SECTION 'A' (40MARKS)

Answer ALL questions in this Section.

1- (i) Simplify $2\frac{1}{2} + 3^{1}/_{3} \div 1^{3}/_{4}$

(ii)Solve the equation $9x(x+1) = 4b$

2- Simplify, without using table or calculators

(a) Log4/log8

(b) $3\sqrt{2} - 2\sqrt{3}$

3- (a) Find two values of α between 0 and 36o degrees such that $\sin\alpha = 0.5$

(b) Evaluate without using table or calculator $(16/81)^{-3/4}$

(c)Given that l$\log_x 8 = 3$, find the value of x

(4)- (a)-Solve the inequality $^{x}/_{3}-2\geq 2x+8$

(b)-Workout $(0.0315)^2-(0.0185)^2$ without using mathematical table or calculator and give your answer to 3 signiN,HJficant figures.

5-(a)-Find the values of X and Y If $\begin{pmatrix} 3 & -1 \\ 20 & y \end{pmatrix}\begin{pmatrix} x \\ -1 \end{pmatrix}=\begin{pmatrix} 7 \\ 20 \end{pmatrix}$

(b)- Express the following number in polar form and represent it graphically
$2+2\sqrt{3}i$

6- Given P= $\begin{pmatrix} 2 & 4 \\ 3 & 6 \end{pmatrix}$ and Q=$\begin{pmatrix} -2 & 5 \\ 6 & 1 \end{pmatrix}$, find

(i)- P + Q

(ii)- PQ

7- Given the co-ordinates A(3, 4) and B(-1 ,2) on a Cartesian plane, find:

(a)- The length AB

(b)- the slope ofAB

8- (a)- Solve the simultaneous equations

X + y =8

Xy=15

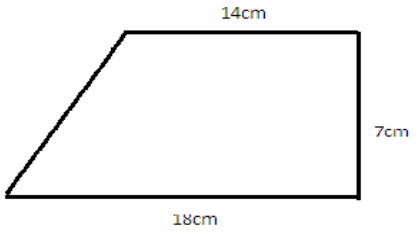
(b)-Write the equation of a circle with centre (-3, 1) and radius 5

9-A fair die is tossed once. Find the probability that

(i) A number less than 5 shows up.

(ii) An odd or even number more than 2 shows up.

10-(i) Find the area of the trapezium in figure below.



Type equation here.

(ii)Write down the expansion of $(1 + X)^5$

SECTION"B" (60MARKS)

Attempt any five questions.

11-Given that F(x)=3-2x , g(x)=X^2+1.

Find

(i) $[f + g](2)$

(ii) $[f - g](2)$

(iii) $f[g(2)]$

(iv) $g[f(2)]$

(v) $g'(x)$

12-The heights of 30 pupils in a certain class were as shown in the table below.

Heights (cm)	Frequency(f)	X	fx
0-2	10		
3-5	9		
6-8	6		
9-11	4		
12-14	1		
	∑f		∑fx

Calculate

(a) The mean height of the pupils

(b) The 3rd term of a geometric sequence is 9 and the 6th term is 243. Find the first term and the common ratio.

13-(a) Find $\frac{dy}{dx}$ of

(i) $Y=1/x + 5\sin x$

(ii) $Y=\frac{5x^3}{x+1}$

(b)Find the following integrations

(i) $\int \frac{(x^3-1)}{x^2} dx$

(ii) $\int (3x+1) dx$

14-Given $Z_1=6+2i$ and $Z_2=1+i$

Find

(i) Z_1+Z_2

(ii)Z_1-Z_2

(iii)Z_1Z_2

(iv)The modulus of Z_1Z_2

H

(v)Arg Z_1Z_2

15-(a)Find the derivative of $Y=2x^5-1/x^2-3x+5$

(b)Find the slope of the curve $y=x^2-3x+4$ at the point(1,2)

(c)Find the equation of the tangent to the curve $y=3x^2$ at the point (3,27)

16-(a)Find the simple interest on 25000ssp for $3^{1/}_2$ years at 18% per annum.

(b)Given that P is inversely proportional to q and when P=4, q=5. Find the value of P when q=10.

(c)How many terms of the Arithmetic series 6+9+12+----- are taken if their sum is 132?

17-(a) Evaluate: $\int_1^2 (x3 + x)dx$

(b)If a=$\binom{5}{6}$and b=$\binom{-3}{4}$ Find

(i) $|b|$

(ii)$|a + b|$

(c)The gradient function of a curve is $3\text{-}2x^2$ and the curve passes through the origin. Find the equation of the curve?