

Date:

class test - Work, Energy, Power

Max. Marks: 20

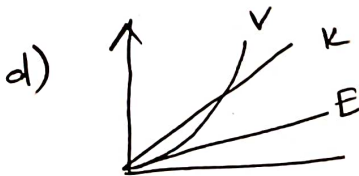
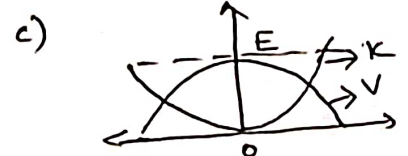
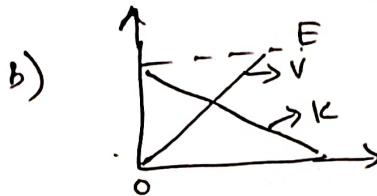
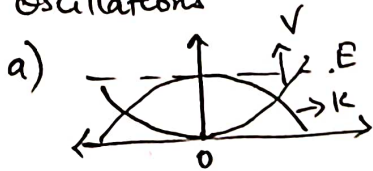
Time: 1h

MCQs

(5x1=5)

- In an inelastic collision, what is conserved?
 a) Kinetic energy b) Momentum c) Both (a) and (b) d) Neither (a) nor (b)
- Which of the following graphs correctly represents K.E, P.E and T.E for a spring attached to a body of mass set into oscillations

Oscillations



- When a body moves in a circular path with constant speed, its W.D will be
 a) positive b) zero c) Negative d) None of these

- A force $\vec{F} = 5\hat{i} + 3\hat{j} + 2\hat{k}$ N is applied over a particle which displaces it from its origin to the point $\vec{r} = 2\hat{i} - \hat{j}$ m. The W.D on the particle will be
 a) -7 b) +7 c) 10 d) 13

- A body of mass m_1 collides elastically with another mass m_2 at rest. There is maximum transfer of energy when
 a) $m_1 > m_2$ b) $m_1 < m_2$ c) $m_1 = m_2$ d) Same for all values of m_1 and m_2

Answer the following Questions.

- State and Prove Work-Energy theorem for a variable force. (3)
- What is the effect on K.E of a body when its momentum is doubled? Write the expression. (2)
- How high a body must be lifted to gain an amount of P.E equal to the K.E it has moving at a speed of 20 m/s? (2)
 Take $g = 9.8 \text{ m/s}^2$
- Derive an expression for final velocities of two bodies m_1 and m_2

as they collide elastically in one dimension. (3)

10. Prove that spring force is conservative in nature. (5)