OCTOBER 2020 EBS 169J TRIGONOMETRY 1 HOUR 30 MINUTES

Candidate's Index Number	
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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, OCTOBER 2020

OCTOBER 27, 2020

TRIGONOMETRY

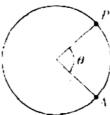
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SECTION B Answer only TWO questions from this section

- 1. (a) Express cos 3A in terms of cos A only.
 - (b) The bearing of a point P from a point Q is (6km, 305°) and the bearing of a point R from P is (8km, 035°).
 - Find the bearing of the point R from Q.
 - ii. Hence, find the angle between the line PR and QR.
- 2. (a) i. Using a scale of 2 cm to 20° on the x-axis and 2 cm to 0.5 unit on the y-axis, draw the graph of $f: x \to 3 \sin x + 2 \cos x$ for $0^{\circ} \le \theta \le 180^{\circ}$ at the intervals of 20°.
 - ii. Use the graph in (i) to find, correct to the nearest degree, the truth set of:
 - $\alpha. 3\sin x + 2\cos x + 1 = 0$
 - B. $6 \sin x + 4 \cos x 2 = 0$
 - (b) Solve the equation $\tan \theta = 2 \sin \theta$, for values of θ from 0° to 360° inclusive.
- 3. (a) If $\sin A = \frac{3}{5}$ and $\cos B = \frac{5}{13}$, find the values of $\sin(A + B)$ and $\cos(A + B)$ when
 - i. A and B are both acute.
 - ii. A is obtuse and B is acute.

36.86

- (b) In $\triangle PQR$, p = 25mm, q = 40mm and $\angle R = 82^\circ$. Find: i. r, ii. $\angle P$ and iii. $\angle Q$, to one decimal place.
- 4. (a) Given that $y = 3\sin(2x + \pi/2)$, find the amplitude, period and phase shift. Hence, sketch the graph for $-\pi \le x \le \pi$.
 - (b) An arc AP of a circle, centre O, subtends an angle of θ at O. Find an expressions in terms of θ and the radius, r, for the length of the arc AP and the area of the sector OAP. (see the figure below)



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