CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA TPC JEE MAIN TEST 54

Chemistry

1. Match the following compounds in the List I with it's shape in the List II.

A. $A \rightarrow R, B \rightarrow S, C \rightarrow T, D \rightarrow Q$

B. $A \rightarrow P, B \rightarrow Q, C \rightarrow S, D \rightarrow T$

C. $A \rightarrow R, B \rightarrow P, C \rightarrow Q, D \rightarrow S$

D. $A \to R, B \to P, C \to S, D \to Q$

Answer: D

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2. The size of Be^{2+} and Al^{3+} is not so close but they show iagonal relationship due to

A. Different effective nuclear charge

B. Different atomic number

C. Simillar charge per unit area

D. They do not show diagonal relationship

Answer: C

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3. In the extraction of copper from copper pyrites, iron is removed as:

A. $FeSO_4$

B. $FeSiO_3$

C. Fe_3O_4

D. Fe_2O_3

Answer: B

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4. The H-O-H bond angle in water molecule is about:

A. 105°

B. 109°

C. 180°

D. 90°

Answer: A

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5. Correct order of paramagnetic character is

A. $Mn > Fe > Cr$

B. $Fe > Zn > Cr$

C. $Cr > Zn > Fe$

D. $Cr > Mn > Fe$

Answer: D

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6. What will be the IUPAC name for

$\left[(NH_3)_5Cr - OH - Cr(NH_3)_5\right]^{5+}$?

A. μ- Hydroxixobis

(pentaamminedichromium (v))ion

B. μ -Hydroxidobis

(decaamminedichromium (v)) ion

C. μ- Hydroxidobis

(octaamminechromium (V)) ion

D. μ- Hydroxidobis

(pentaamminechromium (III)) ion

Answer: D

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7. Atomic radii of alkali metals (M) follow the order $Li > Na > K > Rb$ but ionic radii in aqueous solution follow the reverse order

$Li^+ > Na^+ > K^+ > Rb^+$. The reason of the reverse order:

A. Increase in the ionisation energy

B. decreases in the metallic bond character

C. inverses in the electropositie character

D. decreases in the amount of hydration

Answer: D

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8. In the given reactioin, what will be the final product A

$CO_{(g)} + H_{2(g)}$

$\xrightarrow{\text{cobalt catalyst}} A$ (liquid)

A. CH_4

B. $HCHO$

C. CH_3OH

D. $HCOOH$

Answer: C

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9. Which of the reactions will not give α- hydroxy acid as product?

A. $C_6H_5 - CH = O \xrightarrow{\overset{\ominus}{OH}}$

B. $C_6H_5 - \overset{\overset{O}{||}}{C} - \overset{\overset{O}{||}}{C} - C_6H_5 \xrightarrow{\overset{\ominus}{OH}}$

C. $CH_6H_5 - \overset{O}{\overset{||}{C}} - \overset{O}{\overset{||}{C}} - H \xrightarrow{\overset{\ominus}{OH}}$

D. All of these

Answer: A

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10. Select the wrong pair:

A. Celulose -Polymer of $\beta - D -$ Glucose

B. Lactose $-\beta - D$- Galactose and $\beta - D -$ Glucose

C. Sucrose $-\beta - D -$ Glucose and α- D- Fructose

D. Starch $-\alpha - D -$ Glucose

Answer: C

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11. Bottels containing C_6H_5 and $C_6H_5CH_2I$ lost their original labels. They were labelled A and B for testing. A and B were separately taken in test tubes and boiled with NaOH solution. The end solution in each tube was made acidic with dilute HNO_3 and then some $AgNO_3$ solution was added. Substance B gave a yellow precipitate. Which one of the following statements is true for this experiment?

A. A is C_6H_5I

B. A is $C_6H_5CH_2I$

C. B is C_6H_5I

D. Addition of HNO_3 is unnecessary

Answer: A

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12. Phosphine, Acetylene and Amonia can be formed by treating water with:

A. Ca_3P_2, CaC_2, Mg_3N_2

B. Ca_3P_2, Al_4C_3, Li_3N

C. $Ca_3P_2, CaC_2, Ca(CN)_2$

D. $Ca_3P_2, Mg_2C_3, NH_4NO_3$

Answer: A

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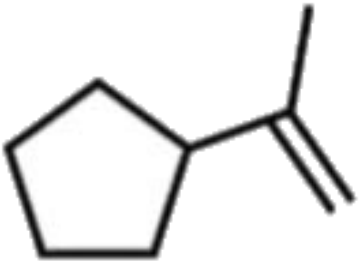
13. Which of the following represents the correct IUPAC name of the following compound?



A. 3-ethly-3-pentyl-1,4-pentadiene

B. 6-ethyl-3-(1-methylbutyl)-4,5-octadien-1-yne

C. 6-ethyl-2-methyl-5-octen-3-yne

D. 2-cyclopentyl propene

Answer: D

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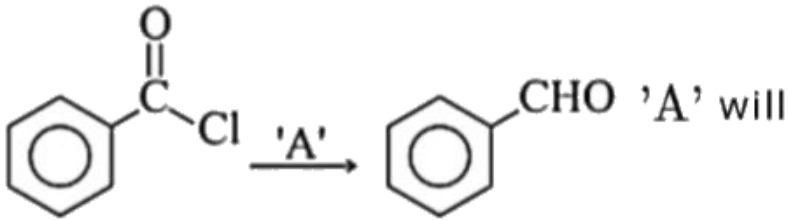

14. 'A' will be :-

A will be:

A. $Pd + H_2$

B. $NaBH_4$

C. $LiAlH_4$

D. $Pd / BaSO_4 / H_2$

Answer: D

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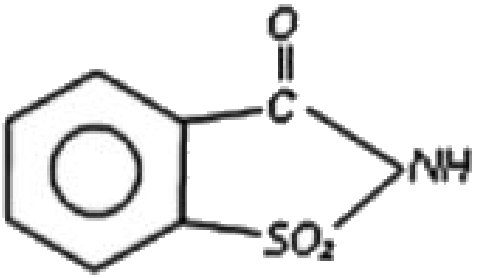
15. Consider the compound given below.



Select the correct statement about the above compound.

A. It is an aritifical sweetner.

B. It is 300-400 times sweeter than sucrose.

C. It is used as a sweetening agent.

D. All of these

Answer: D

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16. For daniel cell reaction $K_c = 10^{12}$ then E°_{cell} and the cell reaction will be:

A. $E^{\circ} = 0.059 \times 6$ spontaneous

B. $E^{\circ} = 6 \times 0.059$ nonspontaneous

C. $E^{\circ} = -0.059 \times 6$ Nonspontaneous

D. $E^{\circ} = -0.059 \times 6$ Spontaneous

Answer: A

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17. In the electrolysis of $CuCl_2$, solution, the mass of cathode increase by 6.4 g. What occurred at copper anode?

A. 0.224 litre of Cl_2 was liberated

B. 1.12 litre of oxygen was liberated

C. 0.05 mole Cu^{2+} passed into the solution.

D. 0.1 mole Cu^{2+} passed into the solution

Answer: D

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18. Radius of B^- in solid AB is 100 pm. If coordination number of A is 8 then calculate the edge length of unit cell. Assume anions are in contact.

A. 173.2 pm

B. 200pm

C. 141.4 pm

D. 240pm

Answer: B

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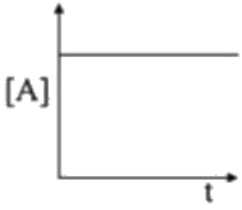
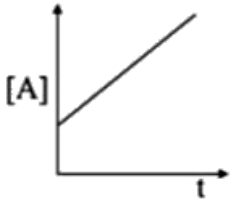
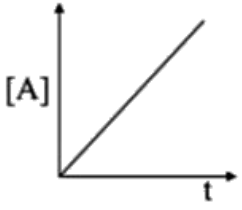
19. Which curve is correct for zero order reaction?

A. 

B. 

C. 

D.

Answer: D

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20. Latent heat of vaporisation of a liquid at 500 K and 1 atm pressure is 10.0k cal/mol. What will be the change in internal energy (ΔU) of 3 mole of liquid at same temperature?

A. 13.0 kcal

B. -13.0 kcal

C. 27.0 kcal

D. -27.0 kcal

Answer: C

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21. How many of the following ligands are chelating ligands?

$DMG, H_2O, C_2O_4^{2-}, CH_3NH_2, en, CN^-, NH_2CH_2COO^-, NH_3$

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22. Calculate the bond order of C-O bond in CO_3^{2-} ion.

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23. The count of group 16 elment(s) that exists in theform of diatomic molecules at room temperature is

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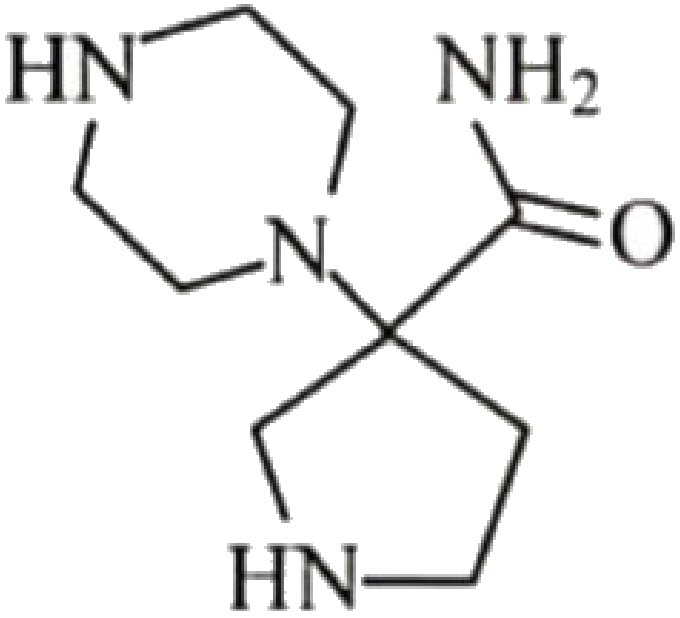
24. How many primary amine functional group(s) is/are present in the following compound?



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25. How many of the following alcohols are secondary in nature?

Butan -2-ol, 2,2 - dimethylpropa-1-1-ol, propan -1,2-diol,2-methylpropan-2-ol propan -1,3-diol, propan-2-ol, cyclobutanol, 2-methylcyclopentanol, propan -I,2,3-triol

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26. (i) Find K_p partial pressures of the component species and the volume of the container for the reaction:

$$H_2(g) + CO_2(g) \Leftrightarrow H_2O(g) + CO(g)$$

The equilibrium for the given reaction is established in an evacuated vessel at 734 K starting of CO_2. Equilibrium mixture contains 10 per cent mole of water vapour, and equilibrium presure is 0.5 atm.

(ii) Adding solid CoO and solid Co in the flask, two new equilibria are established.

$CoO(s) + H_2(g) \Leftrightarrow Co(s), K_1 + H_{2^\circ}(g)$

$CoO(s) + CO(s) \Leftrightarrow Co(s), K_2 + CO_2(g)$

The new equilibrium mixture contains 30 percent mole of water vapour. Find the equilibrium constants for the new equilibria & report the ratio $\frac{K_1}{K_2}$

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27. Find the vapour pressure of solution where 0.5 g pf a nonk volatile solute (Mol wt. =65g) is dissolve in 100mL CCl_4.

Given

Density of $CCl_4 = 1.58g/cm^3$

Vapour pressure of CCl_4 at $25^\circ C$ is 143 mm Hg.

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28. In a mixture containing 8.2 g Ca, 10 mm $NaNO_3$, calculate the total no. of oxygen and nitrogen atoms present in amixture. Report your answer to their nearest whole number ratio.

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29. A thin tube of uniform cross section is sealed at both ends. It lies horizontally. The middle 5 cm containing Hg and the two equal parts containing air at the pressure P_0.When the tube is held at an angle 60° with the vertical, the length of air column above and below the mercury are 46 and 44.5 cm respectively. Calculate the pressure P_0 in cm of Hg (the temperature of the system is kept at $30^\circ C$).

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30. Calculate the maximum no. of spectral lines obtained if 4-H-atoms are present, if an electron jumps from 4th excited state to ground state in H atom.

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