CHEMISTRY

VMC MODULES ENGLISH

MOCK TEST 8

Chemistry Section 1

1. The complex that can show optical isomerism is:

A. cis$-\left[CrCl_2(\otimes)_2\right]^{-3}$

B. trans-$\left[CrCl_2(\otimes)_2\right]^{-3}$

C. Both (A) & (B)

D. Neither (A) and (B)

Answer: A

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2. The intermolecular interaction that is dependent on the inverse cube of distance between the molecule is :

A. ion-ion interaction

B. ion-dipole interaction

C. London force

D. covalent bond

Answer: B

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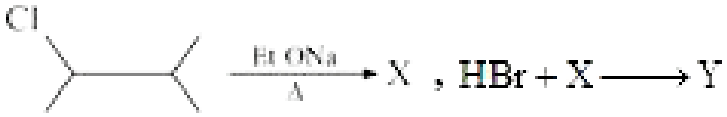
3. The major products X and Y in the following reaction are



A. 

B. 

C. 

D. 

Answer: C

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4. When washing soda is heated below 373 K, it forms:-

A. Na_2CO_3

B. $Na_2CO_3.\ H_2O$

C. Both (A) & (B)

D. $Na_2CO_3.5H_2O$

Answer: B

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5. The major product of the following reaction is

$$CH_3 - CH = CH - \overset{\overset{O}{||}}{C} - O - CH_3 \xrightarrow{LiAlH_4}$$

A. $CH_3 - CH = CH - CH_2 - OH$

B. $CH_3 - CH_2 - CH_2 - CH_2 - OH$

C. $CH_3 - CH_2 - CH_2 - CO_2CH_3$

D. $CH_3CH_2CH_2CHO$

Answer: A

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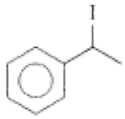
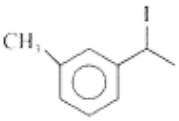
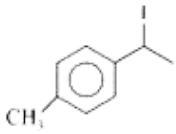
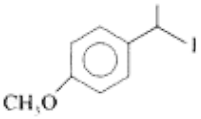
6. Increasing rate of S_N1 reaction in the following compounds is

(I) 

(II) 

(III) 

(IV) 

A. $(I) < (II) < (III) < (IV)$

B. $(II) < (I) < (III) < (IV)$

C. $(I) < (II) < (IV) < (III)$

D. $(II) < (I) < (IV) < (III)$

Answer: B

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7. The third ionization enthalpy is maximum for

A. Co

B. Ni

C. Mn

D. Zn

Answer: D

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8. The number of σ-bonds between P and O atom in $H_4P_2O_7$ and number of bonds between P and P atom in white phosphorus, respectively are

A. 6 and 4

B. 8 and 6

C. 8 and 7

D. 7 and 4

Answer: B

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9. As per hardy-schulze formulation, the flocculation values of the following for haemoglobin sol are in the order

A. $AlCl_3 > K_3[Fe(CN)_6] > K_2CrO_4 > KBr = KNO_3$

B. $K_3[Fe(CN)_6] < K_2CrO_4 < KBr = KNO_3 = AlCl_3$

C. $K_3[Fe(CN)_6] > AlCl_3 > K_2CrO_4 > KBr > KNO_3$

D. $K_3[Fe(CN)_6] < K_2CrO_4 < AlCl_3 < KBr < KNO_3$

Answer: B

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10. Arrange the following compounds in increasing order of CNH_2 bond length: Methanamine, Aniline, p-ethoxy aniline

A. Methanamine $<$ p-ethoxy aniline $<$ aniline

B. Aniline $<$ p-ethoxy aniline $<$ methanamine

C. Aniline $<$ methanamine $<$ p-ethoxy aniline

D. Methanamine $<$ Aniline $<$ p-ethoxy aniline

Answer: B

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11. An organic reaction is carried out at 500 K. If the same reaction carried out in the presence of a catalyst at the same rate, the temperature required is 400 K. What is the activation energy of the uncatalysed reaction if catalyst lowers the Ea by 20 kJ/mol?

A. 110 kJ/mol

B. 10 kJ/mol

C. 100 kJ/mol

D. 1000 kJ/mol

Answer: C

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12. For emission line of atomic hydrogen from $n_i = 8$ to $n_f = n$, the plot of wave number $(\bar{v})$ against $\left(\frac{1}{n^2}\right)$ will be (The Rydberg constant, R_H is in wave number unit) (1) Linear with slope - RH (2) Linear with intercept-RH (3) Non linear (4) Linear with slope RH

A. Non-linear

B. Linear with slope $-R_H$

C. Linear with slope R_H

D. Linear with intercept R_H

Answer: C

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13. Which of the following statement is not true for glucose?

A. α -glucose and β -glucose are anomers

B. Glucose on reaction with Br_2 water produces saccharic acid

C. Glucose on reaction with HNO_3 also produces saccharic acid

D. Glucose does not form the hydrogen-sulphite addition product with

$NaHSO_3$

Answer: B

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14. The freezing point of a diluted milk sample is found to be $-0.2^\circ C$, while it should have been $-0.5^\circ C$ for pure milk. How much water has been added to pure milk to make the diluted sample?

A. 2 cups of water to 3 cups of pure milk

B. 1 cup of water to 3 cups of pure milk

C. 3 cups of water to 2 cups of pure milk

D. 1 cup of water to 2 cups of pure milk

Answer: C

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15. The correct set of species responsible for the photochemical smog is:

A. N_2, NO_2 and hydrocarbons

B. CO_2, NO_2, SO_2 and hydrocarbons

C. NO, NO_2, O_3 and hydrocarbons

D. N_2, O_2, O_3 and hydrocarbons

Answer: C

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16. In nitroprusside ion the iron and NO exist as Fe (II) and NO^+ rather than the Fe(III) and NO. these forms can be differentiated by

A. Estimating the concentration of iron

B. Measuring the concentration of CN^-

C. Measuring the solid state magnetic moment

D. Thermally decomposing the compound

Answer: C

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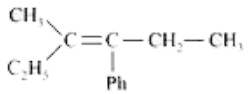
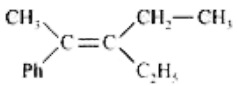
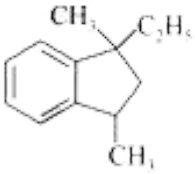
17. The major product of the following equation is.

$$C_2H_5 - \underset{\underset{Ph}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2 - \underset{\underset{OH}{|}}{CH} - CH_3 \xrightarrow[\Delta]{\text{conc. } H_2SO_4}$$

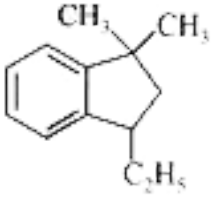
A. 

B. 

C.



D.



Answer: A

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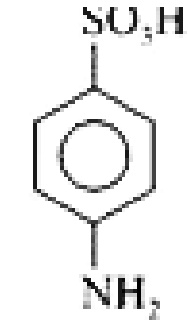
18. Which of the following compound will give blood red colour while doing the Lassigne's test for N?

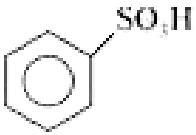
A. $NH_2 - \overset{O}{\overset{||}{C}} - NH_2$

B. $NH_2 - NH_2$

C.



D.



Answer: C

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19. The molar solubility of $Cd(OH)_2$ is $1.84 \times 10^{-5} M$ in water. The expected solubility of $Cd(OH)_2$ in a buffer solution of pH = 12 is

A. $1.84 \times 10^{-5} M$

B. $\frac{2.49}{1.84} \times 10^{-9} M$

C. $6.23 \times 10^{11} M$

D. 2.49×10^{-10} M

Answer: D

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20. Which of the following represents the correct order of increasing first ionization enthalpy for Ca, Ba, S, Se and Ar?

A. $Ca < S < Ba < Se < Ar$

B. $S < Se < Ca < Ba < Ar$

C. $Ba < Ca < Se < S < Ar$

D. $Ca < Ba < S < Se < Ar$

Answer: C

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1. Consider the following cell reaction

$$2Fe_{(s)} + O_{2(g)} + 4H^{\oplus}_{(aq.)} \rightarrow 2Fe^{+2}_{(aq.)} + 2H_2O_{(l)} \qquad E^{\circ} = 1.67V$$

At

$\left[Fe^{+2}\right] = 10^{-3}M$, $P(O_2) = 0.1$ atm and pH $= 3$, the cell potential at 25

is .....

Use $\dfrac{2.303RT}{F} = 0.059$

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2. What is the edge length of a cube whose volume is $4,096cm^3$?

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3. When the following aldohexose exists in its D-configuration, the total number of stereoisomers in its pyranose form is.

$$OHC - CH_2 - \underset{\underset{OH}{|}}{CH} - \underset{\underset{OH}{|}}{CH} - \underset{\underset{OH}{|}}{CH} - CH_2 - OH$$

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4. For an element, $Cp = 23 + 0.01T\left(\mathrm{JK}^{-1}\mathrm{mol}^{-1}\right)$. If temperature of 3 moles of that element is raised from 300 K to 1000 K at 1 atm pressure, the value of ΔH will be _____ kJ.

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5. The spin only magnetic moment value (in Bohr magneton unit) of $\left[Cr(CO)_6\right]$ is _____ BM.

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