CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA TPC JEE MAIN TEST 57

Chemistry

1. Which of the following statements is true for a CO molecule ?

A. Sigma bond is weaker than n-bond.

B. Causes minimum splitting in d-orbital

C. Antibonding 2s-orbital will donate electron in the formation of CO^+.

D. All are correct

Answer: C

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2. Which of the following order is wrong:

A. $NH_3 < PH_3 < AsH_3$ - Acidic

B. $LI < Be < B < C$ - First IP

C. $Al_2O_3 < MgO < Na_2O < K_2O$ - Basic

D. $Li^+ < Na^+ < K^+ < Cs^+$ - Ionic radius

Answer: B

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3. Purification of Ge like semiconductor is done by:

A. Cyanide process

B. Van arkel process

C. Alumino thermite

D. Zone reflining

Answer: D

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4. When air is passed over hot coke, which of the following gas is produced ?

A. Carbon monoxide

B. Carbon dioxide

C. Producer gas

D. Water gas

Answer: C

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5. A complex $K_n[MnF_6]$ has magnetic moment 4.9BM. What will be the oxidation state of Mn and the value of

n are respectively ?

A. $Mn(II), n = 4$

B. $Mn(III), n = 3$

C. $Mn(VI), n = 2$

D. $Mn(V), n = 1$

Answer: B

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6. Which of the following is π acid ligand ?

A. NH_3

B. CO

C. F^-

D. $H_2N - CH_2 - CH_2 - NH_2$

Answer: B

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7. What are raw materials used in Solvay process ?

A. $NaCl, CaCO_3, C, H_2SO_4$

B. $NaOH, CO_2$

C. $NaCl, CO_2$

D. $NaCl, NH_3, CaCO_3$

Answer: D

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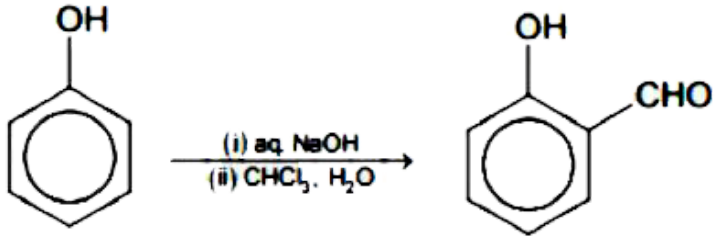
8.



What is the intermediate involved in the above reaction ?

A. $:CH_2$

B. CCl_2

C. $\overset{\oplus}{C}H_3$

D. $\overset{\oplus}{C}Cl_2$

Answer: B

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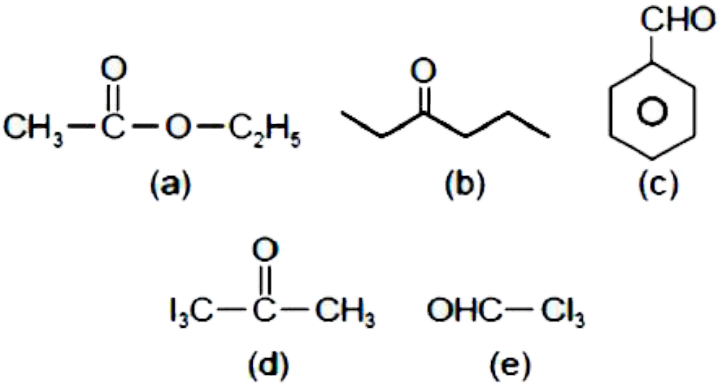
9. Which of the following compounds will not give iodoform test ?



A. a,b & d

B. b & c

C. c,d & e

D. all of these

Answer: B

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10. Which of the following have thiol group.

A. Methionine

B. Cysteine

C. Glycine

D. Cytosine

Answer: B

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11. When isobutane is treated with Br_2 in sunlight, then major product is :-

A. 1° alkyl bromide

B. 2° alkyl bromide

C. 3° alkyl bromide

D. alkene

Answer: C

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12. Propyne reacts with hypochlorous acid to give a major product as :-

A. $CH_3 - \overset{\overset{Cl}{|}}{\underset{\underset{Cl}{|}}{C}} - CHO$

B. $CH_3 - \underset{\underset{O}{||}}{C} - CHCl_2$

C. $CH_3 - \overset{\overset{Cl}{|}}{\underset{\underset{OH}{|}}{C}} - \overset{\overset{Cl}{|}}{\underset{\underset{OH}{|}}{C}}H$

D. $CH_3 - \overset{\overset{Cl}{|}}{\underset{\underset{OH}{|}}{C}} - CHO$

Answer: B

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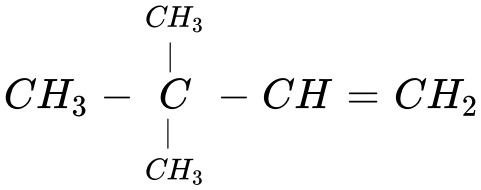
13. Which of the following is correct IUPAC name of:



A. 2, 2 — Dimethyl — 3 — butene

B. 2, 2 — Dimethyl — 4 — pentene

C. 3, 3 — Dimethyl — 1 — butene

D. 1 — Hexene

Answer: C

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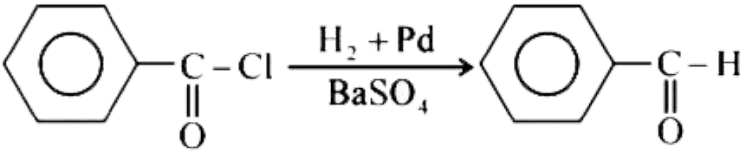
14. The given reaction is:



A. Mendius reaction

B. Stephen's reaction

C. Rosenmund's reduction

D. Cannizzaro's reaction

Answer: C

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15. Alkaline hydrolysis of coconut oil gives:

A. glycol

B. alcohol

C. glycerol

D. ethylene oxide

Answer: C

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16. Which of the following pair shows positive value of:

$E^{\circ}_{M^{+3}/M^{+2}}$:-

A. Mn,Co

B. Ti,V

C. Cr,Fe

D. Mn,Ti

Answer: A

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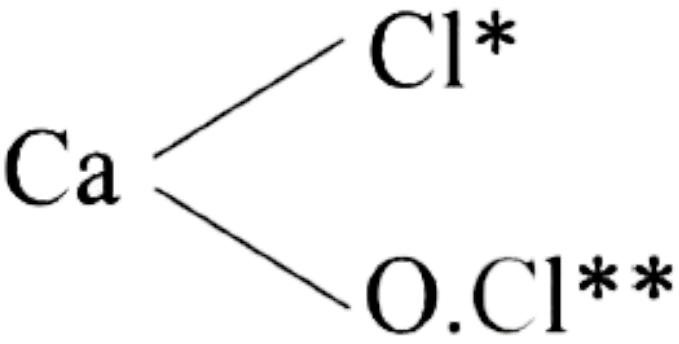
17. Oxidation numbers of Cl-atoms in $CaOCl_2$ (bleaching powder) :



A. zero in each

B. -1 in $Cl^{\cdot}$ and $+1$ in Cl^{*}

C. $+1$ in $Cl^{\cdot}$ and -1 in Cl^{*}

D. 1 in each

Answer: B

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18. AgCl is crystallized from molten AgCl containing a little $CdCl_2$. The solid obtained will have

A. cationic vacancies equal to number of Cd^{2+} ions incorporated

B. cationic vacancies equal to double the number of Cd^{2+} ions

C. anionic vacancies

D. neither cationic nor anionic vacancies

Answer: A

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19. If Ea for the forward and backward reaction is 150 and $260 kJ \mathrm{mol}^{-1}$, then calculate ΔH for the reaction (in $\mathrm{kJ\ mol}^{-1}$)

A. 410

B. -110

C. -90

D. -410

Answer: B

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20. In thermodynamics, a process is called reversible when :

A. surrounding and system changes into each other.

B. there is no boundary between the system and the surroundings.

C. the surroundings are always in equilibrium with system.

D. the system changes into the surroundings spontaneously.

Answer: C

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21. Which of the following ligands have nitrogen as their donor atom ?

en, EDTA, dien, dmg, NH_3, gly

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22. In which of the following species bond angle decreases when all CI are replaced by F-atoms.

CCl_3^+ , CCl_3^- , NCl_3, $CHCl_3\left(Cl-\widehat{C}-Cl\right)$, $SiCl_4$, BCl_3

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23. For the following reaction, find the sum of the oxidation state of nitrogen in the product:

$3HNO_2 \rightarrow HNO_3 + 2NO + H_2O$

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24. Amongst the following, the total number of compounds which can be prepared by Gabriel phthalimide reaction are_____.

Aniline, p-toluidine, isopropylamine, triethylamine, ethanamine, propan-l-amine, sec butylamine, dimethylamine.

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25. 3-Methylbutan-$2-ol-HI \xrightarrow{\Delta} X.$

Identify the position of the nucleophile in product 'X' ?

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26. Benzene can be produced from hexane in the reversible reaction:

`C_(6)H_(14) (g) The partial pressure equilibrium constant (Kp) for this reaction has been found to vary with temperature according to the equation.

$\log K_p = 23.45 - \frac{13941K}{T}$

Equilibrium is established by starting with pure C_6H_{14} gas. What must be the temperature if the initial gas

pressure is 1 atm and the equilibrium partial pressure of H_2 is 1 atm.

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27. A 2g sample containing KI and NaCl yielded 0.425g metallic palladium. What is the % KI in a sample, if iodide (I^-) can be separated from other halides by precipitation as Pdl_2 and weighed after reduction in a current of H_2 to yield Pd.

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28. If alcoholic KOH is added to 15. 7 g of 1 - chloropropane, then calculate the mass of propene (in grams) obtained, with the yield of reaction to be 50% ?

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29. 0.20 mol of He and 1.00 mol of an unknown compound (vapor pressure 0.70 atm at 300 K) are introduced to an evacuated empty vessel with a movable piston under the external pressure of 1 atm. Considering the ideal gas behavior, determine the total volume of the gases (in L) at 300 K.

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30. A hydrogen-like species can emit a maximum energy photon of 204 eV. It is in an excited state of quantum number 2n. If it makes a transition to quantum state n, a photon of energy 40.8 eV is emitted. What is the value of n ?

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