



JURONG PIONEER JUNIOR COLLEGE
9478 H2 PHYSICS/8867 H1 PHYSICS

QUANTITIES AND MEASUREMENT ASSIGNMENT

- 1 The force F between two long, thin and parallel current carrying wires is given by

$$F = \frac{\mu_0 I_1 I_2 L}{2\pi d}$$

where I_1 and I_2 are the currents in the wires, L is their length and d is their distance apart.

Determine the base units of μ_0 . [3]

- 2 The power P required by a helicopter to hover in air is thought to depend on the vertical upwards force F provided by its blades, the length of the blades L and the density of the air ρ , according to the relationship below.

$$P = kF^w L^x \rho^y$$

where k is a dimensionless constant

Using unit analysis, determine the values of the constant w , x and y . Show your working clearly. [4]

- 3 Three coplanar forces act at the point O as shown in Fig. 3.1.

Determine

(a) the resultant horizontal force, [1]

(b) the resultant vertical force. [1]

Hence, calculate the resultant force acting on point O. [2]

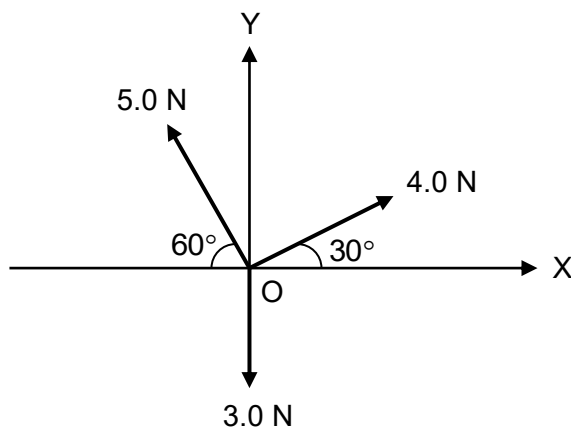


Fig. 3.1