



CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA TPC JEE MAIN TEST 43

Chemistry

1. Intermolecular H-bonding can be observed in which of the following ?

I: Acetic acid

II : o-nitrophenol

III : m-nitrophenol

IV : o-boric acid

Select correct alternate ?

A. I,II,III

B. I,II,IV

C. I,III,IV

D. II,III,IV

Answer: C



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2. Which of them do not follow Dobereiner's Triad rule :

A. *Li, Na, K*

B. *Cl, Br, I*

C. Be, Mg Ca

D. H, Li, Na

Answer: D



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3. Element found in majority in Calamine is

A. Iron

B. Copper

C. Aluminium

D. Zinc

Answer: D



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4. Which of the following statement is correct :

A. Oxidation number of F is always 1.

B. Oxidation number of Cl is always -1.

C. H has oxidation state +1 and -1.

D. Oxidation number of O is always -2.

Answer: C



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5. Transition metals are not characterized by :

A. Fixed valency

B. Coloured compound

C. High melting and boiling points

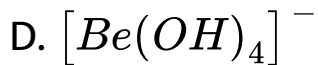
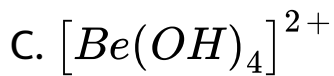
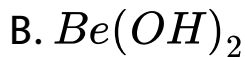
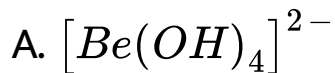
D. Tendency to form complexes

Answer: A



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6. Correct formula of beryllate ion is :



Answer: A



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7. Reaction between phenyl magnesium bromide and methanol produces

A. A mixture of anisole and $\text{Mg}(\text{OH})\text{Br}$

B. A mixture of benzene and $\text{Mg}(\text{OME})\text{Br}$

C. A mixture of toluene and $\text{Mg}(\text{OH})\text{Br}$

D. A mixture of phenol and $\text{Mg}(\text{Me})\text{Br}$

Answer: B



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8. The compound among the following, which undergoes reaction with 50% NaOH solution to give the corresponding alcohol and salt of carboxylic acid, respectively?

A. Phenol

B. Butanol

C. Benzoic acid

D. Benzaldehyde

Answer: D



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9. Phenyl isocyanides are prepared by which of the following reaction?

A. Reimer-Tieman reaction

B. Carbylamine reaction

C. Rosenmund's reaction

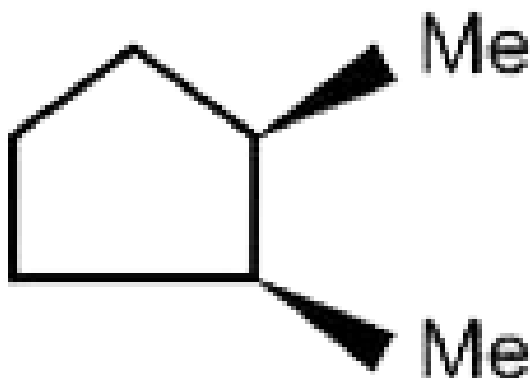
D. Wurtz reaction

Answer: D



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10. The correct IUPAC name of the compound:



- A. cis-1, 2-dimethyl cyclopentane
- B. cis-2, 4-dimethyl cyclopentane
- C. cis-1,4-dimethyl cyclopentane
- D. cis-3, 6-dimethyl cyclopentane

Answer: A



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11. The rate constant k_1 and k_2 for two different reactions are $10^{16}e^{-2000/T}$ and $10^{15}e^{-1000/T}$ respectively. The temperature at which $k_1 = k_2$ is :

A. 2000 K

B. $\frac{1000}{2.303}K$

C. 1000K

D. $\frac{2000}{3.303}K$

Answer: B



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12. E_1 and E_2 are two half-cells of electrode potential which when combined form a cell of electrode E_3 , then which of the following is true (where n_1, n_2 and n_3 are number of electrons exchanged in first, second and combined half cells)?

A. $E_3 = E_2 - E_1$

B. $E_3 = \frac{E_1 n_1 + E_2 n_2}{n_3}$

C. $E_3 = \frac{E_1 n_1 - E_2 n_2}{n_3}$

D. $E_3 = E_1 + E_2$

Answer: B



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13. $0.1MCH_3COOH(pH = 3)$ is titrated with a $0.05 M NaOH$ solution. Determine the pH (approximately) when about 25% of acid has been neutralised.

A. 4.5

B. 5.4

C. 4

D. 3.5

Answer: A



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14. An element adopts a cubical crystal structure in which only 68% of the space is occupied. The edge length of unit cell is 300 pm. If density of element is $7 \text{ gm} / \text{cm}^3$. The number of atoms present in 100 gm of the element is

A. 1.05×10^{23}

B. 1.05×10^{22}

C. 1.05×10^{24}

D. 1.05×10^{25}

Answer: C



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15. Which condition is not satisfied by an ideal solution?

A. $\Delta_{\text{mix}}V = 0$

B. $\Delta_{\text{mix}}S = 0$

C. Obedience to Raoult's law

D. $\Delta_{\text{mix}}H = 0$

Answer: B



16. 4g of M_2O_y oxide was reduced to 2.8 g of the metal in an experiment. If the atomic mass of the metal is 56g mol^{-1} , then find the number of oxygen atoms in the oxide.

A. 1

B. 2

C. 3

D. 4

Answer: C



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17. Which of the following pair will form H bond?

A. HCl, H_2O

B. HF, HCl

C. HF, H_2O

D. H_2S, H_2O

Answer: C



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18. Select the incorrect statement about photon:

A. Photon's energy is $h\nu$.

B. Photon's rest mass is zero.

C. Momentum of photon is $\frac{h\nu}{c}$.

D. Photon exerts no pressure.

Answer: D



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19. During adsorption the ΔH is - ve and the magnitude of - ve value

- A. goes on increasing
- B. goes on decreasing
- C. C remains same
- D. first increase then decreases

Answer: B



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20. Given $H_2(g) + Br_2(g) \rightarrow 2HBr(g)$, ΔH_1° and standard enthalpy of condensation of bromine is ΔH , standard enthalpy of formation of HBr at $25^\circ C$ is:

A. $\frac{\Delta H_1^\circ}{2}$

B. $\frac{\Delta H_1^\circ}{2} + \Delta H_2^\circ$

C. $\frac{\Delta H_1^\circ}{2} - \Delta H_2^\circ$

D. $\frac{\Delta H_1^\circ - \Delta H_2^\circ}{2}$

Answer: D



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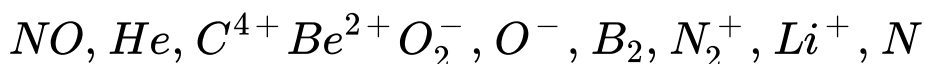
21. Octahedral complex like $[ML_6]^{n+}$ has CFSE (Δ_0) of 1.8 eV. If identical metal ion (M^{n+}) forms a tetrahedral complex with the same ligands (L), then

find CFSE of tetrahedral (Δ_t) of $[ML_6]^{n+}$ complex in electron volts (eV).



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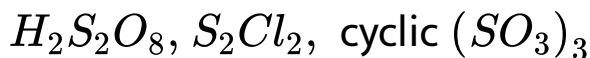
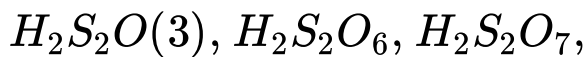
22. Among the following species, the number of paramagnetic species:



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23. Among the following compounds of sulphur, in how many of them, there is S-S bond (only single

bond not double bond between two sulphur atoms)?



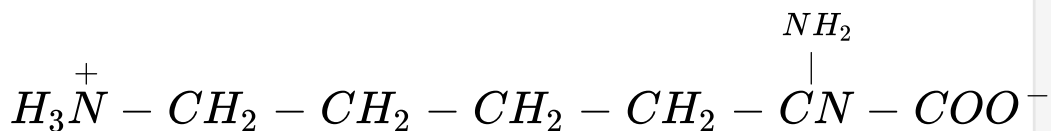
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24. The bond dissociation energies of X_2 , Y_2 , and XY are in the ratio of 1 : 0.5 : 1. ΔH for the formation of XY is -100 kJ mol^{-1} . The bond dissociation energy of X_2 will be ___ kJ mol^{-1} .



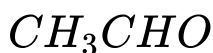
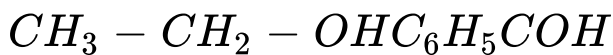
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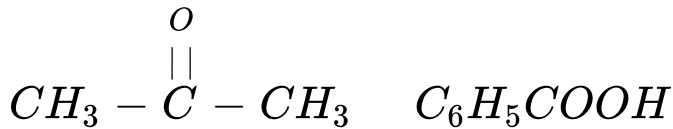
25. How many basic groups are present in lysine (ion form)?



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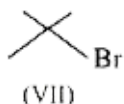
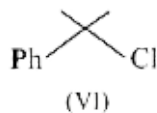
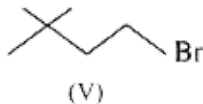
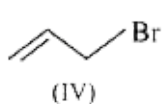
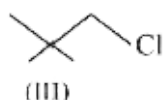
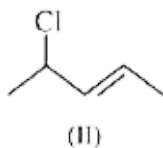
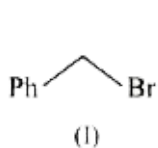
26. Total number of compounds among the following which will give positive Tollen's reagent test is:





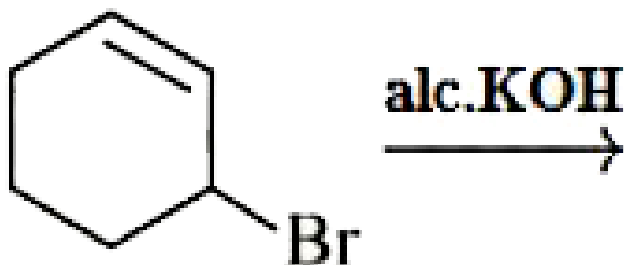
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27. How many of the following alkyl halides will readily undergo S_N1 reaction mechanism?



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28. The total number of sigma and pi bonds in the product formed by the following reaction is

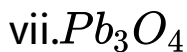
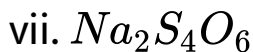
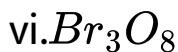
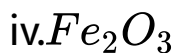
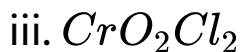
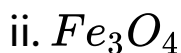
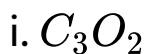


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29. The number of P = O bonds in P_4O_{10} will be:

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30. In how many of the following species, an element has fractional oxidation state?



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