



CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA TPC JEE MAIN TEST 51

Chemistry

1. In the conversion $SiF_4 + 2F^- \rightarrow [SiF_6]^{-2}$, the hybridization of Si changes from

A. sp^2 to sp^3

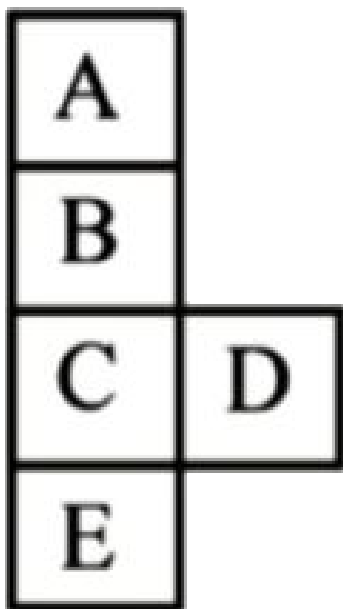
B. sp^3 to sp^2

C. sp^3 to Sp^3d^2

D. sp^3d^2 to sp^3

Answer: C

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C : $[\text{Xe}]6s^2 5d^1$

2.

Then choose the correct statement:

A. A : Sc

B. $B: Y$

C. $D: Hf$

D. All are incorrect

Answer: D



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3. Which of following is correct matching

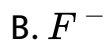
- | | | |
|----|-----------------|----------------|
| A. | Refining Method | Metal purified |
| | Liquation | Cu, Fe |
| B. | Refining Method | Metal purified |
| | Polling | Mg, Zn |
| C. | Refining Method | Metal purified |
| | Distillation | Zn, Hg |
| D. | Refining Method | Metal purified |
| | Zone refining | Cu, Sn |

Answer: C



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4. Which of them has largest radius ?



Answer: A



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5. During estimation of oxalic acid vs $KMnO_4$ self indicator is :

A. $KMnO_4$

B. Oxalic acid

C. K_2SO_4

D. $MnSO_4$

Answer: A



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6. What is the incorrect statement regarding two given complexes $[Cr(H_2O)_6]Cl_3$ (A) and $[Cr(NH_3)_6]Cl_3$ (B) which are violet and yellow coloured respectively ?

A. Both are paramagnetic with three unpaired electrons

B. Δ_0 value of (A) is less than that of

C. Δ_0 values of (A) and (B) are calculated from the energies of violet and yellow light, respectively.

D. Both absorb energies corresponding to their complementary colors.

Answer: C



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7. The correct statement for the molecule, CsI_3 , is :

A. It contains Cs^{3+} and I^- ions

B. Cs^+ , I^- It contains and lattice I_2 molecule

C. It is a covalent molecule

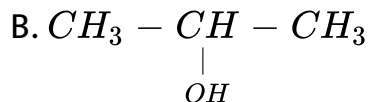
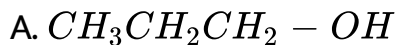
D. It contains Cs^+ and I_3^- ions

Answer: D



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8. Identify the compound Z from the following reaction.



Answer: B



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9. The major product obtained on nitration of benzaldehyde with a mixture of concentrated sulphuric and nitric acid is:

A. Mixture of o-nitrobenzaldehyde and p-nitrobenzaldehyde.

B. O-nitrobenzaldehyde.

C. m-nitrobenzaldehyde

D. Mixture of o, p and m nitrobenzaldehyde

Answer: C



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10. Which of the following statement is not true about glucose?

- A. It does not give 2, 4 - DNP test
- B. On heating with red P + HI, it form n-hexane
- C. on reaction with Br_2 / H_2O , it form glucaric acid
- D. All are true

Answer: C



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11. Benzyl Chloride ($C_6H_5CH_2Cl$) can be prepared from toluene by chlorination with

- A. Cl_2 in presence of $h\nu$
- B. $SOCl_2$
- C. PCl_5

D. NaOCl

Answer: A

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12. Stilbene ($\text{PhCH} = \text{CHPh}$) can exist in two diastereomeric forms (X) and (Y) and (X) is found to be more soluble in water than (Y). Predict which of the following statement is correct?

A. X is trans isomer

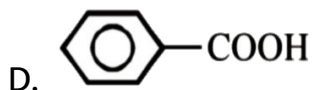
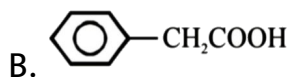
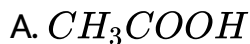
B. Stability of X > Stability of Y

C. Melting point of X > melting point of Y

D. Boiling point of X > boiling point of Y

Answer: D

13. Which of the following does not undergo HVZ reaction ?



Answer: D

14. What will be the correct decreasing order of sweetening capacity of sweetening agent given below:

I. Saccharin, II. Aspartame, III. Alitame.

A. $I > II > III$

B. $III > II > I$

C. $III > I > II$

D. $II > I > III$

Answer: C



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15. Ionic conductance at infinite dilution of Al^{3+} and SO_4^{-2} ions are $189\text{ohm}^{-1}\text{cm}^2\text{eq}^{-1}$ and $160\text{ohm}^{-1}\text{cm}^2\text{eq}^{-1}$ respectively. Calculate the head of λ_{eq}^∞ of $Al_2(SO_4)_3$:

A. $349\text{ohm}^{-1}\text{cm}^2\text{eq}^{-1}$

B. $143\text{ohm}^{-1}\text{cm}^2\text{eq}^{-1}$

C. $720\text{ohm}^{-1}\text{cm}^2\text{mole}^{-1}$

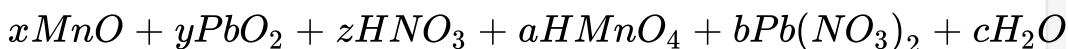
D. $120\text{ohm}^{-1}\text{cm}^2\text{eq}^{-1}$

Answer: A



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16. In the redox reaction



A. $x = 2, y = 5, z = 10$

B. $x = 2, y = 5, z = 8$

C. $x = 2, y = 7, z = 8$

D. $x = 2, y = 5, z = 5$

Answer: A



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17. A metallic element exists as simple cubic lattice. Each edge of the unit cell is 3\AA . The density of the metal is 9g cm^{-3} . How many number of unit cells will be present in 100 g of the metal :-

A. 6.85×10^2

B. 4.12×10^{23}

C. 4.37×10^5

D. 2.12×10^6

Answer: B



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18. The first half-life period for a first order radioactive decay is 5 seconds. The time taken for the completion of hundredth half-life for this decay process is

- A. 5 seconds
- B. 20 seconds
- C. 500 seconds
- D. 100 seconds

Answer: A



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19. Assuming that water vapour is an ideal gas, the internal energy change (ΔU) when 1 mole of water is vaporised at 1 bar pressure and $100^\circ C$, (given : molar enthalpy of vaporization of water 41 kJ mol^{-1} at 1 bar and 373 k and $R = 8.3 \text{ J mol}^{-1} \text{ K}^{-1}$) will be

A. $4.100 \text{ kJ mol}^{-1}$

B. $3.7904 \text{ kJ mol}^{-1}$

C. $37.904 \text{ kJ mol}^{-1}$

D. $41.00 \text{ kJ mol}^{-1}$

Answer: C



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20. The total count of geometrical isomers for a square planar complex $[Mabcd]^{n\pm}$ is 'x'. The number of geometrical isomers possible for octahedral complex of the type $[Ma_4b_2]^{n\pm}$ - is 'y'. Calculate x+y: _____ (a, b, c, d are monodentate ligands).

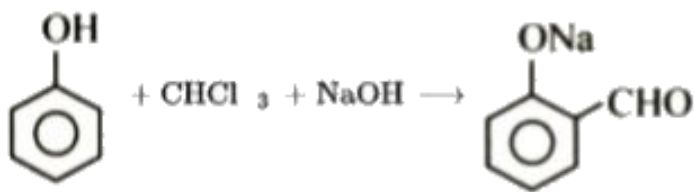
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21. Bond order of Be_2^+ is x, then what is the value of 2x:

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22. The number of allotropes of oxygen is _____

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23.

The electrophile involved in above reaction has _____ lone pair of electrons on central carbon atom.

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24. The K_a of $\text{C}_6\text{H}_5\text{COOH}$ is 6.46×10^{-5} and K_{sp} for $\text{C}_6\text{H}_5\text{COO}^- \text{Ag}^+$ is 2.5×10^{-13} . How many times the silver benzoate more soluble in a buffer of $\text{pH} = 3.19$ compared to its solubility in pure water?

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25. The vapor pressure of the solution of a solute in benzene is 631.9 mm of Hg at any particular temperature. Calculate the molality of the solution. (The vapor pressure of pure benzene is 639.70 mm of Hg)



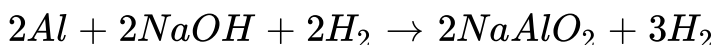
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26. How many litre of water vapor would be produced after the reaction of 10L of dihydrogen gas with 5L of dioxygen gas?



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27. Reaction taking place in Drainex(a drain cleaner), when it is mixed with water is:



What volume(in ml) of dihydrogen at $20^{\circ}C$ and 1 bar will be released, if drainex contains 0.15 g of aluminium?

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28. Find out the value of A from the following information provided.

$A = \frac{E_{1,2}}{2E_{2,1}}$ where $E_{n,z}$ = Energy of electron in nth orbit, Z = atomic of hydrogen like species.

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