

NEET WORK, ENERGY AND POWER — POWER — PYQS

Max. Marks: 56

Questions: 14

Section A (MCQ) — 14 questions

- Q.1** The power of a crane, which lifts a mass of 1000 kg to a height of 20 m in 10 s is :
($g = 9.8 \text{ m/s}^2$) [NEET (UG) 2026]
(1) 19.6 kW (2) 19.6 W (3) 39.2 kW (4) 39.2 W

Scan or tap for the full solution



- Q.2** At any instant of time t , the displacement of any particle is given by $2t - 1$ (SI unit) under the influence of force of 5 N. The value of instantaneous power is (in SI unit):
[NEET (UG) 2024]
(1) 10 (2) 5 (3) 7 (4) 6

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- Q.3** An electric lift with a maximum load of 2000 kg (lift + passengers) is moving up with a constant speed of 1.5 ms^{-1} . The frictional force opposing the motion is 3000 N. The minimum power delivered by the motor to the lift in watts is : ($g = 10 \text{ ms}^{-2}$)
[NEET (UG) 2022]
(1) 23000 (2) 20000 (3) 34500 (4) 23500

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- Q.4** Water falls from a height of 60 m at the rate of 15 kg/s to operate a turbine. The losses due to frictional force are 10% of the input energy. How much power is generated by the turbine?
($g = 10 \text{ m/s}^2$) [NEET (UG) 2021]
(1) 7.0 kW (2) 10.2 kW (3) 8.1 kW (4) 12.3 kW

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- Q.5** A body of mass 1 kg begins to move under the action of a time dependent force $\vec{F} = (2t\hat{i} + 3t^2\hat{j}) \text{ N}$, where $\hat{i}$ and $\hat{j}$ are unit vectors along x and y axis. What power will be developed by the force at the time t ?
[NEET 2016 (Phase 1)]
(1) $(2t^3 + 3t^4) \text{ W}$ (2) $(2t^3 + 3t^5) \text{ W}$
(3) $(2t^2 + 3t^3) \text{ W}$ (4) $(2t^2 + 4t^4) \text{ W}$

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- Q.6** A particle of mass m is driven by a machine that delivers a constant power k watts. If the particle starts from rest the force on the particle at time t is

[AIPMT 2015 (Cancelled)]

- (1) $\sqrt{2mk} t^{-1/2}$ (2) $\frac{1}{2} \sqrt{mk} t^{-1/2}$
(3) $\sqrt{\frac{mk}{2}} t^{-1/2}$ (4) $\sqrt{mk} t^{-1/2}$

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- Q.7** One coolie takes 1 minute to raise a suitcase through a height of 2 m but the second coolie takes 30 s to raise the same suitcase to the same height. The powers of two coolies are in the ratio
[NEET 2013 (Karnataka)]
(1) 1 : 3 (2) 2 : 1 (3) 3 : 1 (4) 1 : 2

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- Q.8** A car of mass m starts from rest and accelerates so that the instantaneous power delivered to the car has a constant magnitude P_0 . The instantaneous velocity of this car is proportional to

[AIPMT 2012 (Mains)]

- (1) $t^2 P_0$ (2) $t^{1/2}$ (3) $t^{-1/2}$ (4) $\frac{t}{\sqrt{m}}$

Scan or tap for the full solution



- Q.9** A body projected vertically from the earth reaches a height equal to earth's radius before returning to the earth. The power exerted by the gravitational force is greatest
[AIPMT 2011 (Prelims)]
(1) at the highest position of the body
(2) at the instant just before the body hits the earth.
(3) it remains constant all through.
(4) at the instant just after the body is projected.

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- Q.10** A particle of mass M , starting from rest, undergoes uniform acceleration. If the speed acquired in time T is V , the power delivered to the particle is

[AIPMT 2010 (Mains)]

(1) $\frac{MV^2}{T}$ (2) $\frac{1}{2} \frac{MV^2}{T^2}$ (3) $\frac{MV^2}{T^2}$ (4) $\frac{1}{2} \frac{MV^2}{T}$

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Q.11 An engine pumps water through a hose pipe. Water passes through the pipe and leaves it with a velocity of 2 m/s. The mass per unit length of water in the pipe is 100 kg/m. What is the power of the engine?

[AIPMT 2010 (Prelims)]

- (1) 400 W (2) 200 W (3) 100 W (4) 800 W

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Q.12 An engine pumps water continuously through a hose. Water leaves the hose with a velocity v and m is the mass per unit length of the water jet. What is the rate at which kinetic energy is imparted to water?

[AIPMT 2009]

- (1) mv^3 (2) $\frac{1}{2}mv^2$ (3) $\frac{1}{2}m^2v^2$ (4) $\frac{1}{2}mv^3$

Scan or tap for the full solution



Q.13 Water falls from a height of 60 m at the rate of 15 kg/s to operate a turbine. The losses due to frictional forces are 10% of energy. How much power is generated by the turbine ? ($g = 10 \text{ m/s}^2$)

[AIPMT 2008]

- (1) 12.3 kW (2) 7.0 kW (3) 8.1 kW (4) 10.2 kW

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Q.14 If $\vec{F} = (60\hat{i} + 15\hat{j} - 3\hat{k}) \text{ N}$ and $\vec{v} = (2\hat{i} - 4\hat{j} + 5\hat{k}) \text{ m/s}$, then instantaneous power is

[AIPMT 2000]

- (1) 195 watt (2) 45 watt (3) 75 watt (4) 100 watt

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	1	1	3	3	2	3	4	2	2	4	4
Ques.	12	13	14								
Ans.	4	3	2								