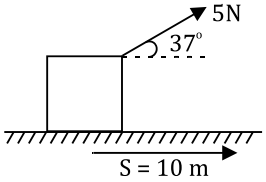
DPP – 1

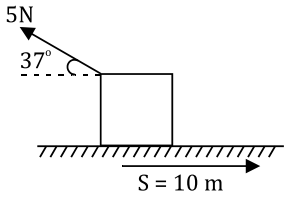
Work power energy

Q.1 Find work done in the following by applied force.

(a) By 5N Force

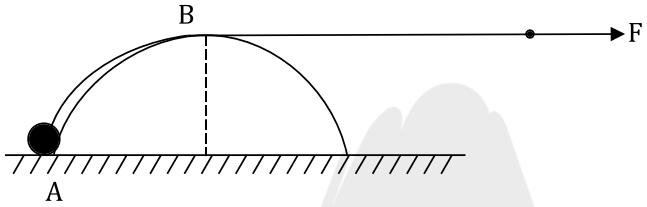


(b)

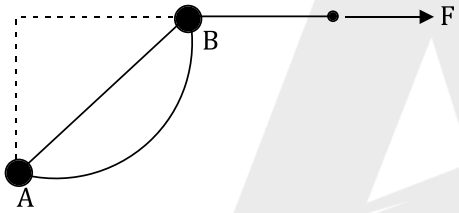


Q.2 Find the work done by force F in moving the particle from A to B. In case A&B

(A)



(B)



Q.3 $\vec{F} = (2\hat{i} + 3\hat{j} + 4\hat{k})$N is applied on a particle find the work done by the force if it move from A(2,2,2)m to B(3,4,5)m

(A) 10 J (B) 20 J (C) −20 J (D) 12 J

Q.4 F = 2x is applied on a particle find the work done by the force in moving the particle from x = 2 to x = 5 m

(A) 11 J (B) 21 J (C) 6 J (D) 31 J

Q.5 A Force $F = (3i + 2\hat{j})$N is applied on a particle the particle moves from x = 0 to x = 5 m on the path y = x + 2. find the work done by the force,

(A) 5J (B) 25 J (C) 35 J (D) N.O.T

Q.6 $\vec{F} = x\hat{i} + y\hat{j}$ is applied on a particle which moves from x = 0 to x = 2 on path y = x + 2. find the work done,

(A) −2J (B) 8J (C) 12 J (D) 4J

Q.7 $\vec{F} = (3xy - 5z)\hat{j} + 4z\hat{K}$ Fore applying, a particle is moved along the path $Y = x^2$ from point (0,0,0) to the point (2,4,0). The work done by the F on the particle is

(A) $\frac{192}{5}$ (B) $\frac{140}{5}$ (C) $\frac{232}{5}$ (D) $\frac{280}{5}$

Q.8 A body of mass 0.5 kg travels on straight line path with velocity $v = (3x^2 + 4)$ m/s. The net work done by the force during its displacement from $x = 0$ to $x = 2$m is

(A) 64 J (b) 60 J (c) 120 J (d) 128 J

Q.9 Arrange the four graphs in descending order of total work done; where W_1, W_2, W_3 and W_4 are the work done corresponding to figure a, b, c and d respectively.

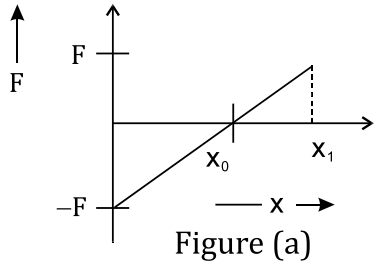


Figure (a)

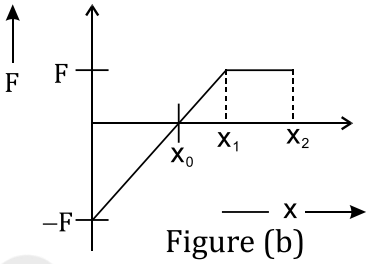


Figure (b)

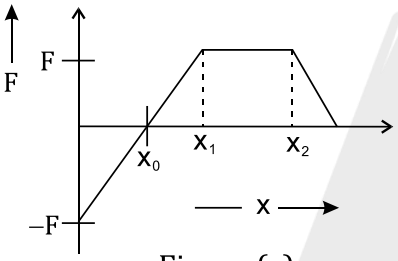


Figure (c)

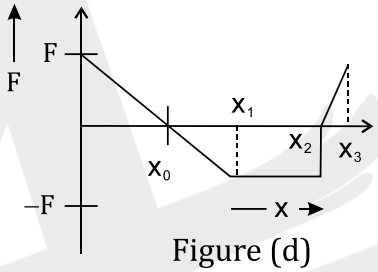
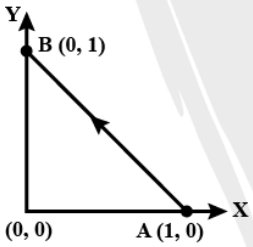


Figure (d)

(A) $W_3 > W_2 > W_1 > W_4$ (B) $W_3 > W_2 > W_4 > W_1$

(C) $W_2 > W_3 > W_4 > W_1$ (D) $W_2 > W_3 > W_1 > W_4$

Q.10 Consider a force $\vec{F} = -x\hat{i} + y\hat{j}$. The work done by this force in moving a particle from point A(1,0) to B(0,1) along the line segment is (all quantities are in SI units)



(A) $\frac{3}{2}$ (B) 2 (C) 1 (D) $\frac{1}{2}$

ANSWER KEY

1. (a) 40 j (b) -40 j **2.** (a) $\frac{\pi RF}{2}$ (b) $FR\sqrt{2}$ **3.** 20 j **4.** 21 j

5. 25 j **6.** 8 j **7.** $\frac{192}{5}$ **8.** 60 j **9.** (A) **10.** (C)