

Full Name: .....

Date: 13 Oct 2024

### Short Assessment

Time Allowed: 15

Total Marks: 20

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1. Group the following physical quantities into the two groups, “Base Quantities” and “Derived Quantities”:

Force      Length      Area      Volume      Temperature      Mass  
Moment      Energy

(4 marks)

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2. (a) Use the formula,  $F = ma$  to express the unit *Newton* in terms of the base units.

(2 mark)

- (b) Use your answer to part (a) to obtain the unit of pressure in terms of base units.

(3 marks)

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3. Use the idea of homogeneity of units to prove that the following formula is **incorrect**.

$$v^2 = u^2 + 2a^2s,$$

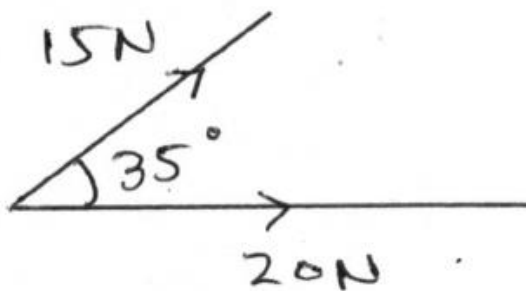
where  $v$  ,  $u$  ,  $a$  and  $s$  represent final velocity, initial velocity, acceleration and displacement respectively. The number '2' in the formula doesn't have a unit.

(3 marks)

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4. Determine the magnitude and direction of the resultant force in each of the following cases. The directions can be given by calculating the angle that the resultant force make with one of the forces given.

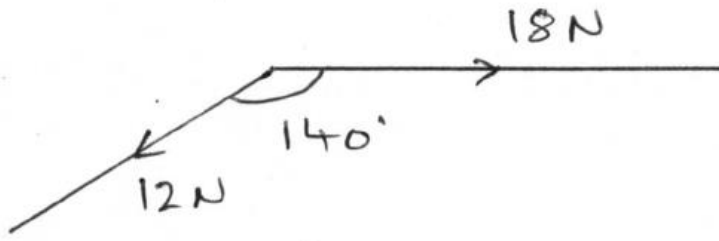
(a)



(4 marks)

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(b)



(4 marks)

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**- End of Test -**