



PHYSICS

BOOKS - SELINA PHYSICS (ENGLISH)

SAMPLE PAPER -5

Questions

1. Choose the correct statement with respect to force.

- A. The CGS unit of momentum of force is
Newton \times meter
- B. The turning effect on a body by a force
depends on momentum of force.
- C. $1 \text{ gf} \times \text{cm} = 980 \text{ dyne cm}$
- D. $1 \text{ kgf} \times m = 10^7 \text{ dyne cm}$

Answer: C



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2. Which of the following is not the example of couple force.

A. Turning a water tap

B. tighttening the cap

C. Turning the toothed wheel of a bicycle

D. Turning a steering wheel

Answer: C



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3. Choose the incorrect statement.

A. In equilibrium condition the resultant of all the forces acting on the body should be equal to zero.

B. The algebraic sum of moments of all the forces acting on the body about the point of rotation should be zero.

C. The rain drop reaches the earth surface with constant velocity.

D. The tension in a string attained with a stone which is whirled in circular path provides the equilibrium force.

Answer: D



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4. The force of 5N is applied at a distance of 10 cm from pivot. The right steps to calculate the moment of force are:

(i) $MoF = 5 \times 10Ncm$, (ii)

$$MoF = \frac{15}{10}N/m, \text{ (iii) } MoF = 50N - m,$$

$$\text{(iv) } MoF = 0.5N - m$$

A. (i) and (ii)

B. (ii) and (iii)

C. (ii) and (iv)

D. (i) and (iii)

Answer: D



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5. Refractive index of diamond with respect to air is 2.4 and speed of light in vacuum is $3 \times 10^8 \text{ms}^{-1}$. Hence speed of light in diamond is

A. $2.5 \times 10^8 \text{ms}^{-1}$

B. $2.25 \times 10^8 \text{ms}^{-1}$

C. $1.25 \times 10^8 \text{ms}^{-1}$

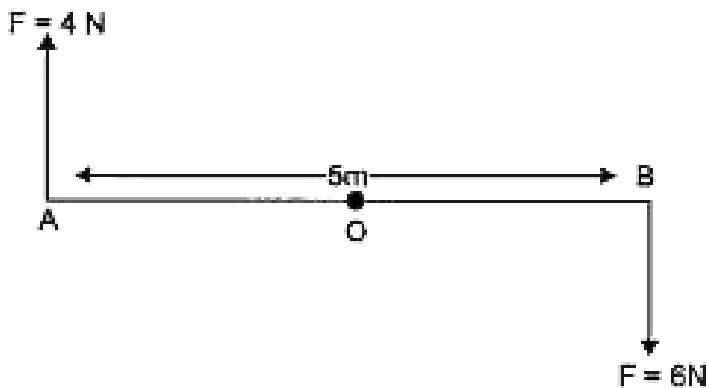
D. $1.5 \times 10^8 \text{ms}^{-1}$

Answer: C



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6. For the arrangement shown answer the following question.



Moment of force at point A

A. 20 Nm

B. 0.4 Nm

C. 10 Nm

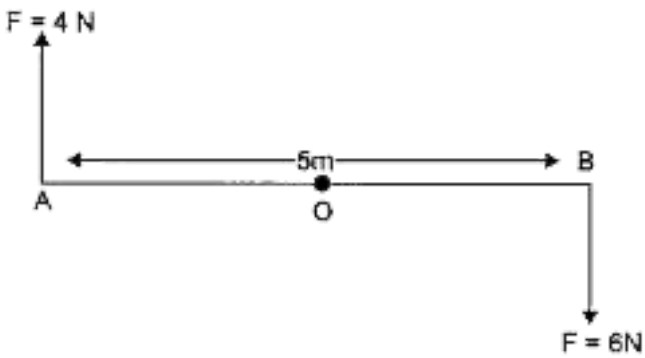
D. 5 Nm

Answer: C



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7. For the arrangement shown answer the following question.



Moment of force at point B

A. 15 Nm

B. 0.6Nm

C. 50 Nm

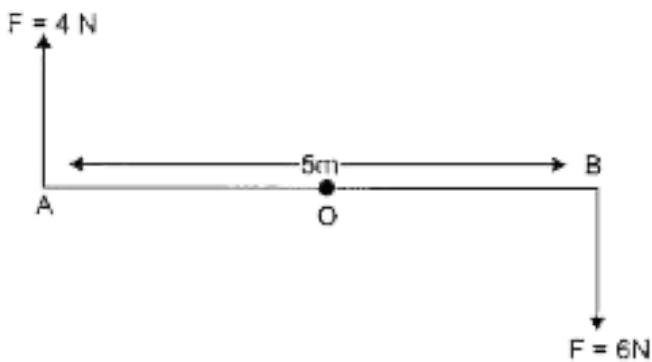
D. 30 Nm

Answer: A



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8. For the arrangement shown answer the following question.



Total momentum of force

A. 20.6 Nm

B. 25 Nm

C. 50 Nm

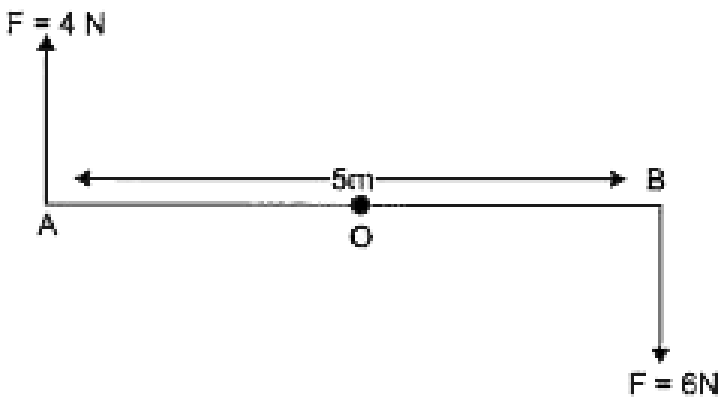
D. 10.6 Nm

Answer: B



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9. For the arrangement shown answer the following question.



Moment of force at point A if $OA = 3 \text{ m}$:

- A. 10 N-m
- B. 15 N-m
- C. 20 N-m
- D. 12 N-m

Answer: D



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10. Work (W), Force (F) and displacement (S) are related to each other by

A. $F = WS \cos \theta$

B. $S = WF \cos \theta$

C. $W = FS \cos \theta$

D. $S = WF \sin \theta$

Answer: C



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11. Work done is positive when

A. Displacement and force are in same direction

B. When $\theta = 90^\circ$

C. When displacement and force are in opposite direction

D. $\theta = 180^\circ$

Answer: A





12. Hari lift a bag and reach to the station in 1 min while Shyam lift the bag (with same weight) and reach to station in 2 min. If the distance travelled by both of them are same, which of the following statements are false

- A. Power spent by Hari is twice than Shyam
- B. Power spent by Shyam is half than Hari
- C. Work done by both of them is same
- D. Work done by both of them is different

Answer: D



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13. The value of 1 Wh in kJ is:

A. 36 kJ

B. 3.6 kJ

C. 0.36 kJ

D. 360 kJ

Answer: B



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14. Relation between velocity ratio (V.R), a velocity of load (V_L) and velocity of effort (V_E) is.

A. $V.R = \frac{V_L}{V_E}$

B. $V.R = \frac{V_E}{V_L}$

C. $V.R = V_E \times V_L$

D. $V.R = V_E + V_L$

Answer: B



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15. The mechanical advantage (M.A.) is defined as:

A. L/E

B. E/L

C. $L+E$

D. $L-E$

Answer: A



16. A stone is thrown in air in vertically upward direction with velocity 30 m/sec. If the mass of the stone is 10 g than

Step to find initial KE applied to stone (A)

Energy = $mv^2 = 10g \times (30 \times 30)$, (B)Energy

= $\frac{1}{2}10g \times (30 \times 30)$, (C) Energy Energy

= $\frac{1}{2}mv^2 = \frac{1}{2}(0.01) \times (30 \times 30)$

= $mv^2 = (0.01) \times (30 \times 30)$, (D)

A. A

B. B

C. C

D. D

Answer: D



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17. A stone is thrown in air in vertically upward direction with velocity 30 m/sec . If the mass of the stone is 10 g than

Maximum height that this stone can achieve
(air friction is neglected)

A. 30m

B. 35m

C. 40m

D. 45m

Answer: D



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18. A stone is thrown in air in vertically upward direction with velocity 30 m/sec. If the mass of the stone is 10 g then

If 60% of initial energy is lost on reaching to maximum height due to air friction the maximum height will be

A. 10m

B. 14m

C. 18 m

D. 20 m

Answer: C



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19. A stone is thrown in air in vertically upward direction with velocity 30 m/sec. If the mass of the stone is 10 g then

Potential energy can be expressed as.

A. $U = mgh$

B. $K = \frac{1}{2}mv^2$

C. $V = \sqrt{2gh}$

D. $P=ma$

Answer: A



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20. Choose the incorrect statement about light wave:

A. light waves are electromagnetic waves.

B. speed of light waves is $3 \times 10^8 m / sec$

C. Light waves are transverse wave

D. The wavelength of light waves is of the order of 10^{-6} m.

Answer: D



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21. Choose the incorrect statement about ultrasonic wave:

A. It can travel undeviated through a long distance.

B. It can be confined to a narrow beam

C. It can be absorbed easily in a medium

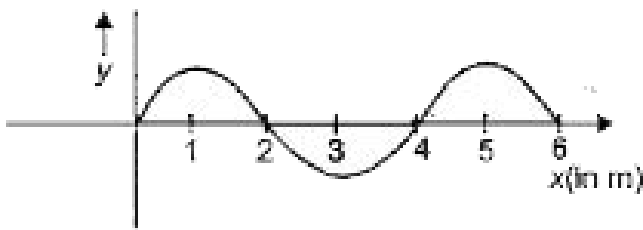
D. Frequency of ultrasonic wave is 20 KHz.

Answer: C



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22. Use the following figure to give answer of questions given below: (Velocity of the wave is 50 m/sec)



Frequency of the wave is around :

A. 50 Hz

B. 12 Hz

C. 60 Hz

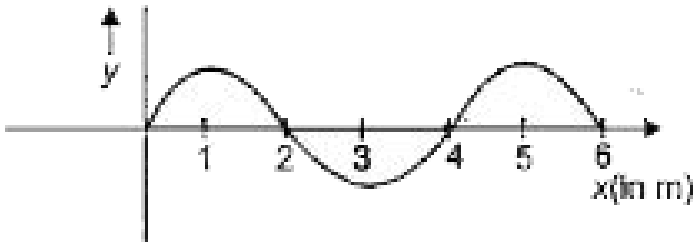
D. 2 Hz

Answer: B



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23. Use the following figure to give answer of questions given below: (Velocity of the wave is 50 m/sec)



Wavelength of the wave is:

- A. 2m
- B. 4m
- C. 6m

D. none of them

Answer: B



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24. A gun is fired in front of a vertical cliff. The echo of that fire is heard after 5 sec. The gun is again fired on moving towards the cliff 98 m and the echo is again heard in 2 sec. Answer the following questions.

The distance from which the gun was fired in starting

A. 163 m

B. 14 m

C. 63 m

D. 62 m

Answer: A



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25. Snell's law is used for:

A. Refraction

B. Reflection

C. Absorption

D. none of these

Answer: A



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26. The diagram below shows a spherical lens in which the brightest image obtained is at a distance of 20 cm



The spherical lens used is

- A. convex
- B. convexo concave
- C. concave
- D. plano convex

Answer: A



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27. The diagram below shows a spherical lens in which the brightest image obtained is at a distance of 20 cm



The focal length of lens is

A. 100 cm

B. 20 cm

C. 0.25 m

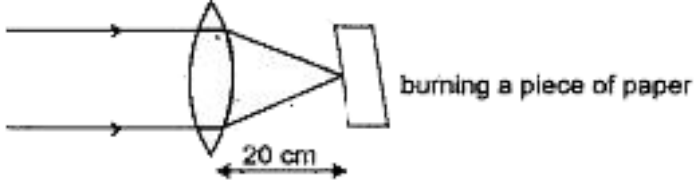
D. both 2 and 3

Answer: B



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28. The diagram below shows a spherical lens in which the brightest image obtained is at a distance of 20 cm



If the object is placed at a distance of 100 cm in front of the lens then, the screen should be placed at a distance of to obtain a clear image

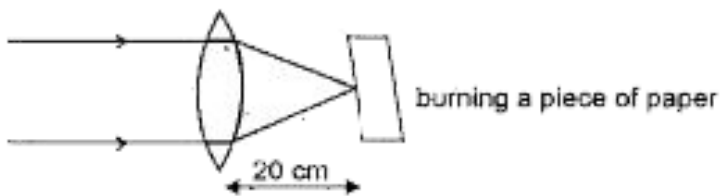
- A. 15 cm
- B. 6.25 cm
- C. 12.5 cm
- D. 25 cm

Answer: D



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29. The diagram below shows a spherical lens in which the brightest image obtained is at a distance of 20 cm



The power of the above lens is

A. 5 D

B. $-6.67D$

$$C. + 5.67D$$

$$D. + 7.67D$$

Answer: A



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30. The light is passing from one transparent medium to another transparent medium having different optical density: The phenomenon is

A. bending

B. Absorption

C. Refraction

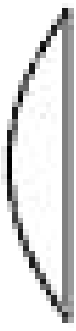
D. Reflection

Answer: C



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31. Plano-Concave lense look like



A.



B.



C.



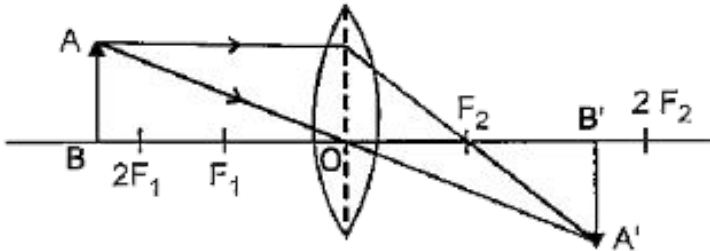
D.

Answer: C



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32. Consider the following ray diagram the properties of image formed



- A. Virtual, large
- B. diminished, real
- C. Magnified, virtual
- D. None of these

Answer: B

33. Light is traveling from denser to rarer medium than

A. It's wavelength will decrease, velocity increases

B. It's wavelength will increase, velocity increases

C. No change in wavelength, No change in velocity

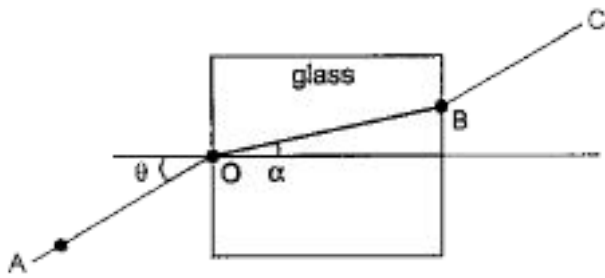
D. the light will not be able to pass, velocity
remains same

Answer: B



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34. Consider the figure and answer the following questions:



Refracted ray is

A. AO

B. OB

C. BC

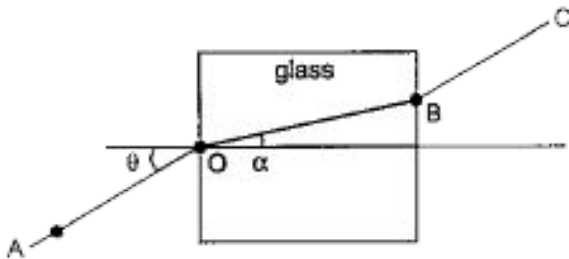
D. AC

Answer: B



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35. Consider the figure and answer the following questions:



Incident ray is

A. AO

B. OB

C. BC

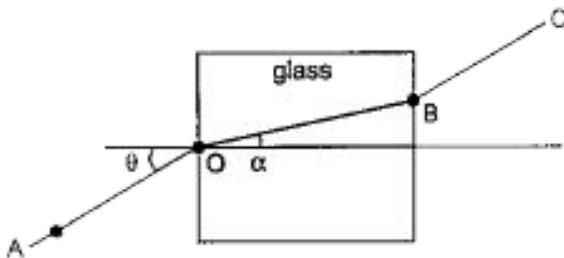
D. AC

Answer: A



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36. Consider the figure and answer the following questions:



Angle of incident is

A. α

B. θ

C. $\alpha + \theta$

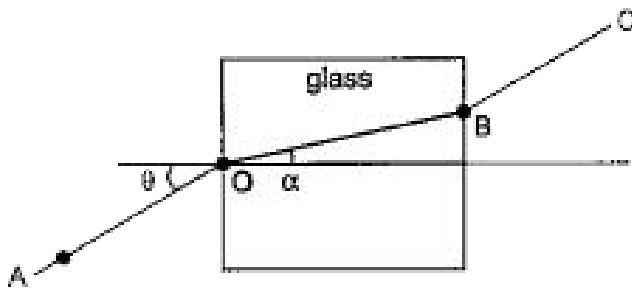
D. $\frac{\alpha}{\theta}$

Answer: B



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37. Consider the figure and answer the following questions:



Refractive angle is

A. α

B. θ

C. $\alpha + \theta$

D. $\frac{\alpha}{\theta}$

Answer: A



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