

LAGOS CITY POLYTECHNIC, IKEJA
SCHOOL OF ENGINEERING AND APPLIED SCIENCE
DEPARTMENT OF ELECT/ELECT AND COMPUTER ENGINEERING
2016/2017 SEMESTER EXAMINATION

COURSE	TITLE:	TRIGONOMETRY	AND
COURSE CODE:	MTH 122	NO OF QUESTIONS :	
FOR WHOM:	ND YR I CE, EE	TIME	ALLOWED: 2Hrs
ANSWER	ANY	PT	INSTRUCTIONS:

QUESTIONS

1. (a) Using addition formulae, evaluate each of the following in simple and forms:
 - (i) $\sin 75^\circ$
 - (ii) $\cos 105^\circ$
 - (iii) $\tan 15^\circ$

- (b) Find the coordinates of the point P (x, y) which divides the segment of the line from A(x₁, y₁) to B(x₂, y₂) such that $\frac{AP}{PE} = r$
 - (i) A(4, 3), B = (1, 4) r = $\frac{2}{1}$
 - (ii) A¹(0, 3), B¹(7,4), r = $\frac{2}{7}$

2. (a) If α and β are acute angles such that $\sin \alpha = \frac{3}{5}$ and $\tan \beta = \frac{5}{12}$. Find $\sin(\alpha + \beta)$ without using tables
 - (i) $\sin(\alpha + \beta)$
 - (ii) $\cos(\alpha + \beta)$

- (b) (i) Find the equation of a line passing through (4, 3) with slope $\frac{1}{4}$
 (ii) Find the distance between the point (3, 2) and (4,1)

3. (a) In a right-angled triangle ABC given that AB = 4, AC = 5, and CB = 3 write down the value of:
 - (i) $\sin A$
 - (ii) $\cos C$
 - (iii) $\cot A$
 - (iv) $\sec C$

- (b) Lists and explain the different form of a straight line equation.

4. Without using tables, write down the value of the following:
 - (i) $1 + \tan^2 30^\circ$
 - (ii) $\frac{\cos 80^\circ}{\sin 10^\circ}$
 - (iii) $1 - \sin^2 30^\circ$
 - (iv) $\text{Cosec}^2 45^\circ$
 - (v) $\frac{\cot 25^\circ}{2 \tan 65^\circ}$

5. (a) If $\tan x = \frac{1}{2}$ and $\tan y = \frac{1}{4}$ Where x is acute and y is obtuse, evaluate without using table $\tan(x + y)$
- (b) Are the point A (2, 5), B(1, 1), C(4, 7) Collinear?

6. (a) Given that the point P(9, 2) divides the segment of the line from A(6, 8) to B (x₂, y₂) in the ratio $\frac{AP}{PB} = 3:7$, find the coordinates of B.

- (b) Lists the fundamental identities of Trigonometric.

