PHYSICS

BOOKS - PEARSON IIT JEE FOUNDATION

MOCK TEST

Multiple Choice Question

1. The CGS unit of weight is the .....

A. Gram weight (g wt)

B. Gram force (gf)

C. gcm^{-3}

D. Both (a) and (b)

Answer: D

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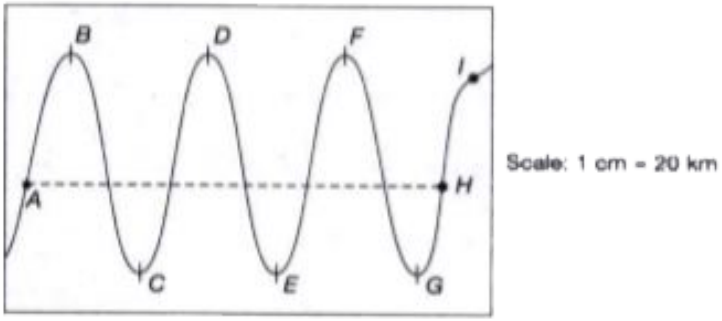
2. An atlas of a river is shown in the figure given below. Here, the river flows through A, B, C, D, E, F, G, H and I. If the length of the river

from A to H is 920 km and if a glider moving directly from A to H at the speed of $400km/h^{-1}$ as shown in the below figure, takes 1 h, then the distance of A from H on graph is _____ cm



A. 10

B. 20

C. 40

D. 80

Answer: B

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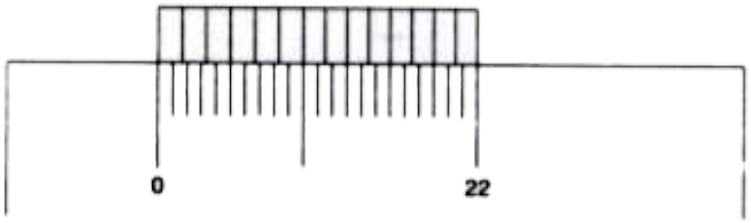
3. A pile of identical coins is placed on a scale (as shown below) to measure the thickness of each coin. Determine the thickness of the coin if 1 division on the scale is 1 mm.



A. $\frac{12}{7}mm$

B. $\frac{11}{7}mm$

C. $\frac{22}{3}m$

D. $\frac{21}{12}mm$

Answer: D

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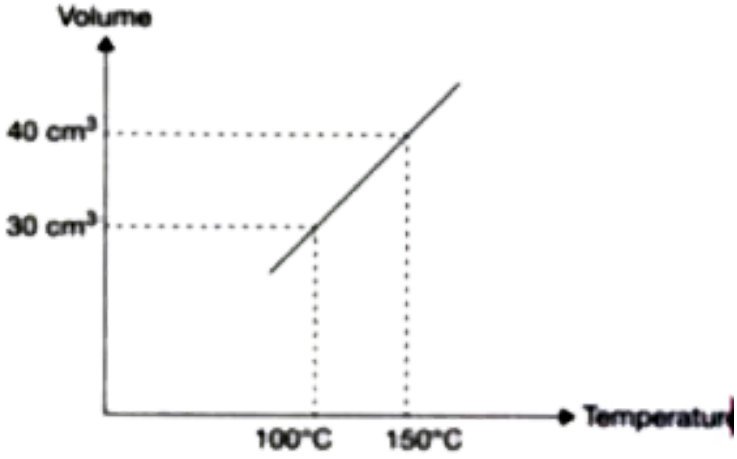
4. The change in volume of a given mass of gas with the temperature is graphically represented as shown in the figure shown

below. Determine the ratio of densities of the gas at $100^\circ C$ and $150^\circ C$.



A. $\frac{4}{3}$

B. $\frac{3}{4}$

C. $\frac{3}{5}$

D. $\frac{1}{3}$

Answer: A

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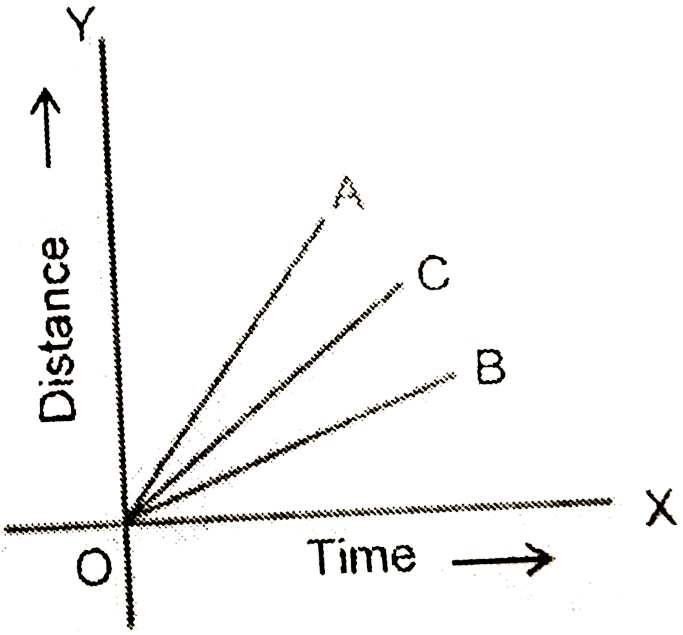
5. The distance- time graph for the motion of three vechicles,A , B and C are as shown in the figure , S_A, S_BndS_C are the speeds, of A,B and C , respectively , compare the speeds of A, B

and C.



A. $S_A > S_B > S_C$

B. $S_A < S_B < S_C$

C. $S_A = S_B = S_C$

D. $S_A < S_B < S_C$

Answer: A

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6. A robot runs forward with 5 ms for 10 s and immediately backwards with 5 m s-1 for 5 s. Which of the following statements is wrong?

A. The average speed of the robot is $5ms^{-1}$

B. The distance covered by the robot is more than its displacement.

C. The average velocity of the robot is $5ms^{-1}$

D. The robot is moving at uniform speed.

Answer: B

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7. Which among the following is correct?

A. The whole amount of heat energy from the sun reaches the earth by conduction.

B. During day time, the temperature of water and sand is same.

C. When two bodies at the same temperature are in contact, no heat flows from one body to another.

D. Heat travels from region of low temperature to region of high temperature.

Answer: C

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8. Heat flows from one end of a steel spoon to the other end by

A. Conduction

B. Convection

C. Radiation

D. Both (a) and (c)

Answer: A

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9. If $0.5\text{cal}g^{-1}C^{-1}$ is the specific heat capacity of a substance of mass 50 g, calculate the amount of heat energy required to change the temperature of a substance from $-5^{\circ}C$ to $10^{\circ}C$

A. 250 cal

B. 125 cal

C. 375 cal

D. 500 cal

Answer: C

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10. The kinetic energy of a body of mass 'm' moving with a speed 'v' is given by $\frac{1}{2}mv^2$. A bullet fired from gun moves with a speed of $50ms^{-1}$ strikes target. If 50 per cent of the kinetic energy is absorbed by the bullet as heat energy, calculate the change in temperature of the bullet. The specific heat capacity of the material of the bullet is $42Jkg^{-1}\circ C^{-1}$

A. $11.35^{\circ} C$

B. $14.8^{\circ} C$

C. $22.5^{\circ} C$

D. $44^{\circ} C$

Answer: B

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11. Write the following steps in sequential order to determine the radius of curvature of a given concave mirror.

(A) The radius of the curvature of a concave mirror is equal to twice its focal length.

(B) Take a concave mirror and mount it on a stand.

(C) Take a screen and adjust it before the mirror to catch the inverted, real and diminished image of the object.

(D) Focus the mirror on a distant object like a tree or a building.

A. EABCD

B. EDABC

C. BDCEA

D. BAECD

Answer: C

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12. A light ray is made to incident on a mirror. If the glancing angle of incidence is 30°, then write the following steps in sequence to find the angle between the incident light ray and the reflected light ray.

(a) Note the glancing angle of incidence from

the given information.

(b) The angle of reflection is equal to the angle of incidence.

(c) The angle of incidence $\angle i$ will be equal to $(90^\circ - 30^\circ)$.

(d) The angle between the incident light ray and the reflected light ray is equal to $2\angle i$ or $2(90^\circ - \angle 30^\circ)$.

A. DCAB

B. ADCB

C. DABC

D. ACBD

Answer: D

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13. A light ray incidents at an angle 30° on a plane mirror and undergoes reflection. Arrange the following steps to determine the glancing angle of reflection.

(A) The glancing angle of reflection is equal to glancing angle of incidence.

(B) Get the value of angle of incidence $\angle i$ from the given data.

(C) The glancing angle of incidence $\angle g$, is equal to $(90^\circ - \angle i)$

A. BCA

B. CBA

C. CAB

D. BAC

Answer: A

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14. The distance between the principal focus and centre of curvature of the convex mirror is equal to ___

A. 3f

B. R/2

C. f/2

D. 2R

Answer: B

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15. Match the statements of Column A with those of Column B.

Column A	Column B
(A) Carpets	(a) Birds
(B) Syrinx	(b) Ultrasonic sounds
(C) Dolphins	(c) Reduces reverberation
(D) Internal organs	(d) Echoes

A. $A \rightarrow c, B \rightarrow a, C \rightarrow d, D \rightarrow b$

B. $A \rightarrow d, B \rightarrow c, C \rightarrow a, D \rightarrow b$

C. $A \rightarrow c, B \rightarrow d, C \rightarrow a, D \rightarrow b$

D. $A \rightarrow b, B \rightarrow d, C \rightarrow a, D \rightarrow c$

Answer: A

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16. Rearrange the following steps of an experiment in sequential order to determine the speed of sound in air.

(A) The person P_1 will fire the cracker and person P_2 will start the stopwatch as soon as he sees the light.

(B) The speed of sound in air is the ratio of the distance between the two places to the time

interval (C) Note the time taken by the sound to travel from P_1 to P_2

(D) The person P_2 will stop the stopwatch as he hears the sound of the cracker.

(E) Let two persons P_1 and P_2 are separated by a distance of 1 km in an open place.

(F) Measure the distance between the two places by using a survey chain.

A. ABCDEF

B. ABCDEF

C. ADBFCE

D. EADCFB

Answer: D

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17. Three identical cells of e.m.f. $1.5V$ are connected in parallel. The total e.m.f. of the combination is _____.

A. $1.5V$

B. $30V$

C. $4.5V$

D. $0.5V$

Answer: C

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18. How many units of electrical energy would a 2000 W electrical appliance, used for 2 hours everyday consume in the month of April?

A. 120

B. 30

C. 100

D. 10

Answer: A

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19. The gravitational force of attraction between two celestial bodies is F. If these two bodies are moving away from each other and the new distance between them is twice that

of the original distance after 5 years, then change in gravitational force between them is

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A. 2F

B. $\frac{F}{2}$

C. $\frac{3F}{4}$

D. $\frac{F}{4}$

Answer: C

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20. Assertion (A): The loudness of sound produced by the vibrating body can be increased. Reason

(R): The loudness of sound by the vibrating body depends on the amplitude of vibration and also the surface area.

A. A and R are true and R is the correct explanation of A.

B. A and R are true, but R is not the correct explanation of A.

C. A is true but R is false.

D. Both A and R are false.

Answer: A

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21. A leveller with one metre long metal strip is used to level the surface of the soil. If the farmer takes the leveller from one end to another end of the field of length 265m hen calculate the area of the field which is levelled.

A. A and R are true and R is the correct explanation of A.

B. A and R are true, but R is not the correct explanation of A.

C. A is true but R is false.

D. Both A and R are false.

Answer: C

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22. How many hours should a 200 W bulb glow to consume 2 units of electrical energy?

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23. The difference between weights of a body of mass 10 kg on the moon and Pluto is 10.15 N. If acceleration due to gravity on the moon is $1.625ms^{-2}$, then the ratio of acceleration due to gravity on moon to that on Pluto is

A. A and R are true and R is the correct explanation of A.

B. A and R are true, but R is not the correct explanation of A.

C. A is true but R is false.

D. Both A and R are false.

Answer: A

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24. The sound produced by a company horn reaches a person on the road at a distance of 990 m in the times. Consider the velocity of sound in air as $330ms^{-1}$

A. A and R are true and R is the correct explanation of A.

B. A and R are true, but R is not the correct explanation of A.

C. A is true but R is false.

D. Both A and R are false.

Answer: C

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25. Two plane mirrors are arranged such that their reflecting surfaces are perpendicular to each other. What is the number of images formed, when an object is placed between them?

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