

Dear student following is an Easy level [O ● O O O] test paper. Score of 18 Marks in 15 Minutes would be a satisfactory performance. Questions 1-10 (+3, -1). (All Questions have Single Options correct)

- Q.1** An object is thrown vertically upwards. As it rises its total energy :
 (A) decreases
 (B) increases
 (C) remains constant
 (D) sometimes decreases, sometimes increases
- Q.2** A force of 100N is required to move a body with a velocity of 10ms⁻¹. The power developed is :
 (A) 50 watts (B) 1000 watts
 (C) 10 watts (D) 100 watts
- Q.3** Work can be :
 (A) positive only
 (B) negative only
 (C) both positive and negative
 (D) neither positive nor negative
- Q.4** A body of mass m is moving with velocity v and is brought to rest by a fore F in a distance S. Work done is stopping the body is :
 (A) $\frac{1}{2} mv^2$ (B) mv^2
 (C) $2mv^2$ (D) None
- Q.5** If the momentum of a body is doubled the kinetic energy is :
 (A) doubled
 (B) remains same
 (C) increases to 8 times
 (D) increases to 4 times
- Q.6** A bullet of mass m moving with velocity v strikes a suspended wooden block of mass M and gets embedded. The block rises to height h. The initial velocity of bullet is :
 (A) $(2gh)^{1/2}$ (B) $\frac{m(2gh)^{1/2}}{M+m}$
 (C) $\frac{M+m}{m} (2gh)^{1/2}$ (D) None of these
- Q.7** In perfectly inelastic collision, the relative velocity of the bodies :
 (A) before impact is zero
 (B) before impact is equal to that after impact
 (C) after impact is zero
 (D) None of the above is true
- Q.8** In elastic collision law of conservation of momentum holds good if :
 (A) time of collision is small
 (B) bodies are mere particles
 (C) bodies are mere spheres
 (D) under all conditions
- Q.9** A bullet strikes a wooden block and gets embedded into it. Which type of the collision is it ?
 (A) Perfectly elastic (B) Perfectly inelastic
 (C) Partially elastic (D) Partially inelastic
- Q.10** The coefficient of restitution for a perfectly inelastic collision is :
 (A) 1 (B) zero
 (C) infinity (D) -1



PHYSICS IIT JEE (JULY 4th WEEK CLASS TEST 4) (WORK, POWER, ENERGY & COLLISION) ANSWER KEY

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| Name : | | | | Roll No. : | | | | | | | | | | |
| | A | B | C | D | | A | B | C | D | | A | B | C | D |
| 1 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 5 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 9 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 6 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 10 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 7 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | | | | | |
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ANSWER KEY

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|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Que. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Ans. | C | B | A | A | D | C | C | D | B | B |

SOLUTIONS

Sol.1 (C)

Sol.2 (B)

Sol.3 (A)

Sol.4 (A)

W = change in kinetic energy

$$W = \frac{1}{2} mv^2 - 0$$

$$W = \frac{1}{2} mv^2$$

Sol.5 (D)

Momentum a velocity. When for a body it is doubled, it means its velocity is doubled and energy being proportional to the square of velocity, it becomes 4 times.

Sol.6 (C)

As the block and bullet rises by a vertical height h, the velocity of combination is given by $v = (2gh)^{1/2}$. Now applying the law of conservation of momentum

$$m.u + M \times 0 = (M + m)v$$

$$u = \frac{M+m}{m} (2gh)^{1/2}$$

Sol.7 (C)

Sol.8 (D)

Sol.9 (B)

Sol.10 (B)