

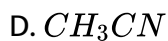
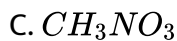
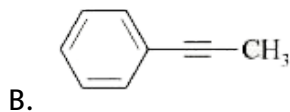
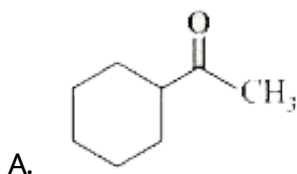
CHEMISTRY

VMC MODULES ENGLISH

JEE MAIN REVISION TEST - 18

Chemistry Section 1

1. Which one of the following compounds is most acidic :-



Answer: C



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2. State which of the following statements is true for an ideal solution.

A. $\Delta H_{\text{mix}} = (+)ve$, $\Delta V_{\text{mix}} = (+)ve$

B. $P_{\text{Actual}} < P_{\text{Theoretical}}$

C. $\Delta G_{\text{mix}} = (-)ve$, $\Delta S_{\text{mix}} = (+)ve$

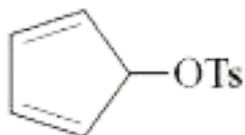
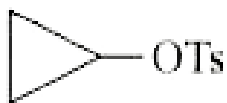
D. $\Delta G_{\text{mix}} = 0$, $\Delta H_{\text{mix}} = 0$

Answer: C



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3. Among the following, the compound that undergoes the fastest S_N1 reaction is:



Answer: C



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4. Which one of the following events occurs during the charging of a lead storage battery?

A. Consumption of sulphuric acid

B. Formation of sulphuric acid

C. Formation of lead sulphate

D. Consumption of lead

Answer: B



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5. If during an isothermal process certain gas is expanded from V_1 to V_2 .

Then, which of the following would be true?

A. during expansion temperature of the gas remains fixed

B. internal energy of the gas remains fixed

C. enthalpy of the gas remains fixed

D. entropy of the gas remains fixed

Answer: A



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6. Which of the following is NOT related to green chemistry in day-to-day life?

- A. Use of liquefied carbondioxide as solvent for dry cleaning
- B. Use of hydrogen peroxide with suitable catalyst for bleaching of paper
- C. Commercial preparation of ethanal by one step oxidation of ethene in the presence of ionic catalyst Pd(II) in aqueous medium
- D. Use of sodium chlorate as pest controlling substance

Answer: D



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7. The correct order of decreasing acid strength of trichloroacetic acid (A), trifluoroacetic acid
(B) acetic acid

(C) and formic acid

(D) is:

A. I gt II gt III gt IV

B. I gt III gt II gt IV

C. II gt I gt IV gt III

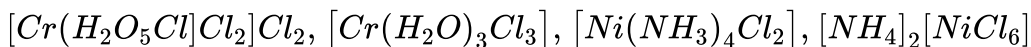
D. II gt IV gt III gt I

Answer: C



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8. A coordination complex has only two stereo isomers, having octahedral coordination geometry. Identify the complex(es) among the following:



A. only $[Cr(H_2O)_5Cl]Cl_2$

B. $[Cr(H_2O)_3Cl_3]$ and $[NH_4]_4[NiCl_6]$

C. $[Cr(H_2O)_3Cl_3]$ and $[Ni(NH_3)_4Cl_2]$

D. only $[Ni(NH_3)_4Cl_2]$

Answer: C



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9. Among the three allotropes of an element, one is a good electrical conductor, the second one is known to be one of the hardest materials and the third one has a molecular form with a truncated icosahedral structure. The element is:

A. boron

B. carbon

C. silicon

D. sulfur

Answer: B



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10. For a hypothetical reaction, $A + B + C \rightarrow \text{Products}$, the rate law is determined to be $\text{rate} = k[A][B]^2$. If the concentration of B is doubled without changing the concentration of A and C, the reaction rate:

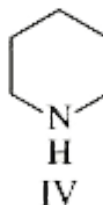
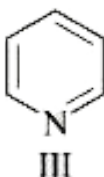
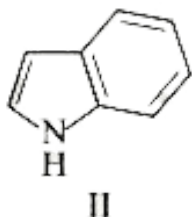
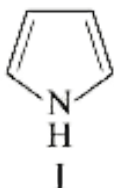
- A. doubles
- B. increases by a factor of four
- C. increases by a factor of six
- D. decreases by a factor of eight

Answer: B



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11. Increasing order of basicity of the following molecules is:



A. I It II It III It IV

B. II It III It IV It I

C. II It I It III It IV

D. II It I It IV It III

Answer: C



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12. Choose the correct combination of true statements from the statements given below regarding H_3BNH_3 and H_3CH_3 :

- (i) the two molecules are isoelectronic
- (ii) the two molecules are isostructural
- (iii) both molecules have zero dipole moment
- (iv) H_3BNH_3 is paramagnetic while H_3CH_3 is diamagnetic
- (v) both may be viewed as coordination compounds

A. (i), (iii) and (iv)

B. (i) and (ii)

C. (ii) and (v)

D. (i), (ii) and (v)

Answer: B



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13. An aqueous solution containing NH_4Cl , $FeCl_3$ and $MnCl_2$ is treated with NH_4OH solution.

The observation is that:

A. both Fe^{3+} and Mn^{2+} will precipitate as hydroxides

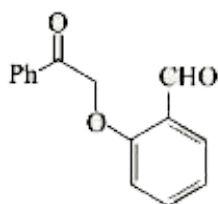
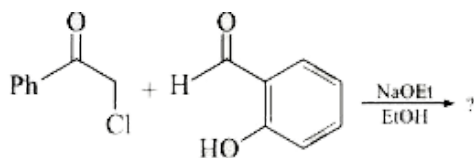
B. only will Fe^{3+} precipitate as hydroxide

C. only Mn^{2+} will precipitate as hydroxide

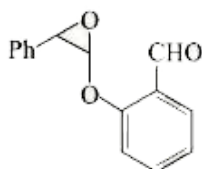
D. NH_4Cl will crystallize out from the solution

Answer: B

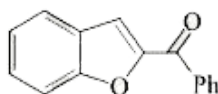
14. The final product of the following reaction is :



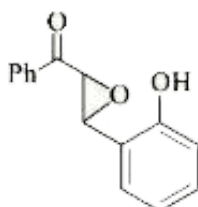
A.



B.



C.

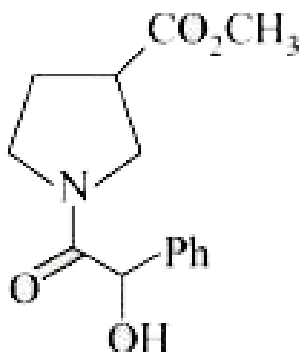
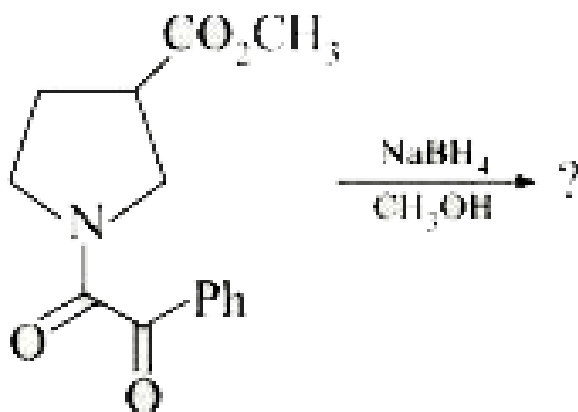


D.

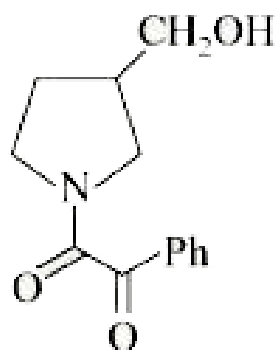
Answer: C

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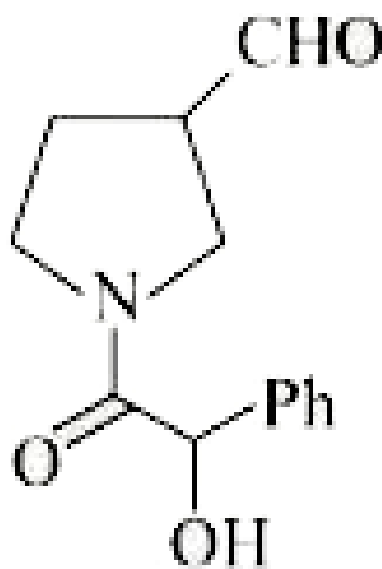
15. The major product obtained in the following transformation is:



A.

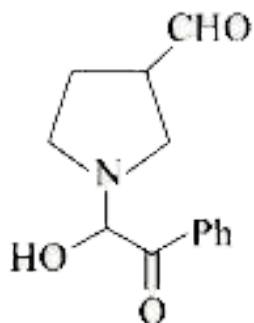


B.



C.

(D)



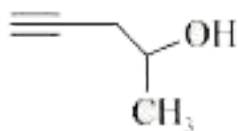
D.

Answer: A

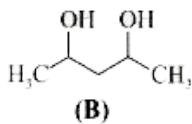


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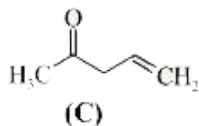
16. The major product expected from the following reaction is:



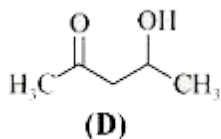
A.



B. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$



C.



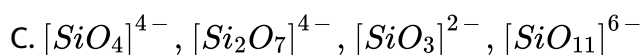
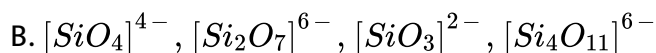
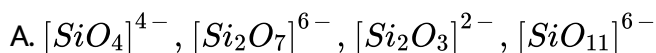
D.

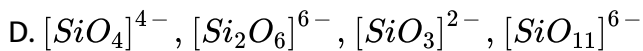
Answer: D



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17. Formulae for ortho-, pyro-, chain-, and double chain silicates are respectively:





Answer: B



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18. The use of superglue (2-cyanoacrylate) involve:

- A. Radical chain growth polymerization
- B. Ziegler Natta catalytic polymerization
- C. Anionic chain growth polymerization
- D. Cationic chain growth polymerization

Answer: C



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19. According to molecular orbital theory, which of the following is true with respect to C_2^{2+} and C_2^{2-} ?

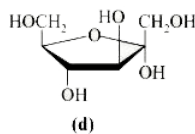
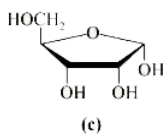
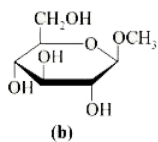
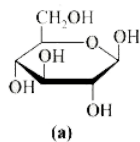
- A. Both have same number of σ bonds
- B. C_2^{2+} has more number of π bonds and C_2^{2-} has less number of π bonds
- C. C_2^{2+} is paramagnetic and C_2^{2-} is diamagnetic
- D. Both have same number of π bonds

Answer: C



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20. Identify the correct match of monosaccharide to the characteristics of the monosaccharide described:



- (i) Open-chain form is an aldopentose (ii) Open-chain form is a ketohexose
 (iii) D-glucose (iv) A glycoside

A. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

B. (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

C. (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)

D. (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

Answer: D



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Chemistry Section 2

1. It has been found that 0.290 g of an organic compound containing C, H and O on complete combustion yielded 0.66 g of CO_2 and 0.27 g of H_2O .

The vapour density of the compound is found to be 29.0. Determine the molecular formula of the compound.



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2. The number of elements expected in the g-block of the periodic table is:



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3. In a 3D hexagonal unit cell of identical atoms, the number of atoms that will contribute their 100% volume within the cell would be:



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4. H_2 (gas) is bubbled through an aqueous solution of HCl ($pH = 2.5$) at $25^\circ C$. If at $P_{H_2(g)} = 10^{-x}$ bar the electrode potential will be zero. Then find value of x.



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5. What is the coordination number of Ce^{+4} in the complex ceric ammonium nitrate $(NH_4)_2[Ce(NO_3)_6]$?



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