
 - 45°
 - 30°
 - 90°
12. The y -axis divides the line segment joining the points $(5, -6)$ and $(-1, -4)$. Also find the point of intersection. Find the ratio and point of intersection.
- 2:3
 - 3:2
 - 1:5
 - 5:1
13. A circle has equation $x^2 + y^2 = 81$. Which of the following is **true** about this circle?
- It has its Centre at the origin $(0,0)$.
 - It has radius of 9
 - It has a radius of 81
- II only
 - I and II only
 - I, and III only
 - III only

14. Find the value of x in the figure below



- 19
 - 29
 - 53
 - 116
15. The angle of a sector of a circle of radius 6cm is 120° . Find the area of the sector in terms of π .
- $4\pi\text{cm}^2$
 - $8\pi\text{cm}^2$
 - $12\pi\text{cm}^2$
 - $24\pi\text{cm}^2$

16. The circumference of a circle is 132cm. Find the radius of the circle. [Take $\pi = \frac{22}{7}$]
- A. 21 cm
 - B. 12 cm
 - C. 42 cm
 - D. 24 cm

17. Which of the following is/are **regular** polygon(s)?



- A. I only
 - B. II only
 - C. I and III only
 - D. I and IV only
18. The exterior angle of a regular polygon is 36° . Find its number of sides.
- A. 10
 - B. 11
 - C. 12
 - D. 13
19. Given that $\mathbf{p} = 2\mathbf{i} - 3\mathbf{j}$ and $\mathbf{q} = \mathbf{i} + 3\mathbf{j}$, what is the magnitude of the vector $\mathbf{p} + 2\mathbf{q}$
- A. 9 units
 - B. 16 units
 - C. 4 units
 - D. 5 units
20. A ladder leans against a wall such that it makes an angle of 36° with the wall. If the wall is 5m high, how far away is the foot of the ladder from the wall?
- A. 0.36 m
 - B. 36 m
 - C. 4.6 m
 - D. 3.6m