

1 (a) (i) Define gravitational potential at a point.

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(ii) Explain why gravitational potential is negative.

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[2]

- (b) A meteorite was observed to be traveling fast on a straight-line path inside a gravitational field. AB is a segment of this path, which occurs over a short period of time. The variation in the gravitational potential ϕ along AB is shown in Fig 1.1 where x is the displacement of the meteorite from A. The gravitational potential reaches a maximum value when $x = x_0$ at the point C.

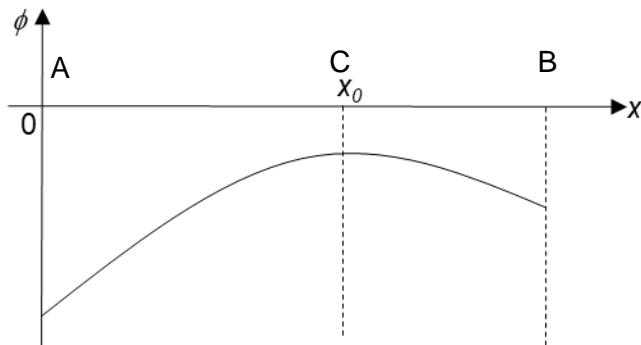


Fig 1.1

- (i) Describe the variation in the gravitational force acting on the meteorite along the path AC.

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- (ii) On Fig 1.2, sketch the graph of the variation in the kinetic energy of the meteorite.

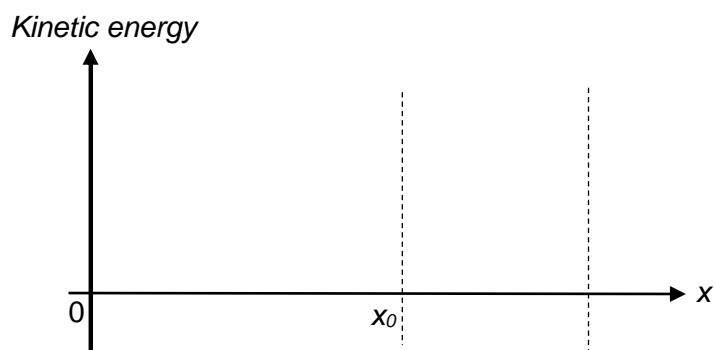


Fig 1.2

[2]

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