

Solomon Practice Paper

Mechanics 2E

Time allowed: 90 mintues

Centre:

Name:

Teacher:

Question	Points	Score
1	4	
2	6	
3	11	
4	12	
5	13	
6	13	
7	16	
Total:	75	

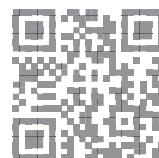
How I can achieve better:

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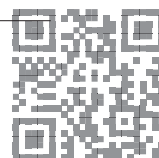
1. A ball of mass 0.6kg bounces against a wall and is given an impulse of $(12\mathbf{i} - 9\mathbf{j})\text{N s}$ where $\mathbf{i}$ and $\mathbf{j}$ are perpendicular horizontal unit vectors. The velocity of the particle after the impact is $(5\mathbf{i} + 3\mathbf{j})\text{ ms}^{-1}$. [4]

Find the velocity of the particle before the impact.

[illegible]

$$x = 2 + t - \frac{1}{10}e^t.$$

- Total: 6

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-
- A diagram showing a ladder of length 2 m leaning against a vertical wall. The ladder makes an angle θ with the horizontal ground. The wall is represented by a vertical line, and the ground by a horizontal line. The ladder is shown as a hatched line segment.

The ladder is at an angle θ to the horizontal where $\tan \theta = \frac{5}{2}$ and the coefficient of friction between the ladder and the wall is $\frac{1}{3}$.

- A man wishes to use the ladder but fears the rope will snap as he climbs the ladder.

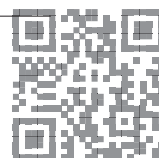
- Total: 11

[illegible]

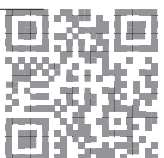
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- The earring is to be worn such that it hangs in equilibrium suspended from the point A.

- Total: 12

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- Total: 13

[illegible]

- Given that the speed of T after the collision is 4 ms^{-1} ,

[6]

[3]

[4]

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-
- A diagram showing a particle of mass m on an inclined plane. The plane is inclined at an angle α to the horizontal. The particle is at point A and is moving up the plane with a speed of 5.6 ms^{-1} . The plane is labeled B.

(a) use the Work-Energy principle to show that the distance AB is 1.4m.

[10]

(b) Find, correct to 2 significant figures, the speed of P when it returns to A .

[6]

Total: 16

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