



CHEMISTRY

BOOKS - NTA MOCK TESTS

JEE MOCK TEST 3

Chemistry

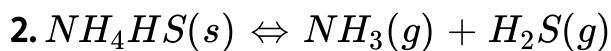
1. XeF_6 on partial hydrolysis with water produces a compound 'X'. The same compound 'X' is formed when XeF_6 reacts with silica. The compound 'X' is:





Answer: D

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In the above reaction, if the pressure at equilibrium and at 300K is 100atm then what will be equilibrium constant K_p ?

A. $2500atm^2$

B. $50atm^2$

C. $100atm^2$

D. $200atm^2$

Answer: A



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3. How many EDTA molecules are required to make an octahedral complex with a Ca^{2+} ion?

A. six

B. Three

C. One

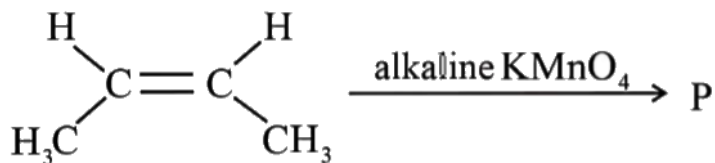
D. Two

Answer: C



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4. Which of the following statements is true for the reaction given below?



- A. P is a the meso compound 2, 3- butanediol formed by syn-addition
- B. P is a the meso compound 2,3- butanediol formed by anti-addition
- C. P is a racemic mixture of (d) and (l) 2,3-butenediol formed by anti-addition
- D. P is a racemic mixture of (d) and (l) 2,3-butenediol formed by syn-addition.

Answer: A



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5. Electrometallurgical process is used to extract

A. Fe

B. Pb

C. Na

D. Ni

Answer: C



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6. The equivalent conductivity of $0.1M$ weak acid is 100 times less than that at infinite dilution. The degree of dissociation of weak electrolyte at $0.1M$ is.

A. 100

B. 10

C. 0.01

D. 0.001

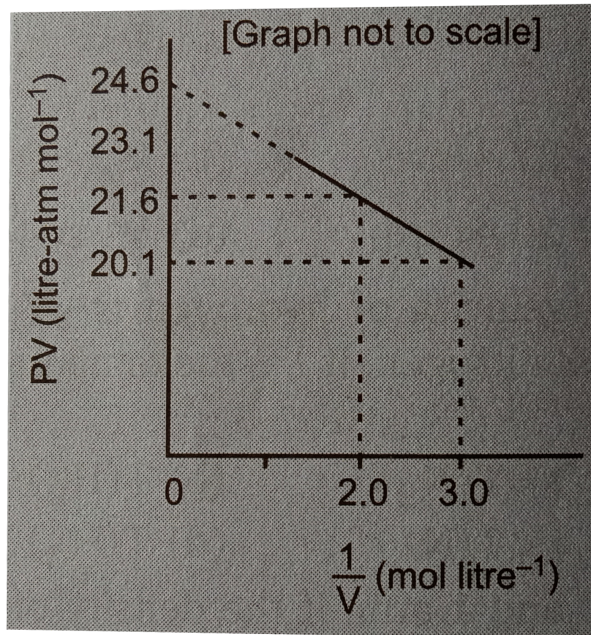
Answer: C



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7. For one mole of a van der Waals gas when $b = 0$ and $T = 30K$ the $PV vs 1/V$ plot is shown below The value of the

van Waals constant a ($\text{atm litre}^2 \text{mol}^{-2}$) is



A. 1.0

B. 4.5

C. 1.5

D. 3.0

Answer: C



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8. An isomer of C_6H_{14} forms three monochloro derivatives. The isomer may be- (Excluding stereo isomer)

- A. neo-pentane
- B. n-hexane
- C. 2, 3-dimethylbutane
- D. iso-hexane

Answer: B



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9. Why is Cr^{2+} reducing and Mn^{3+} oxidising when both have d^4 configuration ?

A. both are reducing agent

B. both are oxidizing agents

C. Cr^{2+} is an oxidizing agent while Mn^{3+} is a reducing agent.

D. Mn^{3+} is an oxidizing agent while Cr^{2+} is a reducing agent.

Answer: D



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10. The IUPAC name of the product obtained by the oxidation of phenol with the help of chromic acid is

- A. cyclohexa-2, 4-diene-1, 4-diol
- B. cyclohexa-2, 4diene -1, 4-dione
- C. cyclohexa-2, 5-diene-1, 4-diol
- D. cyclohexa -2, 5-diene-1, 4-dione

Answer: D

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11. Three elements X, Y and Z have atomic numbers 19, 37 and 55 respectively. Then the correct statements (s) is/are

- A. their ionization potential would increase with increasing atomic numbers
- B. Y would have an ionization potential between those of X and Z
- C. Y would have the highest ionization potential
- D. Z would have the highest ionization potential

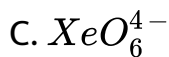
Answer: B



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12. In which of the following species, each atom carries same number of lone pair of electron on it?





Answer: B



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13. An electron in an atom jumps in such a way that its kinetic energy changes from x to $\frac{x}{9}$. The change in its potential energy (magnitude) will be-

A. $\frac{x}{9}$

B. $\frac{16x}{9}$

C. $9x$

D. $\frac{9x}{16}$

Answer: B

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14. Which of the following compounds is not an antacid?

A. Ranitidine

B. Aluminium hydroxide

C. Cimetidine

D. Phenelzine

Answer: D

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15. How many grams of sucrose (molecular weight 342) should be dissolved in 100g water in order to produce a solution with $105^{\circ}C$ difference between the freezing point and the boiling point ? ($K_b = 0.51^{\circ}Cm^{-1}$, ($K_f = 1.86^{\circ}Cm^{-1}$)

A. 34.2 g

B. 72.2 g

C. 342 g

D. 460 g

Answer: B



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16. 10 g of $MgCO_3$ decomposes on heating to 0.1 mole CO_2 and 4g MgO. The percent purity of $MgCO_3$ is (Given that atomic weights of Mg, C and O are 24,12 and 16 u)

A. 44 %

B. 54 %

C. 74 %

D. 84 %

Answer: D



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17. The rate of decomposition for methyl nitrite and ethyl nitrite can be given in terms of rate constant k_1 and k_2

respectively. The energy of activation for the two reactions are $152.30 \text{ kJ mol}^{-1}$ and $157.7 \text{ kJ mol}^{-1}$ as well as frequency factors are 10^{13} and 10^{14} respectively for the decomposition of methyl and ethyl nitrite. Calculate the temperature at which rate constant will be same for the two reactions.

- A. 256 K
- B. 354 K
- C. 282 K
- D. 674 K

Answer: C



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18. A body centred cubic lattice is made up of hollow sphere of B. Sphere of solid A are present in hollow sphere of B. Radius of A is half of the radius of B. What is the ratio of total volume of sphere B unoccupied by A in unit cell and volume of unit cell?

A. $\frac{29\pi\sqrt{3}}{64}$

B. $\frac{7\pi\sqrt{3}}{64}$

C. $\frac{19\pi\sqrt{3}}{64}$

D. $\frac{2\pi\sqrt{3}}{64}$

Answer: B



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19. The equilibrium constant for



for $CN^- = 4.69$ and pK_b for $CH_3COO^- = 2.25$)

A. 3.7×10^4

B. 2.8×10^{-5}

C. 1.97×10^4

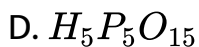
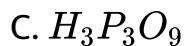
D. 0.5×10^{-5}

Answer: A



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20. Which of the following is a cyclic oxoacid

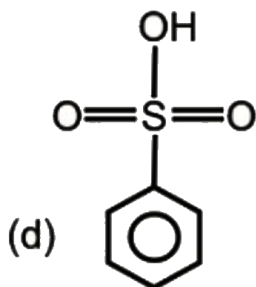
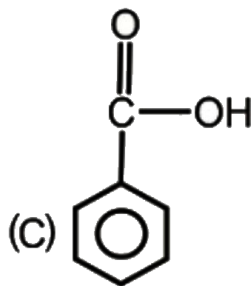
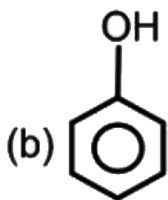
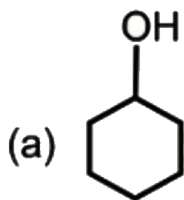


Answer: C



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21. Among given compounds, how many compounds will react with $NaHCO_3$ or soluble in $NaHCO_3$?



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22. The critical micelle concentration (CMC) of a cationic colloidal electrolyte is 10^{-3} M. If 1 mm^3 contains 10^{13} micelles, the number of cations making one micelle is
(Given, $N_A = 6.0 \times 10^{23} \text{ mol}^{-1}$)

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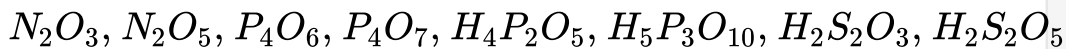
23. The ammonia evolved from the treatment of 0.30 g of an organic compound for the estimation of nitrogen was passed in 100 mL of 0.1 M sulphuric acid. The excess of acid required 20 mL of 0.5 M sodium hydroxide solution for complete neutralization. The percentage nitrogen in the organic compound is

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24. The ratio K_p to K_c of a reaction is $24.63 \text{ L atm mol}^{-1}$ at 27° C . If heat of reaction at constant pressure is 98.8 kcal, what is the heat of reaction (in kcal) at constant volume?

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25. The total number of compounds having at least one bridging oxo group among the molecules given below is



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