



CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 91

Chemistry

1. Fish die in water bodies polluted by sewage due to

A. Pathogens

B. Bad odour of sewage

C. Reduction in oxygen

D. Release of poisonous substances

Answer: C



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2. Blister copper is refined by stirring molten impure metal with green logs of wood because such a wood liberated hydrocarbon gases like (CH_4). The process X is called ____ and the Metal contains impurity of Y is ____:

A. X = poling, $Y = CuO_2$

B. X = cupellation, $Y = CuO$

C. X = cupellation, $Y = ZnO$

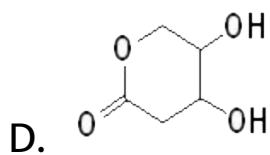
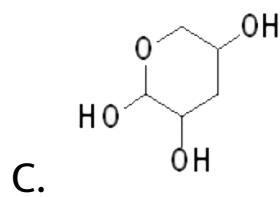
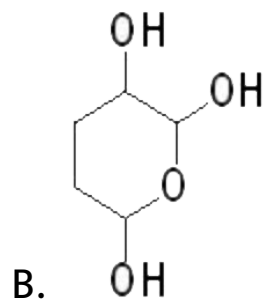
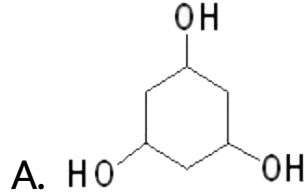
D. X = poling, $Y = Cu_2O$

Answer: D



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3. In which molecule, cleavage by HIO_4 is not observed?

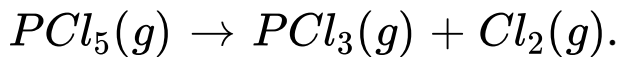


Answer: A



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4. The degree of dissociation is 0.4 at 420 K and 1.0 atm for the gaseous reaction



Assuming ideal behaviour of all gases, calculate the density of equilibrium mixture at 420 K and 1.0 atm. (P = 31, Cl = 35.3)

A. 4.30

B. 3.54

C. 2.64

D. 1.56

Answer: A



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5. The number of stereoisomers obtained by bromination of trans-2-butene is

A. 4

B. 1

C. 2

D. 3

Answer: B



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6. 29.5 mg of an organic compound containing nitrogen was digested according to Kjeldahl's method and the evolved ammonia was absorbed in 20 mL of 0.1 M HCl solution. The excess of the acid required 15 mL of 0.1 M NaOH solution for complete neutralization. The percentage of nitrogen in the compound is:

A. 59.0

B. 47.4

C. 23.7

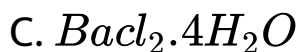
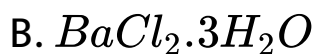
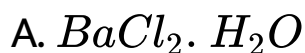
D. 29.5

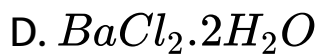
Answer: C



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7. A sample of a hydrate of barium chloride weighing 61 g was heated until all the water of hydration is removed. The dried sample weighed 52 g. The formula of the hydrated salt is : (atomic mass, Ba = 137 amu, Cl = 35.5 amu)





Answer: D



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8. Sodium sulphite is used in preserving squashes and other mildly acidic foods due to

- A. Potassium salt has preservative action
- B. Potassium metabisulphite prevents oxidation
- C. Potassium metabisulphite is not influenced by acid

D. Sulphur dioxide and sulphurous acid formed
kill bacteria and germs

Answer: D



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9. Bouveault - Blanc reduction reaction involves :

A. Reduction of an acyl halide with H_2 / Pd .

B. Reduction of an anhydride with $LiAlH_4$

C. Reduction of an ester with Na / C_2H_5OH .

D.Reduction of a carbonyl compound with

Na / Hg and *HCl*

Answer: C



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10. Which of the following is used to prepare a medicine, which is used in making an important explosive, RDX?

A. Acetaldehyde

B. Acetone

C. Formaldehyde

D. None of these

Answer: C



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11. Which two sets of reactants best represent the amphoteric character of $Zn(OH)_2$?

Set 1: $Zn(OH)_2$ & $OH^- (aq)$

Set 2: $Zn(OH)_2(s)$ & $H_2O(l)$

Set 3: $Zn(OH)_2(s)$ & $H^+ (aq)$

Set 4: $Zn(OH)_2(s)$ & $NH_3(aq)$

A. 1 and 2

B. 1 and 3

C. 2 and 4

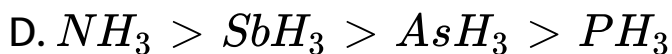
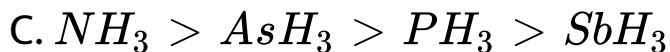
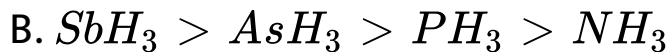
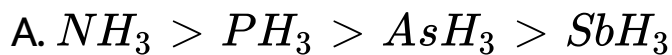
D. 2 and 3

Answer: B



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12. The decreasing order of the bond moment of $E - H$ bond in NH_3 , PH_3 , AsH_3 and SbH_3 is given by



Answer: D



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13. The S_N2 reaction involves back - side attack and therefore results in a "Walden Inversion." For which one of the substrates shown would you be

able to demonstrate that such back - side attack with "Walden Inversion" has in fact occurred?

A. 1 - bromopropane

B. 2 - bromobutane

C. 3 - bromopentane

D. Methyl bromide

Answer: B



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14. The rate constant for the first order decomposition of a certain reaction is described by the equation

$$\log k(s^{-1}) = 14.34 - \frac{1.25 \times 10^4 K}{T}$$

(a) What is the energy of activation for the reaction?

(b) At what temperature will its half-life period be 256 min ?

A. 239.33 kJ, 669 K

B. 259.33 kJ

C. 329.33 kJ

D. 539.33 kJ

Answer: A



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15. role of ethylene glycol in the radiator of vehicles is to

- A. Decrease the freezing point of water in the winter and increase the boiling point of water in the summer
- B. Only decrease the freezing point of water

C. Only increase the boiling point of water

D. Prevent corrosion of automobile parts

Answer: A



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16. The half-life period of U^{234} is 2.5×10^5 years. In how much time is the quantity of the isotope reduce to 25% of the original amount?

A. 5×10^5 years

B. 4×10^5 years

C. 6×10^5 years

D. 3×10^5 years

Answer: A



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17. When 0.04 F of electricity is passed through a solution of $CaSO_4$, then the weight of Ca^{2+} metal deposited at the cathode is

A. 0.2 g

B. 0.4 g

C. 0.6 g

D. 0.8 g

Answer: D



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18. Which one of the following options is correct for the spontaneity of the reaction?

A.

$$\Delta G = \text{positive (+Ve)}, \quad \Delta H = \text{positive (+Ve)}$$

B.

$$\Delta H = \text{positive (+Ve)}, \quad \Delta S = \text{negative (-Ve)}$$

C.

$$\Delta G = \text{negative (-Ve)}, \quad \Delta S = \text{negative (-Ve)}$$

D.

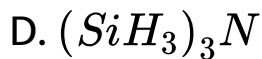
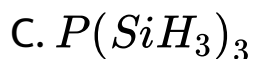
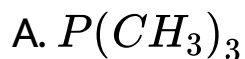
$$\Delta G = \text{negative (-Ve)}, \quad \Delta S = \text{positive (+Ve)}$$

Answer: D



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19. Which one of the following does not have a pyramidal shape?

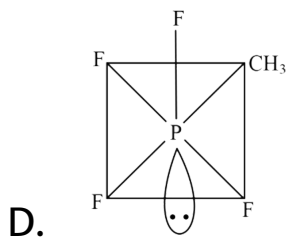
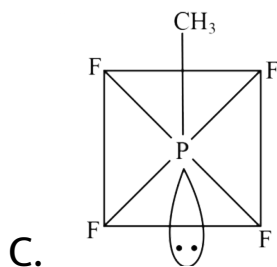
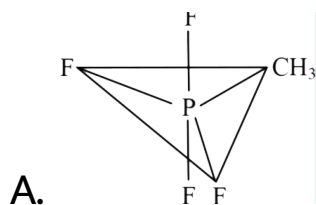


Answer: D



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20. Which of the following is most stable?



Answer: A



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21.3 - Methylpent -2- ene $\xrightarrow[H_2O_2]{HBr}$ Z.

The number of stereoisomers possible for the product 'Z' is _____.



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22. The average concentration of SO_2 in the atmosphere over a city on a certain day is 10 ppm, when the average temperature is 298 K. Given that the solubility of SO_2 in water at 298 K is 1.3653

mol litre^{-1} and the pK_a of H_2SO_3 is 1.92, estimate the pH of rain on that day.



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23. Hydrogen peroxide solution (20mL) reacts quantitatively with a solution of $KMnO_4$ (20mL) acidified with dilute of H_2SO_4 . The same volume of the $KMnO_4$ solution is just decolourised by 10mL of $MnSO_4$ in neutral medium simultaneously forming a dark brown precipitate of hydrated MnO_2 . The brown precipitate is dissolved in 10mL of $0.2M$ sodium oxalate under

boiling condition in the presence of dilute H_2SO_4 .

Write the balanced equations involved in the reactions and calculate the molarity of H_2O_2 .

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24. The rate constant, the activation energy, and the Arrhenius parameter of a chemical reaction at $25^\circ C$ are $3.0 \times 10^{-4} S^{-1}$, $104.4 K J mol^{-1}$, and $6.0 \times 10^{14} S^{-1}$, respectively. The value of the rate constant as $T \rightarrow \infty$ is

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25. A reaction is first order in A and second order in B : How is the rate affected when the concentrations of both A and B are doubled?



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