CHEMISTRY

AAKASH INSTITUTE ENGLISH

MOCK TEST 9

Example

1. The ratio of rates of diffusion of CO_2 and SO_2 at the same temperature and pressure will be

A. $4:\sqrt{11}$

B. $11:4$

C. $1:4$

D. $1:6$

Answer: A

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2. Equal mass of methane and oxygen are mixed in an empty container at 25° C. The fraction of the total pressure exerted by oxygen is:

A. $1/2$

B. 8//9

C. 16//19

D. 1//9

Answer: B

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3. A $0.5dm^3$ flask contains gas A and 2 dm^3 flask contains gas B at the same temperature. If density of A = $4gdm^{-3}$, that of B = $2gdm^{-3}$ and molar mass of A is half of that of B, then the ratio of pressure exerted by gas is

A. $\frac{P_A}{P_B} = 0.5$

B. $\frac{P_A}{P_B} = 2$

C. $\frac{P_A}{P_B} = 4$

D. $\frac{P_A}{P_B} = 0.25$

Answer: C

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4. Equal molecules of N_2 and O_2 are kept in a closed container at pressure P. If N_2 is removed from the system, then the pressure of the container will be

A. P

B. P//2

C. $\frac{P}{4}$

D. 2P

Answer: B

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5. One mole of nitrogen gas at 0.8 atm takes 38 second of diffuse through a pin hole whereas one mole of an unknown compound of Xenon with fluorine at 1.6 atm takes 56.26 second to diffuse through at same hole, then the molecular formula of the compound is (Atomic mass of Xenon : 131.3 u)

A. XeF2

B. XeF4

C. XeF_5

D. XeF_6

Answer: D

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6. Which of the following pairs of gases will have identical rate of effusion under similar conditions?

A. Dideuterium and Helium

B. Diprotium and Dideuterium

C. Propene and Propane

D. Nitrogen dioxide and Carbon dioxide

Answer: A

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7. A sample of nitrogen occupies a volume of 350 cm^3 at STP. Then, its volume at 550 K and 0.5 atm pressure is approximately

A. $1280cm^3$

B. 1409 cm^3

C. $1050cm^3$

D. 1428 cm^3

Answer: D

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8. A 10 L flask contains 0.2 mole of CH_4 and 0.3 mole of hydrogen at 25° C and which makes non- reacting gaseous mixture. Then, the total pressure inside the flask is

A. $1.22atm$

B. 0.5 atm

C. 0.61 atm

D. 2.20 atm

Answer: A

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9. The ratio of most probable velocity, average velocity and root mran square velocity is

A. $\sqrt{2}:\sqrt{\frac{8}{\pi}}:\sqrt{3}$

B. $1:\sqrt{2}:\sqrt{3}$

C. $\sqrt{2}:\sqrt{3}:\sqrt{8}$

D. $\sqrt{1}:\sqrt{8\pi}:\sqrt{3}$

Answer: A

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10. Helium atom is two times heavier than hydrogen molecule. At $25^{\circ}C$, the kinetic energy of He atom is

A. Double than hydrogen

B. Same than hydrogen

C. Four times than hydrogen

D. Half than hydrogen

Answer: B

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11. Real gases will approach the behaviour of ideal gases at

A. Low temperature and high pressure

B. High temperature and low pressure

C. Low temperature and low pressure

D. High temperature and high pressure

Answer: B

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12. Four particles have speed 2,3,4 and 5 cm/s respectively. Their rms speed is:

A. 27

B. $\frac{27}{2}$

C. $\sqrt{54}$

D. $\frac{\sqrt{54}}{2}$

Answer: D

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13. List the main postulates of the kinetic molecular theory of matter.

A. No forces exist between molecules

B. Molecules are point masses

C. Molecules are in random motion

D. Molecular collision is followed by loss of kinetic energy

Answer: D

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14. The values of van der Waals' constant 'a' for O_2, N_2, NH_3 and CH_4 are $1.360, 1.390, 4.170$ and $2.253 L^2$ atm mol respectively. The most easily liquefiable gas among these is

A. O_2

B. N_2

C. NH_3

D. CH_4

Answer: C

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15. The density of vapours of a substance of molar mass 18 g at 1 atm pressure and 500 K is 0.36 kg m^{-3}. The value of compressibility factor Z for the vapours will be (Take R = 0.082 L atm $mol^{-1}K^{-1}$

A. 0.69

B. 0.82

C. 1.22

D. 1.45

Answer: C

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16. The rate constant for a first order reaction is $60s^{-1}$. How much time will it take to reduce the initial concentration of the reactant to its $1/10^{th}$ value?

A. At T = 550 K, P = 40 atm, the state will be liquid

B. At T = 300 K, P = 50 atm, the state will be gas

C. At T lt 300 K, P gt 20 atm, the state will be gas

D. At 300 K lt T lt 500 K, P gt 50 atm, the state will be liquid

Answer: D

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17. The temperature at which the root mean square speed of SO_2 molecule is same as that of methane at 27° C.

A. 600 K

B. 900 K

C. 1200 K

D. 400 K

Answer: C

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18. The van der Waal's gas constant, a is given by

A. $3V_c$

B. $27b^2P_c$

C. $27RbT_c$

D. $3RbP_c$

Answer: B

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19. In van der Waals' equation of state, the constant 'b' is a measure of

A. Intermolecular repulsions

B. Intermolecular attractions

C. Volume occupied by the gas molecules

D. Intermoleculer collisions perunit volume

Answer: C

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20. On increasing temperature , surface tension of water

A. Increases

B. Decreases

C. Remains constant

D. Show irregular behaviour

Answer: B

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21. At relatively high pressure, van der Waal's equation for one mole of gas reduces to

A. PV = RT

B. PV = RT + a/V

C. PV = RT + Pb

D. $PV = RT - \left(\frac{a}{V^2}\right)$

Answer: C

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22. Which of the following is equal to $1kgm^{-1}s^{-1}$?

A. 0.01 poise

B. 0.001 poise

C. 1 poise

D. 10 poise

Answer: D

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