CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 53

Chemistry

1. The bond angles in NH_3, NF_3 and NCl_3 are in the order:

A. $NCl_3 > NH_3 > NF_3$

B. $NH_3 > NCl_3 > NF_3$

C. $NH_3 > NH_3 > NCl_3$

D. $NF_3 > NCl_3 > NH_3$

Answer: A

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2. For which of the following van't Hoff factor cannot be greater than unity ?

A. $K_4[Fe(CN)_6]$

B. $AlCl_3$

C. NH_2CONH_2

D. KNO_3

Answer: C

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3. The number of isomers (including stereoisomers) of C_5H_{10} are

A. 10

B. 11

C. 12

D. 13

Answer: D

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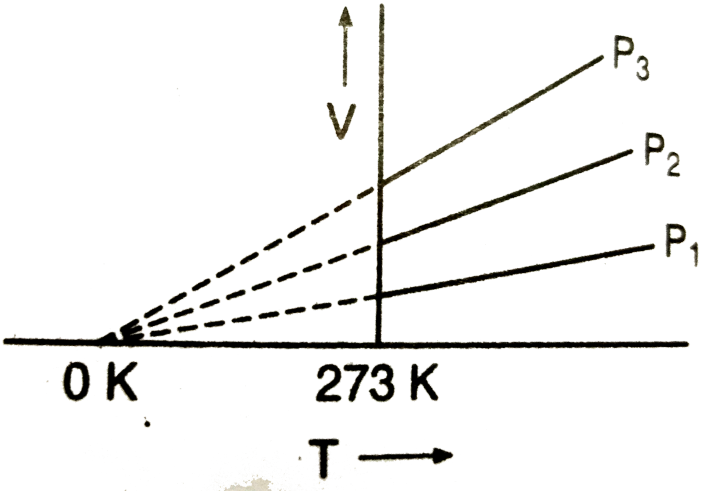
4. The volume-temperature graphs of a given mass of an ideal gas at constant pressure are shown below. What is the correct order of pressure ?



A. $p_1 > p_3 > p_2$

B. $p_1 > p_2 > p_3$

C. $p_2 > p_2 > p_1$

D. $p_2 > p_1 > p_3$

Answer: B

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5. SO_2 turns into which acid when mixed with water

A. H_2SO_2

B. H_2SO_3

C. H_2SO_4

D. None of the above

Answer: B

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6. A reaction is 50% complete in 2 hours and 75% complete in 4 hours. What is the order of reaction?

A. 0

B. 1

C. 2

D. 3

Answer: B

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7. Total number of geometrical isomers for the complex $[RhCl(CO)(PPh_3)(NH_3)]$ is

A. 1

B. 2

C. 3

D. 4

Answer: C

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8. In case of nitrogen, NCl_3 is possible but not NCl_5 while in case of phosphorous, PCl_3 and PCl_5 are possible. It is due to

A. Availability of vacant d orbitals in P but not in N

B. Lower electronegativity of P than N

C. Lower tendency of H - bond formation in P than N

D. Occurrence of P in solid while N in gaseous state at room temperature.

Answer: A

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9. The lattice energy of solid $NaCl$ is $180K.Calmol^{-1}$. The dissolution of the solid in water in the form of ions is endothermic to the extent of $1K.calmol^{-1}$. If the hydration energies of Na^{+} and Cl^{-} are in ratio $6:5$, what is the enthalpy of hydration of Na^{+} ion

A. $-8.5\ \text{kcal mol}^{-1}$

B. $-97.64\ \text{kcal mol}^{-1}$

C. $+82.6\ \text{kcal mol}^{-1}$

D. $+100\ \text{kcal mol}^{-1}$

Answer: B

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10. Which of the following explain the poling process?

A. Reduction of metallic oxide impurities to metal by

Al

B. Reduction of metallic oxide impurities to metal by gaseous hydrocarbon

C. Electrolytic reduction of metallic oxide to metal

D. Removal of volatile oxide from the molten metal

Answer: B

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11. Salicylic acid is produced when phenol in alcoholic KOH is treated with

A. CH_3Cl

B. $CHCl_3$

C. CH_2Cl_2

D. CCl_4

Answer: D

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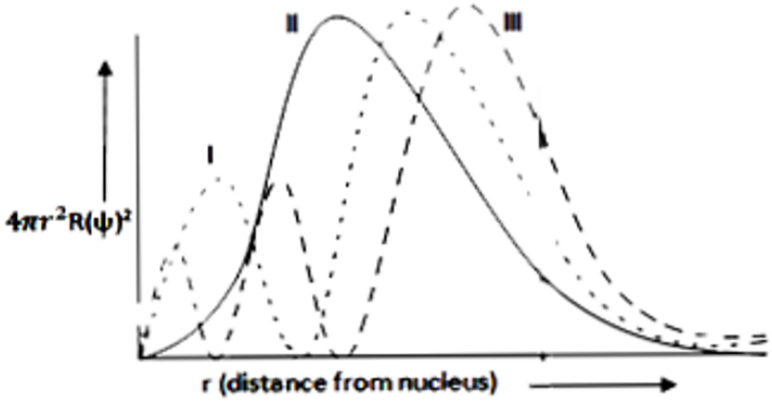
12. Consider the following radial distribution function diagrams. Which of the following has the correct

matching of curve and orbital?



A. I(3s), II(3p), III(3d)

B. I(3d), II(3p), III(3s)

C. I(3s), II(3d), III(3p)

D. I(3p), II(3d), III(3s)

Answer: D

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13. In the following sequence of reactions the products

D is

$HC \equiv CH \xrightarrow{HBr} A \xrightarrow{HBr} B \xrightarrow{alcKOH} C \xrightarrow{NaNH_2} D$. D is

A. Ethanol

B. Ethyne

C. Ethanal

D. Ethene

Answer: B

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14. The compound B is :

$$CH_3CH_2COOH \xrightarrow[redP]{Cl_2} A \xrightarrow{Alc.KOH} B$$

A. CH_3CH_2COCl

B. CH_3CH_2CHO

C. $ClCH_2CH_2COOH$

D. $CH_2 = CHCOOH$

Answer: D

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15. The two forms of D-glucopyranose obtained from solution of D-glucose are known as:

A. Isomers

B. Anomers

C. Epimers

D. Enantiomers

Answer: B

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16. The equilibrium constant for the given reaction is approximately 10^{-3}

$$HPO_4^{2-}(aq) + HCO_3^-(aq) \Leftrightarrow H_2PO_4^-(aq) + CO_3^{2-}(aq)$$

Which is strongest conjugate base in the given reaction?

A. $HPO_4^{2-}(aq)$

B. $HCO_3^-(aq)$

C. $H_2PO_4^-(aq)$

D. $CO_3^{2-}(aq)$

Answer: D

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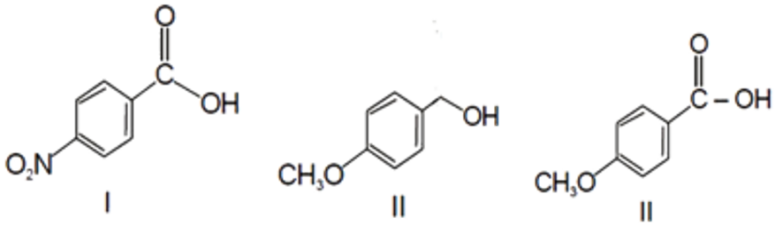

17.

Order of K_a will be :

A. $I > II > III$

B. $II > I > III$

C. $I > III > II$

D. $III > I > II$

Answer: C

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18. Among $CaH_2, NH_3,$ and B_2H_6 which are covalent hydrides?

A. NH_3 and B_2H_6

B. NaH and CaH_2

C. NaH and NH_3

D. CaH_2 and B_2H_6

Answer: A

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19. The most common oxidation states of cerium are

A. $+2, +4$

B. $+3, +4$

C. $+3, +5$

D. $+2, +3$

Answer: B

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20. Which of the following can give iodoform test?

(I) $CH_3 - \overset{\overset{O}{||}}{C} - CH_2 - \overset{\overset{O}{||}}{C} - CH_3$

(II) $C_6H_5 - CH_2 - \overset{\overset{O}{||}}{C} - CH_3$

(III) $CH_3 - CHO$

(IV) $C_6H_5 - \overset{\overset{O}{||}}{C} - CH_3$

A. Only IV

B. II and IV

C. III and IV

D. All of these

Answer: D

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21. An elemental crystal has density of $8570 kgm^{-3}$. The packing efficiency is 0.67. If the closest distance between neighbouring atoms is $2.86 Å$. The mass of one atom is (1 amu = 1.66 xx 10^(-27))kg)

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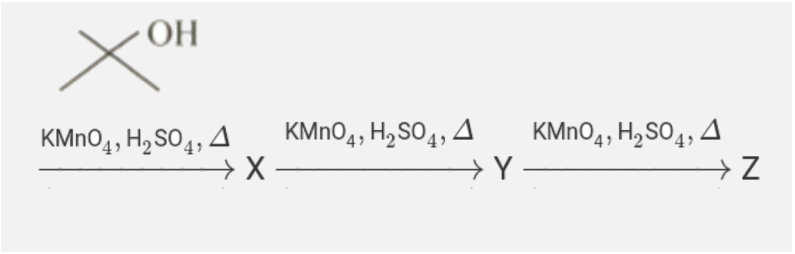
22.



The number of C - atoms present in the final product 'Z' is

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23. To $500mL$ of $0.150MAgNO_3$ solution were added $500mL$ of $1.09MFe^{2+}$ solution and the reaction is allowed to reach an equilibrium at $25^\circ C$

$$Ag^+(aq) + Fe^{2+}(aq) \Leftrightarrow Fe^{3+}(aq) + Ag(s)$$

For 25 mL of the solution, $30mL$ of $0.0832MKMnO_4$

was required for oxidation. Calculate the equilibrium constant for the the reaction at $25^{\circ} C$.

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24. Sum of total number of amphoteric and neutral oxides among the folllowing is :

$CO, NO, Al_2O_3, PbO_2, CaO, SnO_2, ZnO$

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25. A solution of $Ni(NO_3)_2$ is electrolyzed between platinum electrodes using a current of 5 amperes for 20 min. What mass of Ni is deposited at the cathode?

(Atomic mass of Ni = 58.7)

[Report your answer by rounding it upto nearset whole number]

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