For Examiner's Use

Section A

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

1 **(a)** **(i)** Define *linear momentum.*

……..……

……..... [1]

(ii) State the *principle of conservation of momentum*.

……...

……...

……..……

……..... [2]

(b) Fig. 1.1 shows two spheres, A and B, with identical sizes but of different masses, connected by a light elastic string.

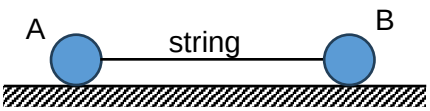

Fig. 1.1

The masses of A and B are 2.0 kg and 1.0 kg respectively. The two spheres are initially held at rest 0.90 m apart on a smooth horizontal surface with the string in tension. They are then simultaneously released. The string releases 12 J of energy as it contracts to its natural length.

(i) Determine the speeds acquired by each of the spheres.

speed of A = …… m s^{-1}

speed of B = …… m s^{-1} [4]

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(ii) Determine the distance of the position of A from its initial position when the two spheres collide.

distance = …… m [3]

[Total: 10]

[Turn over