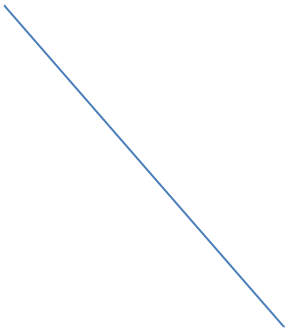
MOMBASA POLYTECHNIC UNIVERSITY COLLEGE
FACULTY OF APPLIED & HEALTH SCIENCES
DEPARTMENT OF MATHEMATICS & PHYSICS
CERTIFICATE IN MECHANICAL ENGINEERING (PLANT OPTION)
CAT II

1. Rationalize the following

$$\frac{1}{\sqrt{7-\sqrt{5}}}$$

2. Find the missing angles



3. A regular hexagon of sides 5cm turns the cross-section of a prison of length 18cm. Find surface area of the prism

$$\pi r(l+r)$$

4. Show that the total surface area of a core is , where the symbols have their usual meanings

$$E=\left(5x^2y^{-3/2}z^{1/4}\right)^2\times\left(4x^4y^2z\right)^{-1/2}$$

$$E=25x^4y^{-3}z^{1/2}\times4^{-1/2}x^{-2}y^{-1}x^{-1/2}$$

$$=25x^4y^{-3}z^{1/2}\times1/2\,x^{-2}y^{-1}z^{-1/2}$$

$$=25/2\,x^2y^{-4}z=25/2\,x^2y^{-4}-1=25x^2/2y^2$$

DIP (DAC 10M)

CAT II STATISTICAL TECHNIQUES

1. Define the following
   (i) Qualitative data
   (ii) Mean
   (iii) Standard deviation
   (iv) Histogram
2. Draw a frequency polygon from the following data

Class	10 – 15.9	16 – 21.9	22 – 27.9	28 – 33.9
Frequency	1	3	7	4