CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA TPC JEE MAIN TEST 40

Chemistry

1. Consider the molecules given below:

Which of these molecules would be expected to be planar?

A. only 1, 2 and 3 are correct

B. only 2 and 3 are correct

C. only 3 and 4 are correct

D. only 2 and 4 are correct

Answer: C

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2. Select the correct order of ionisation energies of Ne atom

A. $IE_1 = IE_2 = IE_3$

B. $IE_2 < IE_3 < IE_1$

C. $IE_1 < IE_2 < IE_3$

D. $IE_3 < IE_2 < IE_1$

Answer: C

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3. Among the following which metal is not refined by liquation?

A. Pb

B. Sn

C. Bi

D. He

Answer: D

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4. Which of the following is not true?

A. Permanent hardness canbe removed by boiling the water

B. The temporaty hardness is due ot the presence of Ca and Mg bicarbonates

C. Permanent hardness is due to the presence of soluble Ca and Mg sulphates, chlorides

D. Hardness of water depends on its behavior towards soap

Answer: A

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5. The general oxidation states shown by Ce(cerium) in its compounds ar:

A. $+2,\ +3$

B. $+2,\ +4$

C. $+3,\ +5$

D. $+3,\ +4$

Answer: D

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6. What among the following will not be obtained, when KO_2 is treated with water?

A. KOH

B. O_2

C. H_2O_2

D. K_2O_2

Answer: D

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7. What is the correct sequence of the reagents to be used to convert

$R - CH_2 - CH_2OH$ into

RCH_2CH_2COOH?

A. PBr_3, KCN, H_3O^+

B. PBr_3, KCN, H_2

C. HCN, PBr_3, H^+

D. KCN, H^+

Answer: A

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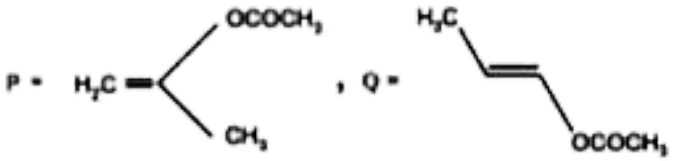
8. P and Q undergo acid hydrolysis.



The product obtained can be distinguished by

A. Luca's reagent

B. 2,4-Dinitrophenylhydrazine

C. Fehling's solution

D. $NaHSO_3$

Answer: C

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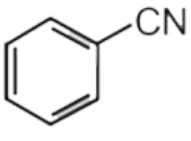
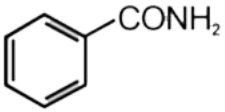
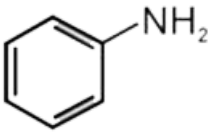
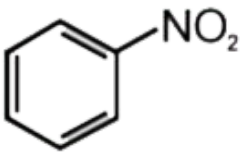
9. A given nitrogen containing aromatic compound (A) reacts with Sn/HCl, followed by HNO_2 to give an unstable compound (B).(B), on

treatment with phenol, forms a beautiful coloured compound (C) with the molecular formula $C_{12}H_{10}N_2O$. The structure of compound (A) is

A. 

B. 

C. 

D. 

Answer: D

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10. Among the following which will have the least hindered (restricted) rotation about carbon carbon sigma and pi bond?

A. Acetylene

B. Hexachloroethane

C. Ethane

D. Ethylene

Answer: C

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11. The ratio of the rate of a reaction at $40^\circ C$ to the rate of a reaction at $10^\circ C$ will be equal to

A. 8

B. 16

C. 4

D. 32

Answer: B

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12. What will be the equivalent conductance of $MgSO_4$ at infinite dilutioin. Ifmolar conductances of $MgCl_2$, H_2SO_4 and HCl at infinite dilution are x,y and z respectively?

A. $(x + y - 2z)$

B. $(x + y - z)$

C. $2 \times (x + y - z)$

D. $(x + y - 2z)/2$

Answer: D

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13. What is the minimum pH required to prevent the precipitation of ZnS in a solution that is $0.01MZnCl_2$ and saturated wth $0.10MH_2S$?

[Given $K_{sp} = 10^{-21}$, $K_{a_1} \times K_{a_2} = 10^{-20}$]

A. 0

B. 1

C. 2

D. 4

Answer: B

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14. Which of the following expression is is correct in case of a CsCl unit cell (edge length,a)?

A. $r_c + r_a = a$

B. $r_c + r_a = \frac{a}{\sqrt{2}}$

C. $r_c + r_a = \frac{\sqrt{3}a}{2}$

D. $r_c + r_a = \frac{a}{2}$

Answer: C

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15. A solution of 0.5 g of a solute (molar mass =150$gmol^{-1}$) in 50 g of a solvent yields a boiling point eleation of 0.40 K. Another solution of 0.60 g of an unknown solute in the same mass of solvent exhibits a boiling point elevation of 0.8 K. The molar mass of unknown solute is

A. $60gmol^{-1}$

B. $90gmol^{-1}$

C. $120gmol^{-1}$

D. $180gmol^{-1}$

Answer: B

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16. A liquid has 35 drops in 2mL. The density of the liquid is 1.2 g/ml. How many molecules are there in 1 drop.

(molecular weight of liquid =70)

A. $\frac{12}{35}N_A$

B. $\left(\frac{1}{35}\right)N_A$

C. $\frac{1.2}{(35)^2}N_A$

D. $1.2N_A$

Answer: C

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17. Vander waal's equation for 1 -mole He gas at high pressure can be written as:

A. $PV_m = RT - Pb$

B. $PV_m = RT + \frac{a}{V_m}$

C. $PV_m = RT - \frac{a}{V_m}$

D. $PV_m = RT + Pb$

Answer: D

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18. The energy of an electron in the first orbit of the hydrogen atom is -2.18×10^{-18}J/atom. What is the thrid ionisation energy of Li^{2+} ion?

A. $8.72 \times 10^{-18} J$

B. $4.36 \times 10^{-18} J$

C. $+19.62 \times 10^{-18} J$

D. $6.54 \times 10^{-18} J$

Answer: C

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19. At high pressure, Langmuir adsorption isotherm takes the form:

A. $\frac{x}{m} = \frac{ap}{1+bp}$

B. $\frac{x}{m} = \frac{a}{b}$

C. $\frac{x}{m} = ap$

D. $\frac{m}{x} = \frac{b}{a} + \frac{1}{ap}$

Answer: B

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20. A person requires 2870 kcal of energy, to lead a normal daily life. If the heat of combustion of cane sugar is -1349 kcal, then his daily consumption of sugar is:

A. 728

B. 0.728 g

C. 342g

D. 0.342g

Answer: A

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21. Find out the total number of diamagnetic species is :

K_2O_2, $\left[Ni(NH_3)_6\right]^{2+}$, $[MnBr_4]^{2-}$, NO_2, $[CuCl_4]^{3-}$, $\left[Co(\text{ox})_3\right]^{3-}$, BaO_2

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22. The total lone pairs of electrons in $XeOF_4$ is _____

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23. How many electrons are present in the catalyst of the lead chamber process?

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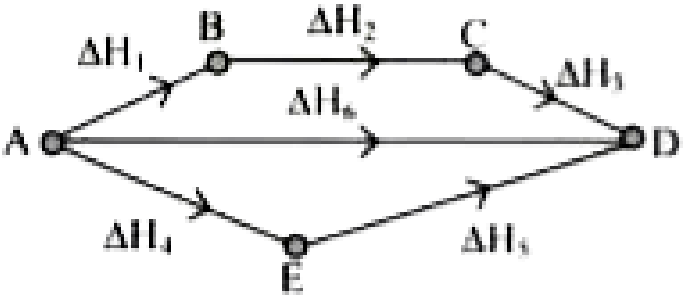
24. Consider the following process for the conversion of A to D.



How many of the following represent the CORRECT expressions, according to the Hess's law?

i. $\Delta H_1 + \Delta H_2 + \Delta H_3 = \Delta H_4 + \Delta H_5$

(ii) $\Delta H_6 = \Delta H_4 + \Delta H_5$

(iii) $\Delta H_3 = \Delta H_6 - \Delta H_1 - \Delta H_2$

(iv) $\Delta H_2 = \Delta H_6 - \Delta H_4 - \Delta H_5$

v. $\Delta H(6) = \Delta H_1 + \Delta H_2 + \Delta H_3$

(vi) $\Delta H_4 = \Delta H_6 + \Delta H_5$

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25. Insulin is used to treat a number of diseases including diabetes and its acute complications how amny amino acids groups are present in 1

molecules of insulin?

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26. One mole each of calcium acetate and calcium propionate undergoes dry distillation to form x mole(s) of ethyl methyl ketone. What will be the value of x?

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27. A saturated alkyl halide (C_3H_7X), when heated with dry silver oxide (Ag_2O), forms 1-propoxypropane. The number of moles of alkyl halide, consumed per mole of 1-propoxypropane formed as

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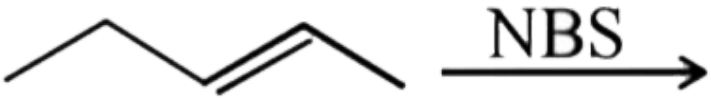
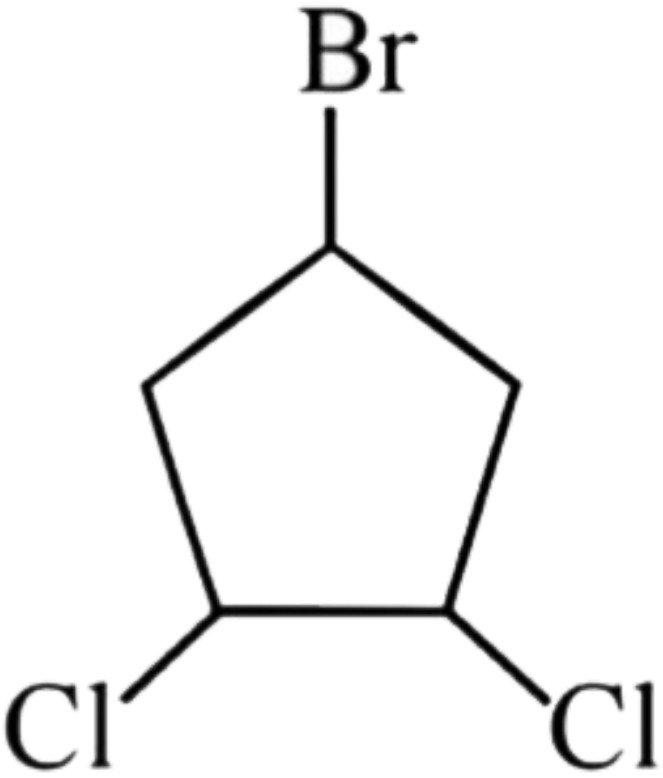
28. a.



number of structural isomeeric products.

b. Number of meso forms in given structure



c. $Me - Br + Et - Br + Pr - Br$ number $\xrightarrow[\text{dryether}]{Na}$

of possible alkanes formed.

d. $HCOOK \xrightarrow{\text{Kolbe's electrolysis}}$ moles of H_2 gas obtained after complete electrolysis.

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29. How many $P-O-P$ linkage (s) are present in $P_4O_{12}^{-4}$?

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30. 60 ml NaOH solution is required for complete neutralisation of 0.98 gm orthophosphoric acid. The molarity of NaOH solution is

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