# © ${ }^{\prime}$ doubtnut 

## CHEMISTRY

## VMC MODULES ENGLISH

## JEE MAIN REVISION TEST - 22 JEE - 2020

## Chemistry

1. According to $M O T$ whch of the following statement about magnetic character and bond order is corrent regarding $O_{2}^{\oplus}$.
A. Paramagnetic and bond order $<\mathrm{O}_{2}$.
B. Paramagnetic and bond order $>\mathrm{O}_{2}$.
C. Diamagnetic and bond order $<\mathrm{O}_{2}$.
D. Diamagnetic and bond order $>\mathrm{O}_{2}$.

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2. The quantity $\frac{P V}{k_{B} T}$ represents the ( $k_{B}$ : Boltzmann constant)
A. number of molecules of the gas.
B. mass of the gas.
C. number of moles of the gas.
D. translational energy of the gas.

## Answer: A

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3. Which one of the following statements is not correct?
A. Proteins are polyamides formed from amino acids.
B. Except glycine, all other amino acids show optical activity.
C. Natural proteins are made up of $L$ - isomers of amino acids
D. $-\mathrm{NH}_{2}$ and -COOH groups are attached to different carbon atoms in $\alpha-$ amino acids.

## Answer: D

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4. Among $\left[\mathrm{Ni}(\mathrm{CO})_{4}\right],\left[\mathrm{Ni}(\mathrm{CN})_{4}\right]^{2-},\left[\mathrm{NiCl}_{2}\right]^{2-} \quad$ species, the hybridisation *states of the Ni atom are, respectively (At. No. of $\mathrm{Ni}=28$ )
A. $\left[\mathrm{Ni}(\mathrm{CO})_{4}\right],\left[\mathrm{NiCl}_{4}\right]^{2-}$ are diamagnetic and $\left[\mathrm{Ni}(\mathrm{CN})_{4}\right]^{2-}$ is paramagnetic.
B. $\left[\mathrm{NiCl}_{4}\right]^{2-},\left[\mathrm{Ni}(\mathrm{CN})_{4}\right]^{2-}$ are diamagnetic and $\left[\mathrm{Ni}(\mathrm{CO})_{4}\right]$ is paramagnetic.
C. $\left[\mathrm{Ni}(\mathrm{CO})_{4}\right],\left[\mathrm{Ni}(\mathrm{CN})_{4}\left[\wedge(2-)\right.\right.$ are diamagnetic and $\left[\mathrm{NiCl}_{4}\right]^{2-}$ is paramagnetic.
D. $\left[\mathrm{Ni}(\mathrm{CO})_{4}\right]$ is diamagnetic and $\left[\mathrm{NiCl}_{4}\right],\left[\mathrm{Ni}(\mathrm{CN})_{4}\right]^{2-}$ are paramagnetic.

## Answer: C

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5. Incorrect statement is
A. $\Delta H=0, \Delta V=0$ for solutions following Raoult's Law.
B. Lowering of vapour pressure is directly proportional to mass of solute.
C. For dilute solutions $\frac{\Delta P}{P^{\circ}}=X_{\text {solute }}$ (where $X_{\text {solute }}$ is mole fraction of solute)
D. Vant Hoff factor $i<1$ in case of polymerisation.

## Answer: B

6. A bottle, which contains 200 ml of 0.1 M KOH , absorbs 1 millimole of $\mathrm{CO}_{2}$ from the air. If the solution is then treated with standard acid using phenolphthalein indicator, the normality of solution formed by absorption of $\mathrm{CO}_{2}$ is :
A. $0.095 N$
B. 0.1 N
C. 0.2 N
D. 0.036 N

## Answer: A

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7. The effect of dilution on conductance shows:
A. 1. increase in specific conductance.
B. 2. decrease in equivalent conductance.
C. 3. increase in molar conductance.
D. 4. decrease in conductance.

## Answer: C

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8. Which of the following statement is not true?
A. HF is more polar than HBr
B. CuCl is more covalent than NaCl
C. $H F$ and $B_{2}$ are isoelectronic species having $\sigma$ bond
D. Chemical bond formation takes place when forces of attraction overcome the forces of repulsion

## Answer: C

9. Name the factors affecting the rate of decomposition.
A. increases
B. decreases
C. remains the same
D. cannot be answered

## Answer: B

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10. 


$\xrightarrow{\mathrm{Ni} / \mathrm{H}_{2}} \mathrm{~A} \xrightarrow{\mathrm{Cu} / 300^{\circ} \mathrm{C}} \mathrm{B} \xrightarrow{\mathrm{NH}_{2} \mathrm{OH}} \mathrm{C}$
(High temperature \& pressure)

Product ' $E$ ' is :
A. Nylon 66
B. Nylon 6
C. Polystyrene
D. Dacron

## Answer: B

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11. Identify (A) in the following reaction

A.

B.

C.

D.

## Answer: C

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12. In a solution containing $\mathrm{Cu}^{2+}$ and $\mathrm{Cd}^{2+}$ dil. $\mathrm{H}_{2} \mathrm{SO}_{4}$ is added followed by iron filings. The solution is warmed and $\mathrm{NH}_{4} \mathrm{OH}$ is added to reduce the acidity followed by passing of $H_{2} S$ gas. The ppt. obtained will be
A. CuS only
B. CdS only
C. Both Cu metal and CdS
D. CuS, CdS and $\mathrm{FeSO}_{4}$

## Answer: C

13. Which of the following statement is incorrect?
A. 1. Silver glance mainly contains silver sulphide
B. 2. Zinc blende mainly contains zinc sulphide
C. 3. Gold is found in native state.
D. 4. Copper pyrites also contains $F e_{2} S_{3}$

## Answer: B

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14. The decreasing order of acidic strength of the following is

(I)

(II)

(III)

(IV)

(V)
A. $I V>I I I>I>I I>V$
B. $I V>I I I>I I>V>I$
C. $I I>V>I V>I I I>I$
D. $I I I>V>I I>I>I V$

## Answer: B

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15. 8.7 gm of pure $\mathrm{MnO}_{2}$ is heated with an excess of HCl and the gas evolved is passed into a solution of KI . The amount of $I_{2}$ liberated is
[Atomic mass $\mathrm{O}=16, \mathrm{Mn}=55$ ]
A. 0.2 mole
B. 25.4 gm
C. 15.4 gm
D. 7.7 gm

## Answer: B



Identify (X)
and $(\mathrm{Y})$ formed in the given reaction.
A. $\mathrm{CH}_{3}-\underset{\substack{\mathrm{C} \\ \text { CH } \\ 1 \\ 1 \\ C H_{3}}}{ }=\mathrm{CH}_{2}$ in both cases
B. $\mathrm{CH}_{3}-\underset{\mathrm{CH}_{3}}{\mathrm{C}}-\mathrm{OC}_{2} \mathrm{H}_{5}$ in both cases

D. $\mathrm{CH}_{3}-\underset{\substack{\mathrm{C} \\ \mathrm{CH}}}{\stackrel{\mathrm{C}}{\mathrm{C}}}-\mathrm{OC}_{2} \mathrm{H}_{5}$ and $\mathrm{CH}_{3}-\underset{\substack{\mathrm{C} \\ \mathrm{CH}}}{\mathrm{C}}=\mathrm{CH}_{2}$

## Answer: D

17. The correct order of basic strength among the following is
A. 1. $\mathrm{Li}_{2} \mathrm{O}<\mathrm{Na}_{2} \mathrm{O}<\mathrm{K}_{2} \mathrm{O}<R b_{2} \mathrm{O}$
B. 2. $R b_{2} \mathrm{O}>\mathrm{Na}_{2} \mathrm{O}=\mathrm{K}_{2} \mathrm{O}>\mathrm{Li}_{2} \mathrm{O}$
C. 3. $\mathrm{Li}_{2} \mathrm{O}>\mathrm{Na}_{2} \mathrm{O}>\mathrm{K}_{2} \mathrm{O}>\mathrm{Rb}_{2} \mathrm{O}$
D. 4. $\mathrm{Na}_{2} \mathrm{O}>\mathrm{LiO}_{2} \mathrm{O}>\mathrm{K}_{2} \mathrm{O}>\mathrm{Rb}_{2} \mathrm{O}$

## Answer: A

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18. When 1 mole of a substance ( $X$ ) was treated with an excess of water, 2 moles of readily combustible gas were produced along with solution which when reacted with $\mathrm{CO}_{2}$ gas produced a white turbidity. The substance ( $X$ ) could be
A. Ca
B. $\mathrm{CaH}_{2}$
C. $\mathrm{Ca}(\mathrm{OH})_{2}$
D. $\mathrm{Ca}\left(\mathrm{NO}_{3}\right)_{2}$

## Answer: B

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19. The major product of the following reaction is

A.

B.

c.

D.

## Answer: C

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20. Which alcohol is most reactive towards HCl in the presence of anhydrous $\mathrm{ZnCl}_{2}$ ?
A.

B.

C.
D.


## Answer: C

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21. Calculate the heat of formation of methane in $\mathrm{kcalmol}^{-1}$ using the following thermo chemical reactions
$\mathrm{C}(\mathrm{s})+\mathrm{O}_{2} \rightarrow \mathrm{CO}_{2}(\mathrm{~g}), \Delta \mathrm{H}=-94.2 \mathrm{kcalmol}^{-1}$
$H_{2}(g)+\frac{1}{2} O_{2}(g) \rightarrow H_{2} O(l), \Delta H=-68.3 \mathrm{kcalmol}^{-1}$
$\mathrm{CH}_{4}(\mathrm{~g})+2 \mathrm{O}_{2}(\mathrm{~g}) \rightarrow \mathrm{CO}_{2}(\mathrm{~g})+2 \mathrm{H}_{2} \mathrm{O}(\mathrm{l}), \Delta \mathrm{H}=-210.8 \mathrm{kcalmol}^{-1}$

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22. The number of atoms in one molecule of Epsom salt is
23. The coagulation of 10 ml of colloidal solution of gold is completely prevented by addition of 0.25 g of a substance " X " to it before addition of 1 ml of $10 \% \mathrm{NaCl}$ solution. The gold number of " X " is

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24. The number of Pi bonds in one molecule of "Aspartame" is $\qquad$

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25. A buffer solution is prepared by mixing 10 ml of 1.0 M acetic acid \& 20 ml of 0.5 M sodium acetate and then diluted to 100 ml with distilled water. If the $p K_{a}$ of $\mathrm{CH}_{3} \mathrm{COOH}$ is 4.76 . What is the pH of the buffer solution prepared?
$\square$
