PHYSICS

BOOKS - NTA MOCK TESTS

NTA NEET SET 63

Physics

---

1. What is the momentum of a photon having frequency $1.5 \times 10^{13} Hz$?

A. 3.3×10^{-29} kg ms^{-1}

B. 3.3×10^{-34} kg ms^{-1}

C. 6.6×10^{-34} kg ms^{-1}

D. 6.6×10^{-30} kg ms^{-1}

Answer: A

▶ **Watch Video Solution**

2. The total energy of an electron revolving in the second orbit of a hydrogen atom is

A. $-13.6eV$

B. $-1.51eV$

C. $-3.4eV$

D. Zero

Answer: C

▶ **Watch Video Solution**

3. On a friction surface a block a mass M moving at speed v collides elastic with another block of same mass M which is

initially at rest . After collision the first block moves at an angle θ to its initial direction and has a speed $\dfrac{v}{3}$. The second block's speed after the collision is

A. $\dfrac{3}{4}v$

B. $\dfrac{\sqrt{3}}{4}v$

C. $\dfrac{2\sqrt{2}}{3}v$

D. $\dfrac{\sqrt{3}}{5}v$

Answer: C

▶ **Watch Video Solution**

4. A solid cube of the edge a is molten and moulded in eight identical small solid cubes and are placed on one other on a straight line with the edge of the bottom cube on the same horizontal plane on which big cube was placed , then the vertical shift in the centre of mass is
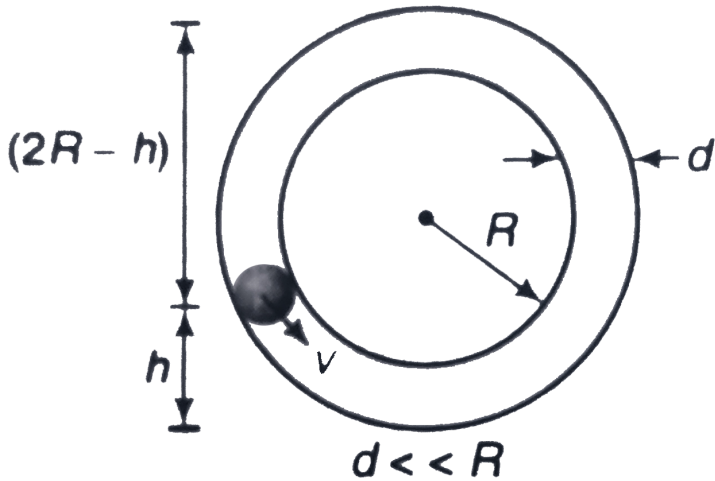
A. $\dfrac{3a}{2}$

B. 2a

C. $\dfrac{5a}{2}$

D. 3a

Answer: A

5. With what minimum speed v must a small ball should be pushed inside a smooth vertical tube from a height h so that it may reach the

top of the tube? Radius of the tube is R .

A. $\sqrt{2g(h + 2R)}$

B. $\sqrt{g(5h + 2R)}$

C. $\sqrt{g(5h - 2R)}$

D. $\sqrt{2g(h - 2R)}$

Answer: D

6. A mass attached to one end of a string crosses top - most point on a vertical circle with critical speed. Its centripetal acceleration when string becomes horizontal will be (where, g=gravitational acceleration)

A. g

B. 3g

C. 4g

D. 6g

Answer: B

▶ **Watch Video Solution**

---

7. A capacitor of capacitance C is fully charged by a 200 V battery. It is then discharged through a small coil of resistance wire embedded in a thermally insulated block of specific heat $2.5 \times 10^2 Jkg^{-1}K^{-1}$ and of

mass 0.1 kg. if the temperature of the block

rises by 0.4 K, what is the value of C?

A. $300\mu F$

B. $200\mu F$

C. $400\mu F$

D. $500\mu F$

Answer: D

▶ **Watch Video Solution**

8. In potentiometer experiment, null point isobtained at a particular point for a cell on potentiometer wire x cm long. If the lengthof the potentiometer wire is increasedwithout changing the cell, the balancing length will (Driving source is not changed)

A. increase

B. decrease

C. not change

D. becomes zero

Answer: A

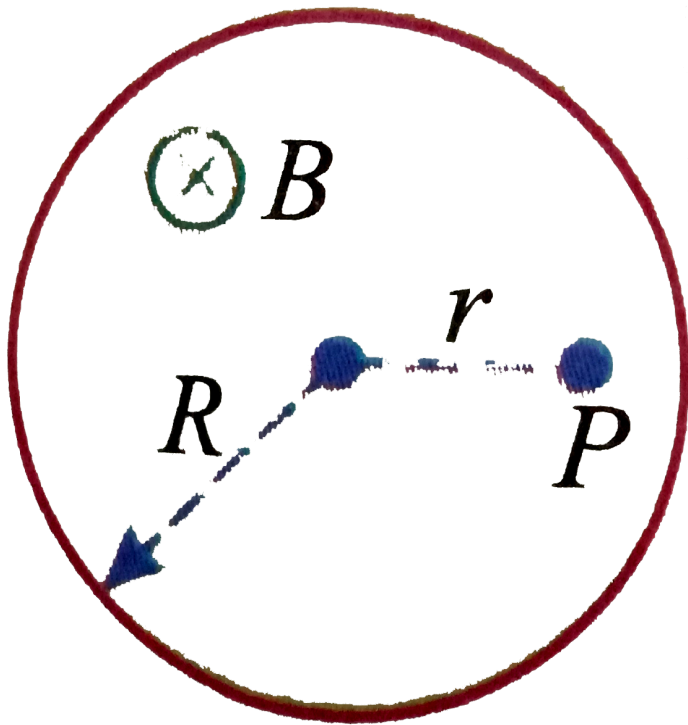**9.** A uniform magentic field of induction B is confined in a cyclinderical region of radius R. If the field is incresing at a constant rate of $\frac{dB}{dt} = \alpha T/s,$ then the intensity of the electric field induced at point P, distant r from the axis as shown in the figure is

proportional to :

A. $\dfrac{1}{8}r$

B. $\dfrac{1}{8}r\alpha$

C. $\dfrac{1}{2}r\alpha$

D. r

Answer: C

Watch Video Solution

---

10. Two coil A and B have coefficient of mutual inductance M=2H. The magnetic flux passing through coil A charges by 4 Weber in 10 seconds due to the change in current in B. Then

A. Change in current in B in this time interval is 0.5 A

B. Change in current in B in this time interval is 8 A

C. The change in current in B in this time interval is 2 A

D. A change in the current of 1 A in coil A will produce a change in flux passing through B by 4 Wb
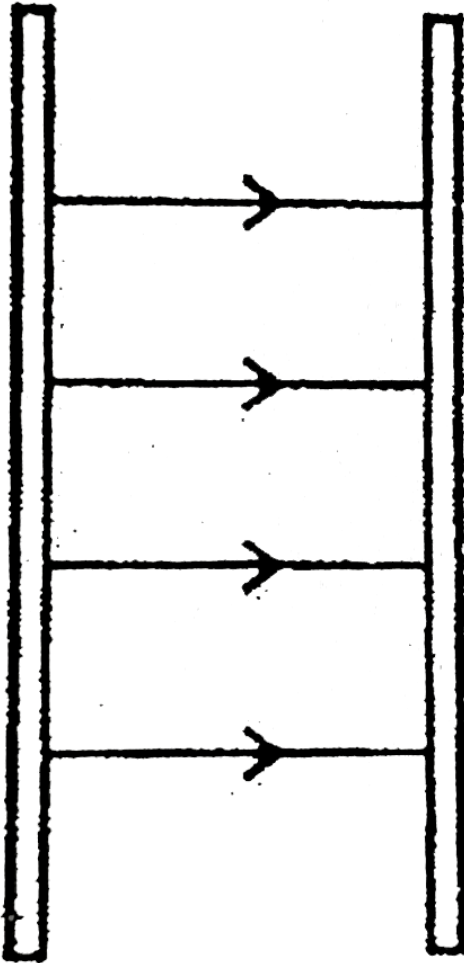
Answer: C

11. Two large oppositely charged insulated plates have a uniform electric field between them as shown. The distance between the plates is increased by a small amount. Which of the following statements is/are correct.

Statement-(i) The electric field strength decreases.

Statement-(ii) The electro force of attraction betweeen the plates increases.

Statements-(iii) The potential difference between the plates increases.

A. (I) only

B. (II) only

C. (III) only

D. (I) and (II) only

Answer: C

▶ Watch Video Solution

12. Three concentric metallic spherical shells of radii R, 2R, 3R, are given charges Q_1, Q_2, Q_3, respectively. It is found that the surface charge denisties on the outer surfaces of the shells are equal. Then, the ratio of the charges given to the shells, $Q_1 : Q_2 : Q_3$, is

    A. $1 : 8 : 18$

    B. $1 : 3 : 5$

    C. $3 : 4 : 5$

    D. $1 : 4 : 9$

---

13. Two satellites A and B go around a planet

in circular orbits of radii 4 R and R respectively.

If the speed of the satellite A is 3 V, then the

speed of the satellite B will be

A. 12 v

B. 6 v

C. $\dfrac{4v}{3}$

D. $\dfrac{3v}{2}$

Answer: B

▶ **Watch Video Solution**

14. A person sitting in a chair in a satellite feels weightless because

A. The earth does not attract the object in a satellite

B. The normal force by the chair on the

person balance the earth's attraction

C. The normal force is zero

D. The person in satellite is not accelerated

Answer: C

▶ Watch Video Solution

15. The surface area of a black body is $5 \times 10^{-4} m^2$ and its temperature is $727°C$.

Energy radiated by it per minute is (Take $\sigma = 5.67 \times 10^{-8} \text{J m}^{-2} s^{-1} K^{-4}$)

A. $1.7 \times 10^3 J$

B. $2.5 \times 10^2 J$

C. $3 \times 10^4 J$

D. $2.7 \times 10^4 J$

Answer: A

16. A Carnot engine takes 12.6×10^6 J of heat from a reservoir at $627°C$ and gives it to a sink at $27°C$. The work done by the engine is:

A. $4.2 \times 10^6 J$

B. $8.4 \times 10^6 J$

C. $16.8 \times 10^6 J$

D. Zero

Answer: B

▶ **Watch Video Solution**

17. The Carnot cycle of a reversible heat engine consists of

A. One isothermal and two adiabatic processes

B. Two isobaric and one adiabatic processes

C. Two isothermal and two adiabatic processes

D. Two isobaric and two isothermal processes

Answer: C

▶ **Watch Video Solution**

18. A galvanometer coil has a resistance of 50Ω and the meter shows full scale deflection for a current of 5 mA . This galvanometer is converted into a voltmeter of range 0 - 20 V by connecting

A. 3950Ω in series with galvanometer

B. 4050Ω in series with galvanometer

C. 3950Ω in parallel with galvanometer

D. 4050Ω in parallel with galvanometer

Answer: A

▶ **Watch Video Solution**

---

19. A voltmeter having a resistance of 998

ohms is connected to a cell of e.m.f. 2 volt and

internal resistance 2 ohm. The error in the measurment of e.m.f. will be

A. $4 \times 10^{-1} V$

B. $2 \times 10^{-3} V$

C. $4 \times 10^{-3} V$

D. $4 \times 10^{-1} V$

Answer: C

20. Which of the following properties is False for a bar magnet ?

A. It doesn't produce magnetic field

B. Its like poles repel and unlike poles

    attract

C. Its poles cannot be separated

D. It points in North - South direction when

    suspended

Answer: A

21. Two persons A and B start from the same location and walked around a square in opposite directions with constant speeds. The square has a side 60 m. Speed of A and B are $4ms^{-1}$ and $2ms^{-1}$ respectively. When will they meet for the first time ?

A. 30 s

B. 40 s

C. 10 s

D. 20 s

Answer: B

> ▶ **Watch Video Solution**

---

22. A body is thrown with the velocity $20ms^{-1}$ at an angle of $60°$ with the horizontal. Find the time gap between the two positions of the body where the velocity of the body makes an angle of $30°$ with horizontal.
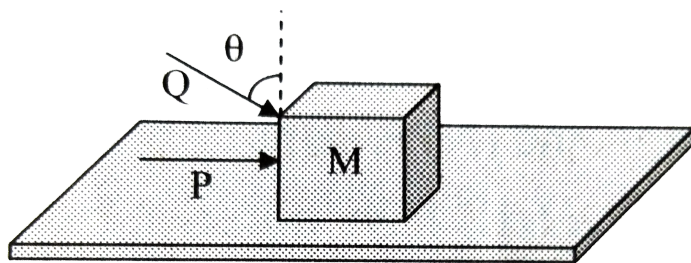
A. 1.15 s

B. 0.95 s

C. 1 s

D. 1.5 s

Answer: A

▶ **Watch Video Solution**

---

23. A block of mass m lying on a rough horizontal plance is acted upon by a horizontal force P and another force Q inclined at an angle θ to the vertical. The block

will remain in equilibrium, if the coefficient of

friction between it and the surface is

A. $\dfrac{P + Q \sin\theta}{mg + Q \cos\theta}$

B. $\dfrac{P \cos\theta + Q}{mg - Q \sin\theta}$

C. $\dfrac{P + Q \cos\theta}{mg + Q \sin\theta}$

D. $\dfrac{P \sin\theta - Q}{mg - Q \cos\theta}$

Answer: A

24. A brick of mass 2kg begins to slide down on a plane inclined at an angle of $45°$ with the horizontal. The force of friction will be

A. $\dfrac{19.6}{\sqrt{2}} N$

B. $\dfrac{9.8}{\sqrt{2}} N$

C. 19.6 N

D. 9.8 N

Answer: A

25. When the nucleus of $.^{238}U_{92}$ disintegrates to give one nuclues of $.^{206}U_{82}$, the number of $\alpha -$ particles emitted and the number of $\beta -$ particles emitted is

A. 4 and 8 respectively

B. 6 and 8 respectively

C. 8 and 6 respectively

D. 8 and 10 respectively

Answer: C

26. Distance in free space at which intensity of 5 eV neutron beam reduces to half will be nearly : (Take half - life of the neutron = 12.8 min)

   A. 6000 km

   B. 12000 km

   C. 18000 km

D. 24000 km

Answer: D

▶ **Watch Video Solution**

---

27. A simple pendulum of length l has maximum angular displacement θ. Then maximum kinetic energy of a bob of mass m is

A. $\dfrac{1}{2}\dfrac{ML}{g}$

B. $\dfrac{Mg}{2L}$

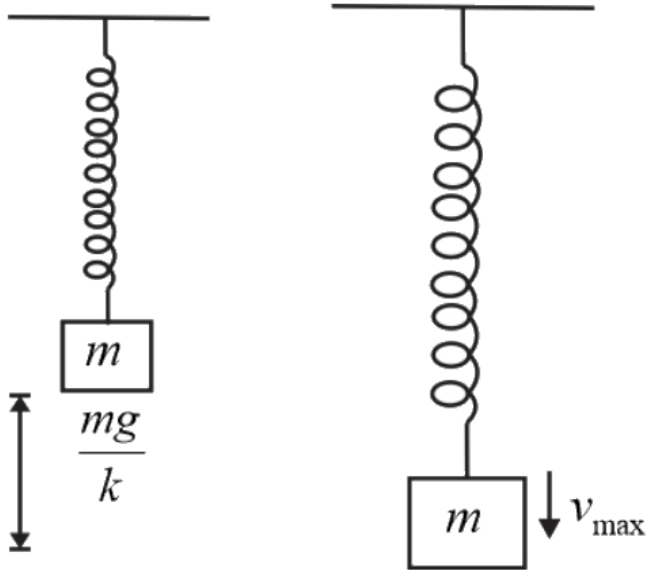C. $MgL(1 - \cos\alpha)$

D. $\dfrac{MgL \sin\alpha}{2}$

Answer: C

> ▶ **Watch Video Solution**

28. A particle suspended from a vertical spring oscillates 10 times per second. At the highest point of oscillation , the spring becomes upstretched . Find the speed when the spring

is stretched by 0.20 cm . (Take , $g = \pi^2 m/s^2$)

A. 110.25cm s^{-1}

B. 12.14cm s^{-1}

C. 15.4cm s^{-1}

D. 16.7cm s^{-1}

Answer: C

29. A particle of charge -16×10^{-18} coulomb moving with velocity $10ms^{-1}$ along the $x-$ axis , and an electric field of magnitude $10^4/(m)$ is along the negative $z-$ axis. If the charged particle continues moving along the x- axis , the magnitude of B is

A. 10^3Wb m^{-2}

B. 10^5Wb m^{-2}

C. 10^{16}Wb m^{-2}

D. 10^{-3}Wb m^{-2}

Answer: A

▶ **Watch Video Solution**

30. If the uncertainty in the position of an electron is 10^{-10} m, then what be the value of uncertainty in its momentum in kg ms^{-1} ? $\left(h = 6.62 \times 10^{-34} Js\right)$

A. 0.52×10^{-24}

B. 1.01×10^{-24}

C. 1.09×10^{-24}

D. 1.07×10^{-24}

Answer: A

▶ **Watch Video Solution**

31. The density of water at the surface of ocean is ρ . If the bulk modulus of water is B, then the density of ocean water at depth,

when the pressure at a depth is αp_0 and p_0 is the atmospheric pressure is

A. $\dfrac{\rho B}{B - (\alpha - 1)p_0}$

B. $\dfrac{\rho B}{B + (\alpha - 1)p_0}$

C. $\dfrac{\rho B}{B - \alpha p_0}$

D. $\dfrac{\rho B}{B + \alpha p_0}$

Answer: A

▶ **Watch Video Solution**

32. A rubber cord of density d, Young's modulus Y and length L is suspended vertically . If the cord extends by a length 0.5 L under its own weight , then L is

A. $\dfrac{Y}{2dg}$

B. $\dfrac{Y}{dg}$

C. $\dfrac{2Y}{dy}$

D. $\dfrac{dg}{2Y}$

Answer: B

Watch Video Solution

33. A beam of width t incident at $45°$ on an air-water boundary. The width of the beam is water is ……

A. $(\mu - 1)t$

B. μt

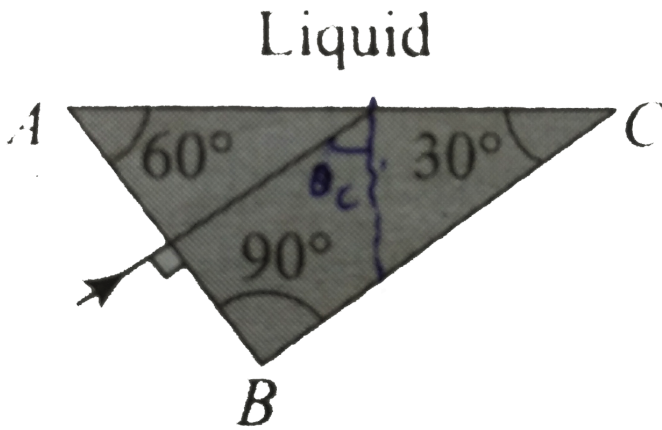C. $\dfrac{\sqrt{\mu^2 - 1}}{\mu}$

D. $\dfrac{\left(\sqrt{2\mu^2 - 1}\right)}{\mu} t$

Answer: D

34. Light is incident normally on face AB of a prism as shown in Figure. A liquid of refractive index μ is placed on face AC of the prism. The prism is made of glass of refractive indes $3/2$. Find the limits of μ for which total internal

reflection takes place on the face AC.

Liquid

A. $\mu < \dfrac{3\sqrt{3}}{4}$

B. $\mu > \sqrt{\dfrac{5}{2}}$
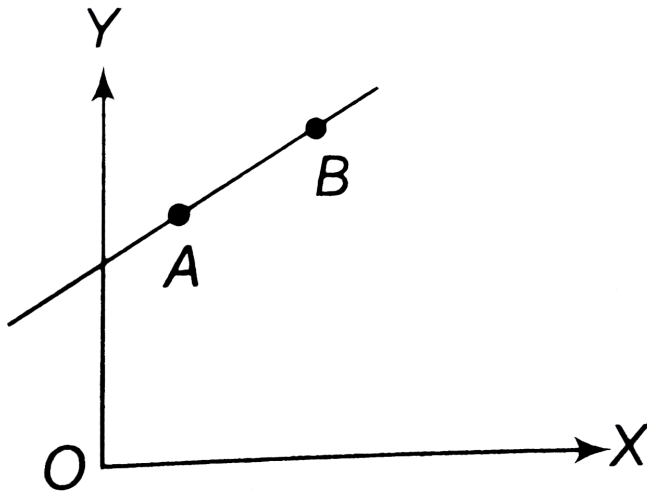
C. $\mu > \sqrt{2}$

D. $\mu < \sqrt{3}$

Answer: A

35. A particle of mass m moves in the XY plane with a velocity v along the straight line AB. If the angular momentum of the particle with respect to origin O is L_A when it is at A

and L_B when it is at B, then

A. $L_A > L_B$

B. $L_A = L_B$

C. The relationship between L_A and L_B

depends upon the slope of the line AB

D. $L_A < L_B$

Answer: B

> ▶ **Watch Video Solution**

---

36. A sphere of mass m and radius r rolls on a horizontal plane without slipping with a speed u. Now it rolls up vertically, then maximum height it would be attain will be

A. $\dfrac{3u^2}{4g}$

B. $\dfrac{5u^2}{2g}$

C. $\dfrac{7u^2}{10g}$

D. $\dfrac{11u^2}{9g}$

Answer: C

▶ **Watch Video Solution**

---

37. If we add impurity to a metal those atoms also deflect electrons . Therefore ,

A. The electrical and thermal conductivities

both increase

B. The electrical and thermal conductivities

both decrease

C. The electrical conductivity increases but

thermal conductivity decreases.

D. The electrical conductivity decreases but

thermal conductivity increases.

Answer: B

38. To detect light of wavelength 500 nm, the photodiode must be fabricated from a semiconductor of minimum bandwidth of

A. 1.24 eV

B. 0.62 eV

C. 2.48 eV

D. 32. eV

Answer: C

39. During an experiment an ideal gas is found to obey an additional law V^2P = constant. The gas is initially at temperature T and volume V. When it expands to a volume 2V, the temperature becomes :

A. $\dfrac{T}{2}$

B. 2T

C. $\sqrt{2}T$

D. $\dfrac{T}{\sqrt{2}}$

Answer: C

40. The dimensions of the ratio of magnetic

flux (ϕ) and permeability (μ) are

A. $\left[M^0 L^1 T^0 A^1\right]$

B. $\left[M^0 L^{-3} T^0 A^1\right]$

C. $\left[M^0 L^1 T^0 A^{-1}\right]$

D. $\left[M^0 L^2 T^0 A^1\right]$

Answer: A

41. In the phenomenon of diffraction of light, when blue light is used in the experiment instead of red light , then

    A. Fringes will become narrower

    B. Fringes will become broader

    C. No change in fringe width

    D. Fring will disappear

Answer: A

42. The electric and the magnetic field, associated with an e.m. wave propagating along the $+z$axis, can be represented by

A. $\left[\overrightarrow{E} = E_0\hat{i}, \overrightarrow{B} = B_0\hat{j}\right]$

B. $\left[\overrightarrow{E} = E_0\hat{k}, \overrightarrow{B} = B_0\hat{i}\right]$

C. $\left[\overrightarrow{E} = E_0\hat{j}, \overrightarrow{B} = B_0\hat{i}\right]$

D. $\left[\overrightarrow{E} = E_0\hat{j}, \overrightarrow{B} = B_0\hat{k}\right]$

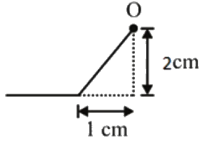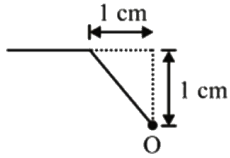**43.** A wave pulse on a string on a string has the dimension shown in figure. The wave speed is v=1 cm /s . If point O is a free end. The shape of wave at time t = 3s is
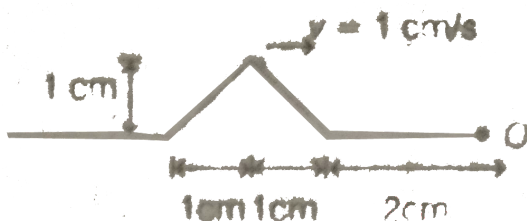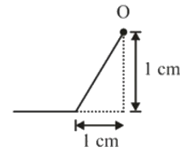

A.

B.

C.

D.

Answer: B

▶ **Watch Video Solution**

44. An open organ pipe has a fundamental frequency of $300 H_Z$. The first overtone of a

closed organ pipe has the same frequency as the first overtone of this open pipe . How long is each pipe ? (Speed of sound in air = $330m/s$)

A. $41.25cm$

B. $42.3cm$

C. $49.5cm$

D. $40.5cm$

Answer: A

45. A car of mass 1500 kg is lifted up a distance of 30 m by crane A in 0.5 minutes. The second crane B does the same jod in 1 minute . The ratio of their powers is

A. $1:2$

B. $2:1$

C. $1:4$

D. $4:1$

Answer: B