

Answer **all** the questions in the spaces provided.

For  
Examiner's  
Use

- 1 (a) Two of the SI base quantities are mass and time. State three other SI base quantities.

1. ....

2. ....

3. ....

[3]

- (b) A sphere of radius  $r$  is moving at speed  $v$  through air of density  $\rho$ . The resistive force  $F$  acting on the sphere is given by the expression

$$F = Br^2\rho v^k$$

where  $B$  and  $k$  are constants without units.

- (i) State the SI base units of  $F$ ,  $\rho$  and  $v$ .

$F$  .....

$\rho$  .....

$v$  .....

[3]

- (ii) Use base units to determine the value of  $k$ .

$k =$  ..... [2]

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**Please turn over for Question 2.**