

JULY 2019
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 QUIZ II, JULY 2019

JULY 5, 2019

TRIGONOMETRY

12:00 PM – 12:30 PM

Answer ALL the questions on the question paper.
(20 Marks)

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

- The vector $(10, 130^\circ)$ express as a column vector is _____.
 - $\begin{pmatrix} 7.66 \\ 6.43 \end{pmatrix}$
 - $\begin{pmatrix} -7.66 \\ 6.43 \end{pmatrix}$
 - $\begin{pmatrix} 7.66 \\ -6.43 \end{pmatrix}$
 - $\begin{pmatrix} -7.66 \\ -6.43 \end{pmatrix}$
- A tree casts a shadow 25 meters long when the angle of elevation of the sun is 56° . How tall is the tree?
 - 37.1m
 - 37.0m
 - 20.7m
 - 14.0m
- What is the back bearing of 210° ?
 - 030°
 - 060°
 - 120°
 - 150°
- In triangle ABC, $\angle A = 59^\circ$, $\angle C = 75^\circ$ and $|BC| = 7.3\text{m}$. Calculate the length of the least side of triangle ABC.
 - 9.29m
 - 8.29m
 - 7.36m
 - 6.18m

5. Simplify $\frac{\sec^2 x - 1}{\sec^2 x}$.

- A. $\sin^2 x$
- B. $\sec^2 x$
- C. $\operatorname{cosec}^2 x$
- D. $\cos^2 x$

6. If $x = 3\sin\theta$, simplify the expression $\sqrt{9 - x^2}$.

- A. $\cos\theta$
- B. $\sin\theta$
- C. $3\sin\theta$
- D. $3\cos\theta$

7. Simplify $\cos(90^\circ - \theta)$.

- A. $\cos\theta$
- B. $\sin\theta$
- C. $\tan\theta$
- D. $\sec\theta$

8. A ladder, 25 m is placed against a vertical wall, If the foot of the is 9 m away from the wall, calculate, correct to the nearest degree, the angle the foot of the ladder makes with the ground,

- A. 70°
- B. 69°
- C. 68°
- D. 67°

9. Simplify $\sin\theta + \cot\theta\cos\theta$.

- A. $\operatorname{cosec}\theta$
- B. $\sec\theta$
- C. $\sin\theta$
- D. $\cos\theta$

10. Given that $\tan B = 2.4$ and angle B lies in the third quadrant, find the value of $\sin B + \cos B$.

- A. $-\frac{5}{13}$
- B. $-\frac{12}{13}$
- C. $-\frac{17}{13}$
- D. $-\frac{21}{13}$

11. Triangle PQR is such that $|PQ| = 8 \text{ m}$, $\angle PQR = 36^\circ$ and $\angle QPR = 47^\circ$. Calculate, correct to two significant figures, the length of RQ.
- A. 5.7 m
 - B. 5.8 m
 - C. 5.9 m
 - D. 6.0 m
12. If the bearing of point A from point B is 067° , find the bearing of B from point A.
- A. 023°
 - B. 157°
 - C. 203°
 - D. 247°
13. In triangle PQR, $\angle P = 120^\circ$, $|PQ| = 36 \text{ m}$ and $|QR| = 45 \text{ m}$. Calculate, correct to the nearest degree, $\angle R$.
- A. 44°
 - B. 57°
 - C. 78°
 - D. 97°
14. The direction $S40^\circ W$ is the same as _____,
- A. 320°
 - B. 230°
 - C. 220°
 - D. 140°

A hunter at point A sights a fire directly south. A second hunter who is 7.5 km from and directly east of the first hunter, sights the same fire on a bearing of 207° .

Use this information to answer questions 15 and 16.

Calculate, correct to the nearest whole number:

15. the distance between the first hunter and the fire.
- A. 14 km
 - B. 15 km
 - C. 17 km
 - D. 20 km
16. Find the distance between the second hunter and the fire.
- A. 17 km
 - B. 21 km
 - C. 23 km
 - D. 28 km
17. A boat starts from a point A, travels 7 km in the direction of 060° to B and then 9 km north to C. Find the boat's distance from A
- A. 16 km
 - B. 13.9 km
 - C. 17.4 km
 - D. 12.5 km

Given that $f(\theta) = 5\cos \theta - 12 \sin \theta = R \cos(\theta + \alpha)$.
Use this information to answer questions 18 and 19.

18. Find the minimum value of $f(\theta)$

- A. 7
- B. 13
- C. 15
- D. 17

19. Calculate, correct to the nearest degree, the angle α .

- A. 23°
- B. 47°
- C. 67°
- D. 78°

20. A man walks 1km on a bearing of 040° . He then walks 2km on a bearing of 162° . Finally, he returns to his starting point. Find the distance of the last part of his walk.

- A. 1.6km
- B. 1.7km
- C. 1.8km
- D. 2.0km