SEPTEMBER 2023
EBS 169/169J
TRIGONOMETRY
30 MINUTES

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, SECOND SEMESTER MID-SEMESTER QUIZ, SEPTEMBER 2023

27TH SEPTEMBER 2023 **TRIGONOMETRY** **3:00 PM – 3:30 PM**

Answer ALL the questions.
[20 MARKS]

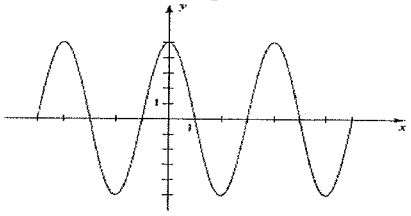
For items 1 to 10, each stem is followed by four options lettered A to D. Read each item carefully and circle the letter of the correct or best option.

1. Which of the following is the amplitude of the function $y = 3\sin(2x + 1)$?
   A. 1
   B. 2
   C. 3
   D. 4

2. Find the period of $y = 2\sin\frac{1}{2}x$.
   A. π
   B. 2π
   C. 3π
   D. 4π

3. Given that $y = a\cos(bx + c)$, what is the name of the quantity $-\frac{c}{b}$? Phase .....
   A. cut
   B. factor
   C. shift
   D. value

4. The graph below represents a sine wave. Deduce the period of the sine wave from the graph.



A. 1
B. π
C. 4
D. 4π

5. If a graph repeats itself at a given interval, then this is the .....
A. amplitude.
B. period.
C. phase shift.
D. solution.

6. Find an equation using the cotangent function that has the same graph as $y = \tan x$.
A. $y = -\cot(x + \frac{\pi}{2})$
B. $y = -\cot(x - \frac{\pi}{2})$
C. $y = \cot(x + \frac{\pi}{2})$
D. $y = \cot(x - \frac{\pi}{2})$

7. Find the solution of the equation $\sin\theta = \frac{1}{2}$, if θ is in the interval $\left[0, \frac{\pi}{2}\right)$.
A. $\frac{\pi}{6}$
B. $\frac{5\pi}{6}$
C. $\frac{13\pi}{6}$
D. $\frac{17\pi}{6}$

8. Solve for x if $\cos 2x = 0$ and express the general solution in degrees.
A. $x = \frac{\pi}{4} + \frac{\pi}{2}n$
B. $x = \frac{\pi}{4} - \frac{\pi}{2}n$
C. $x = 45^\circ + 90^\circ n$
D. $x = 45^\circ - 90^\circ n$

9. Given that $2\sin^2 t - \cos t - 1 = 0$, which of the following is a factor of the equation?
A. $\cos t - 1$
B. $\sin t - 1$
C. $\cos t + 1$
D. $\sin t + 1$

10. Find all the solutions of $\tan\theta = \sqrt{3}$.
    A. $30^\circ + 90^\circ n$
    B. $60^\circ + 180^\circ n$
    C. $90^\circ + 270^\circ n$
    D. $120^\circ + 360^\circ n$

For items 11 and 12, write the appropriate responses in the spaces provided.

11. Find the exact values of $\cos\theta$ and $\tan\theta$, if θ is acute and $\sin\theta = \frac{3}{5}$. **(5 marks)**

12. Use the Pythagorean identities to write each of the following expressions as an integer. **(5 marks)**
    a. $5\sin^2\theta + 5\cos^2\theta$

    b. $4\tan^2\theta - 4\sec^2\theta$