PHYSICS

AAKASH INSTITUTE ENGLISH

Mock test 19

Example

1. Which of the following formula is correct ? [Where symbols have their usual meaning]

A. $C_v = \dfrac{R}{\gamma - 1}$

B. $C_p = \dfrac{\gamma R}{\gamma - 1}$

C. $\dfrac{C_p}{C_v} = \gamma$

D. All of these

Answer: D

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2. Five molecules of a gas have speeds 1, 1, 3, 3, 2 km/s the value of the r.m.s spreed of the gas molecules is

A. $\sqrt{\dfrac{4}{5}} \, km/s$

B. $\sqrt{\dfrac{23}{5}} \, km/s$

C. $\sqrt{\dfrac{24}{5}} \, km/s$

D. $\sqrt{\dfrac{87}{5}} \, km/s$

Answer: C

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3. The ratio of average spreed to the rms spreed of the gas is

A. $\sqrt{8} : \sqrt{3\pi}$

B. $\sqrt{3\pi} : \sqrt{8}$

C. $\sqrt{6} : \sqrt{5\pi}$

D. $\sqrt{8} : \sqrt{5\pi}$

Answer: A

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4. The internal energy of one mole of the

diatomic gas at 200 K is

A. 100 R

B. 200 R

C. 500 R

D. 400 R

Answer: C

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5. If the number density of molecule of an ideal gas becomes 4 time then its mean free path becomes

A. Half of its initial value

B. Double of its initial value

C. Four time of its initial value

D. One fourth of its initial value

Answer: D

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6. Internal energy of n_1 moles of hydrogen at temperature 150 K is equal to the in ternal

energy of n_2 moles of helium at temperature 300 K The ratio of n_1 / n_2 is

A. $3 : 5$

B. $2 : 3$

C. $6 : 5$

D. $5 : 6$

Answer: C

7. The ratio of diameters of molecules of the two gases is 3:5 and their mean free path of the molecule is in the ratio of 5:3 then the ratio of number density of the two gases is

A. $5:3$

B. $25:9$

C. $9:25$

D. $1:1$

Answer: A

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8. The density of the given gas at constant pressure and temperature is ρ and its rate of diffusion isr. If density of the gas becone $\rho/3$ then rate of diffusion becomes

A. $\sqrt{2}r$

B. r

C. $r/\sqrt{3}$

D. $\sqrt{3}r$

Answer: D

9. Which of the following motions is not simple harmonic?

A. $A \sin \omega t$

B. $A \sin \omega t + B \cos \omega t$

C. $A \sin \omega t + B \cos 2\omega t$

D. $A \sin \omega t + B \sin \omega t$

Answer: C

10. A particle executes S.H.M with time period 12 s. The time taken by the particle to go directly from its mean position to half its amplitude.

A. 4 s

B. 3 s

C. 6 s

D. 1 s

Answer: D

11. The heart beat of a person is 72 per minute

.Its frequency is

A. $1s^{-1}$

B. $1.2s^{-1}$

C. $7.2s^{-1}$

D. $0.8s^{-1}$

Answer: B

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12. The amplitude of given simple harmonic motion is $y = (3\sin\omega t + 4\cos\omega t)m$

A. 1 m

B. 3 m

C. 4 m

D. 5 m

Answer: D

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13. The equation of S.H.M of a particle whose amplitude is 2 m and frequency 50 Hz. Start from extreme position is

A. $y = (2\sin 100\pi t)m$

B. $y = (2\cos 100\pi t)m$

C. $y = (2\sin 50\pi t)m$

D. $y = (2\cos 50\pi t)m$

Answer: B

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