

Preparatory Test for Entrance Examinations (PTEE) 21

Class-XI, Paper-II (Chemistry)

Four probable answers are provided to each question. Select the best answer. Each correct answer will be awarded +4 marks. Each wrong answer will be awarded -1 mark. In case of no response, 0 mark will be awarded.

1. 2.5 gm of a metal carbonate was treated with 100 ml of 1N H_2SO_4 . After completion of reaction, the solution was boiled to expel off CO_2 and then titrated against 1N NaOH solution. If the eq. wt. of the metal be 20, the volume of alkali that would be consumed (in ml) is
 - a. 50
 - b. 25
 - c. 100
 - d. 75
2. Number of hydrogen ions in 10^{-7} th part of 1.33 c.c. of pure water at 25°C is
 - a. 6.023 million (6.023million)
 - b. 60 million (60 million)
 - c. 8.01 million (8.01million)
 - d. 80.2 million (80.2million)
3. The energy of electron in second Bohr orbit of hydrogen is -328KJ.mol^{-1} . Hence, the energy of electron in the fourth Bohr orbit (in KJ.mol^{-1}) is
 - a. -41
 - b. -82
 - c. -164
 - d. -1312

4. Which one of the following mathematical expressions does NOT represent Heisenberg's uncertainty principle?

- $\Delta x \Delta p \geq \frac{h}{4\pi}$
- $\Delta x \Delta v \geq \frac{h}{4\pi}$
- $\Delta E \Delta t \geq \frac{h}{4\pi}$
- $\Delta E \Delta x \geq \frac{h}{4\pi}$

5. I. Beryllium, II. Oxygen, III. Nitrogen, IV. Magnesium. Correct order of decreasing electro-negativity values of the elements is

- $II > III > I > IV$
- $III > IV > II > I$
- $I > II > III > IV$
- $I > II > IV > III$

6. Which one of the following has the lowest ionization energy?

- $1s^2 2s^2 2p^6$
- $1s^2 2s^2 2p^6 3s^1$
- $1s^2 2s^2 2p^5$
- $1s^2 2s^2 2p^3$

7. I) NO_2^+ , II) NO_2 , III) NO_2^- The correct order of increasing bond angles in the following triatomic substances, I) NO_2^+ , II) NO_2 , III) NO_2^- is

- $I < II < III$
- $I < III < II$
- $III < II < I$
- $III < I < II$

8. Amongst Be, B, Mg and Al the second ionization potential is maximum for

- B

- Be
- Mg
- Al

9. 100°C ໃນຖານະທີ່ 1 ລິຕີ້ ຂອງອາຍນໍ້າມີໜັກສະເພາະ $6.0 \times 10^{-4} \text{ gm.cm}^{-3}$. ໃນຖານະທີ່ 100°C ໃນຖານະທີ່ 1 ລິຕີ້ ຂອງນໍ້າມີໜັກສະເພາະ 1.0 gm.cm^{-3} . ຈົ່ງຄິດໄລ່ວ່າ ອາຍນໍ້າຈະໃຫ້ບໍລິມະຊາທາງປະຕິບັດໃນຮູບແບບຂອງນໍ້າເປັນເທົ່າໃດ.

(At 100°C and 1 atm. pressure, density of water is 1.0gm.cm^{-3} and that of water vapour is $6.0 \times 10^{-4}\text{gm.cm}^{-3}$. The volume (in cm^3) occupied by molecules of 1 litre steam at 100°C and 1 atm. pressure in water phase is)

- 0.06
- 0.6
- 6
- 60

10. गैर-समतापीय स्थिति में किसी गैस के अणुओं की औसत चाल (r.m.s.) का अनुपात (The root mean square speed at STP of I) H₂, II) N₂, III) O₂ and IV) HBr comes in the order)

- a. $II > III > IV > I$
b. $III > II > I > IV$
c. $I > II > III > IV$
d. $IV > III > II > I$

11. 10^3 moles of electrons will weigh one kilogram? (How many moles of electrons will weigh one kilogram?)

- a. 6.023×10^{23}
b. $\frac{1}{9.108} \times 10^{31}$
c. $\frac{6.023}{9.108} \times 10^{54}$
d. $\frac{1}{6.023 \times 9.108} \times 10^8$

12. एक बालक का द्रव्यमान 100gm है और वह 100cm.s⁻¹ की गति से चल रहा है। इसका तरंगदैर्घ्य क्या होगा? (As per de Broglie's formula a macroscopic particle of mass 100gm and moving at a velocity of 100cm.s⁻¹ will have a wavelength)

- a. $(6.6 \times 10^{-29} \text{cm})$
b. $(6.6 \times 10^{-30} \text{cm})$
c. $(6.6 \times 10^{-31} \text{cm})$
d. $(6.6 \times 10^{-32} \text{cm})$

13. H_2 , Cl_2 and HCl are given bond dissociation enthalpies in $KJmol^{-1}$ are 434, 242, 431 $KJmol^{-1}$ respectively. Enthalpy of formation of HCl in $KJmol^{-1}$ is

- a. -93
- b. 145
- c. 86
- d. -45

14. The bond angle in NF_3 (102.3°) is smaller than that in NH_3 (107.2°). This is because of

- a. Large size of F compared to H
- b. Large size of N compared to F
- c. Opposite polarity of N in the two molecules
- d. Small size of H compared to N

15. Choose the equilibrium that is NOT dependent on pressure

- a. $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$
- b. $CO_2(g) + 3H_2(g) \rightleftharpoons CH_4(g) + H_2O(g)$
- c. $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$
- d. $2HI(g) \rightleftharpoons H_2(g) + I_2(g)$

16. If the equilibrium constant of the following equilibria $SO_2 + \frac{1}{2}O_2 \rightleftharpoons SO_3$ and $2SO_3 \rightleftharpoons 2SO_2 + O_2$ are given by k and K respectively, correct one of the following relations is

- a. $K = (1/k)^2$
- b. $k = (1/K)^3$
- c. $K = 1/k$
- d. $k = (K)^2$

17. The one of the following having neutral pH is

- a. CH_3COOK
- b. Na_2CO_3

- c. NH_4Cl
- d. NaNO_3

18. Four gases P, Q, R, S each obeying Van der Waals equation, have almost identical values of b , but their a values (a and b are Van der Waals constants) are in the order $Q_a < R_a < S_a < P_a$. At a particular temperature, most easily liquefiable of the gases is)

- a. P
- b. Q
- c. R
- d. S

19. When Cl_2 gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from)

- a. zero to +1 and zero to -5 (zero to +1 and zero to -5)
- b. zero to -1 and zero to +5 (zero to -1 and zero to +5)
- c. zero to -1 and zero to +3 (zero to -1 and zero to +3)
- d. zero to +1 and zero to -3 (zero to +1 and zero to -3)

20. Number of moles of MnO_4^- required to oxidize one mole of ferrous oxalate in acidic medium is)

- a. 2.5
- b. 0.2
- c. 0.4
- d. 0.6

21. Alum is water purifier because it)

- a. softens hard water
- b. gives taste
- c. coagulates the impurities

- [illegible]

d. $\text{B}_4\text{O}_7^{2-}$ (tetraborate)

27. KOH of 10^{-4}M solution pH is (The pH of 10^{-4}M solution of KOH is)

- a. 4
- b. 11
- c. 10.5
- d. 10

28. Keto enol tautomerism is NOT exhibited by

- a. $\text{C}_6\text{H}_5\text{CO C}_6\text{H}_5$
- b. $\text{C}_6\text{H}_5\text{COCH=CH}_2$
- c. $\text{C}_6\text{H}_5\text{COCH}_2\text{COCH}_3$
- d. $\text{CH}_3\text{COCH}_2\text{COCH}_3$

29. Boiling point among the compounds mentioned below is lowest for

- a. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
- b. $\text{CH}_3\text{CH=CHCH}_2\text{CH}_3$
- c. $\text{CH}_3\text{CH=CH-CH=CH}_2$
- d. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$

30. Gases present in photochemical smog are

- a. NO and hydrocarbons (NO and hydrocarbons)
- b. SO_2 and SO_3 (SO_2 and SO_3)
- c. CO_2 and CO (CO_2 and CO)
- d. H_2S and H_2O (H_2S and H_2O)

