CHEMISTRY

BOOKS - UNITED BOOK HOUSE

MODEL QUESTION PAPER 2

Exercise

1. If uncertainty in the position of electron is zero, the uncertainty in its momentum would be

A. zero

B. $\geq \frac{h}{4\pi}$

C. $< \frac{h}{4\pi}$

D. Infinite

Answer:

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2. Which of the following has highest dipole moment?

A. H_2S

B. CO_2

C. $\mathbb{C}l_4$

D. BF_3

Answer:

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3. In a chemical change from `PCl_3 rarr PCl_5 the hybrid, state of P changes from

A. $sp^2 \rightarrow sp^3d$

B. $sp^3 \rightarrow sp^2$

C. $sp^3 \rightarrow sp^3d$

D. $sp^3 \rightarrow dsp^2$

Answer:

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4. For the reaction $2NH_3(g)$overset(rarr) (larr) $N_2(g) + 3H_2(g)$ the unit of the K_p will be

A. atm

B. $(atm)^3$

C. $(atm)^{-2}$

D. $(atm)^2$

Answer:

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5. The ratio of most probable velocity, average velocity and root mean square velocity is

A. $\sqrt{2}:\sqrt{8}/\pi:\sqrt{3}$

B. $1:\sqrt{2}:\sqrt{3}$

C. $\sqrt{2}:\sqrt{3}:\sqrt{8}$

D. $1:\sqrt{8}\pi:\sqrt{3}$

Answer:

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6. The heat absorbed in a reaction at constant temperature and constant volume is

A. ΔE

B. ΔH

C. $-\Delta G$

D. ΔG

Answer:

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7. For the reaction, $2NH_3(g) \rightarrow N_2(g) + 3H_2(g)$, which of the following statement is correct?

A. $\Delta H=\Delta E$

B. $\Delta H \geq \Delta E$

C. $\Delta H > \Delta E$

D. $\Delta H=0$

Answer:

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8. Which of the following oxides is not expected to react with NaOH?

A. CaO

B. SiO_2

C. BeO

D. B_2O_3

Answer:

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9. Which has the maximum lattice energy?

A. RbF

B. CsF

C. NaF

D. KF

Answer:

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10. The IUPAC name of the compound, $CH \equiv C — CH = CH_2$ is

A. 1-Butyne-3-ene

B. But-1-yne-3-ene

C. 1-Butene-3-yne

D. 3-butene-1-yne

Answer:

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11. The molecule in which C-H bond length is maximum is

A. C_2H_2

B. C_2H_4

C. C_2H_6

D. C_2HBr

Answer:

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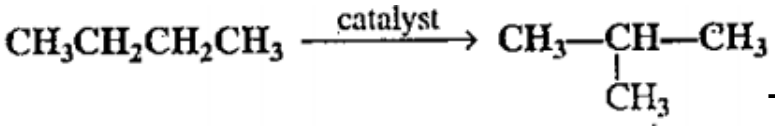
12.



The catalyst used in the above conversion is

A. $ZnCl_2 / HCl$

B. $AlCl_3$

C. $PdC\frac{l_2}{H}Cl$

D. $CuCl / HCl$

Answer:

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13. Benzene reacts with I_2 in presence of which of the following to give iodobenzene?

A. HNO_3

B. HI

C. SO_2

D. H_2O

Answer:

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14. Hypothermia is a disease for

A. Cow

B. Man

C. Fish

D. Bird

Answer:

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15. The atomic weight and equivalent weight of an element are 27 and 9 respectively. What is the formula of it's chloride?

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16. Which block contains inner transition elements.

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17. Which element has highest oxidising property?

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18. Is entropy increases for-the following change? Explain :C(diamond) $\rightarrow$ C(graphite)

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19. According to first law, for a cyclic process $q + w$ =.....

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20. $C_6H_6+CO+HCl \xrightarrow[Cu_2Cl_2]{Anhydrous\,AlCl_3}$ 'A',

Identify 'A'.

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21. How many neutrons are present in 5×10^{-1} moles of C_6^{14}?

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22. Write two difference between orbit anoorbital. What difference will be found jn 2p & 3p orbital.

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23. Write two limitations of Bohr's theory.

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24. $[SiF_6]^{2-}$ is known but $[SiCI_6]^{2-}$ is not. Give reasons.

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25. Complete the following reactions :

$B_2H_6 + 3O_2 \rightarrow$

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26. Complete the following reactions :

$Na_2B_4O_7 + 7H_2O \rightarrow$

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27. Write the structural formula of 3, 4, 4,5-tetramethylheptane.

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28. Arrange the following in decreasing order of -I effect: $-I, -Br, -Cl, -F$

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29. Why $(CH_3)_3 \overset{(+)}{C}$ is more stable than $\overset{(+)}{C}H_3$?

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30. Briefly mention the role of ozone present in stratosphere in protecting the living world.

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31. Calculate the uncertainty in velocity of a moving object of mass 25 g, if the uncertainty in- its position be 10^-5.

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32. Which series of lines of the hydrogen spectrum lies in the visible region?

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33. Nitrogen has positive electron gain enthalpy.Explain.

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34. Arrange Mg, Al, Si and Na in the increasing order of their ionisation potentials.

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35. What are the characteristics of the transition elements and why are they called transition elements ? Which of the d - block elements may not be regarded as the transition elements ?

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36. Between $Fe^{2}+$ and $Fe^{3}+$ which is smaller in size?

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37. ortho-nitrophenol is less soluble is water than p- and m-nitrophenols because-

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38. Determine the number of σ and π bonds in sulphuric acid.

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39. In case of CO_3^{2-} ion,all the C-O bond lengths are equal explain.

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40. Define co-ordination number.

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41. Density of a gas is founded to be $5.46g/dm^3$ at $27^\circ C$ and at 2 bar pressure. What will be its density at STP.

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42. Critical temperature of NH_3 and CO_2 are 405.5 K and 304.10 K respectively. Which of these gases will liquiefy first when you start

cooling from 500 K to their critical temperature.

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43. Calculate the standard enthalpy of reaction at $25^{\circ}C$ temperature for the following reaction $:C_6H_6(I)+\frac{15}{/}2O_2(\mathrm{g}) \rightarrow 6CO_2(g)+3H_2O(I)$. Given: The standard enthalpy of formation of $C_6H_6(I)$, . $CO_2(g)$ and $H_2O(I)$ are 49.0kJ mol^{-1}, -393.5 kJ mol^{-1} and -285.8 kJ mol^{-1} respectively.

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44. Calculate the entropy change, at $0^\circ C$ for the process $H_2O(s) \rightarrow H_2O(I)$. Given : At $0^\circ C$, $H_2O(s) \rightarrow H_2O(g)$,ΔH=51885 J.mol^{-1} and $H_2O(I) \rightarrow H_2O(g)$,$\Delta$ H=45860 J. mol^{-1}.

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45. State the mathematical definition of enthalpy.

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46. Mention the oxidation number of carbon atom in $C_6H_{12}O_6$ molecule.

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47. Balance the equations

$$Cl_2 + OH^- \rightarrow Cl^- + ClO_3^- + H_2O$$

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48. What is the oxidation number .of oxygen in Na_2O_2?

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49. Balance . the following equation by oxidation number method : $H_2S + Cl_2 + H_2O \rightarrow HCl + H_2SO_4$.

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50. What do you mean by 'Non-stoichiometric hydrides'? Do you expect .this type of hydrides to be-formed by alkali metals? Justify your answer.

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51. Which out of $MgCO_3$, $SrCO_3$ and $BaCO_3$ possesses highest thermal stability?

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52. Be and Mg do not give colour to flame whereas other alkaline earth metals do so. Why?

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53. why are alkali metals stored in kerosene ?

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54. What happens when calcium nitrate is heated.

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55. CH_3Cl is unreactive towards. S_N^1 reaction.Why?

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56. Dipole moment of nitrobenzene is greater than that of nitroethane.Why?

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57. Give example of a non-nucleophilic anion.

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58. Explain the orders of acidity of carboxylic acids. $Cl_3\mathbb{C}OOH$ > $Cl_2CHCOOH$ >

$ClCH_2COOH$

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59. State Le Chatelier's principle. Discuss the effect of pressure, concentration and temperature on the following reaction.

$N_{2(g)} + O_{2(g)} \Leftrightarrow 2NO_{(g)}$

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60. Two moles of HI were heated in a scaled tube at $440^{\circ}C$until the equilibrium was reached. HI was found to be 22% dissociated. Calculate equilibrium constant for the reaction $2HI(g) \rightarrow H_2(g) + I_2(g)$.

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61. Find out K_p / K_c for: $CO(g) + \frac{1}{/}2O_2(g) \rightleftharpoons CO_2(g)$.

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62. What will be pH of the solution obtained by mixing 50 ml 0.1 (N) CH_3COOH to 25 ml $0.1(N)NaOH$ solution?'Given $pK_a = 4.74$.

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63. What will happen when a solution of potassium chloride is added to a saturated solution of Lead chloride? Give reason.

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64. Explain : Boric acid is a weak acid.

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65. Explain :Tin (II) is reducing agent but Pb (II) is not.

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66. Complete the following reaction : BF_3+LiH $\rightarrow$

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67. Carry out of.the following transformation :

$HC \equiv CH \rightarrow$ Oxalic acid

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68. Carry out of.the following transformation

:$HC \equiv CH \rightarrow CH_3C \equiv C - CH_3$

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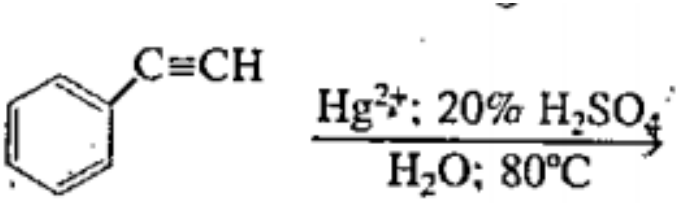
69.



: Identify 'X'.

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70. Mention two polyhalogen compounds which, when heated with silver powder, produce acetylene.

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71. Explain why nitrobenzene $(C_6H_5 - NO_2)$ is used as a solvent in the Friedel-Crafts reaction.

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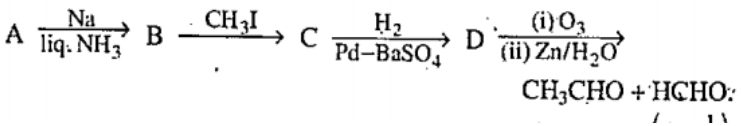
72. Identify A. B, C and D in the following reaction sequence.



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73. If the energy of an elctromin ground State of hydrogen atom be 13.6 ev then its ionisation potential is—

A. 27.2 ev

B. $-13.6ev$

C. 13.6ev

D. $-27.2ev$

Answer:

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74. Exceptional Octate found in—

A. CH_4

B. CO

C. C_2H_6

D. CO_2.

Answer:

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75. Unpaired electron exist in—

A. KO_2

B. Al_2O_3

C. NO_2

D. Ca

Answer:

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76. Moleculer weight of gas whose diffusion rate is half of methane:

A. 32

B. 64

C. 48

D. 16

Answer:

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77. For spontaneous process—

A. $\Delta STotal = positive$

B. $\Delta Ssys = positive$

C. $\Delta STotal = Negative$

D. $\Delta Ssys = Negative$

Answer:

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78. $\Delta H - \Delta U$ for the reaction $C_3H_8(g) + SO_2(g) = 3CO_2(g) + 4H_2O(g)$.

A. $+4RT$

B. $-3RT$

C. 2 RT

D. 5 RT

Answer:

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79. Active mass refers to:

A. Specific Gravity

B. Equivalent wt

C. Moleculer wt

D. Moler Concentration

Answer:

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80. Which one is formed in the reaction between NaH and H_2O.

A. NaO^-

B. OH^-

C. H^{O+}

D. Na^+

Answer:

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81. Thermalstability is highest for the Compound:

A. K_2CO_3

B. Na_2CO_3

C. $BaCO_3$

D. Li_2CO_3

Answer:

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82. NO of double bond possible for C_5H_8.

A. 2

B. 4

C. 3

D. 5

Answer:

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83. Which one can show functional isomerism :

A. $CH_3 - O - C_2H_5$

B. $CH_3CH_2NH_2$

C. $CH_3 - CH_2 - CH_3$

D. $CH_3CH_2CH = CH_2$

Answer:

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84. HBr antimarcowni koff deoes not observed in:

A. C_4H_8

B. pent - 2 ene

C. but - 2-ene

D. propene

Answer:

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85. Chlorosis is caused by —

A. CO_2

B. So_x

C. No_x

D. $CHCI_3$

Answer:

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86. Which of the following reacts with ammoniacal $AgNO_3$ solution:

A. CH_4

B. C_2H_6

C. C_2H_4

D. C_2H_2

Answer:

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87. What is emperical formula?

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88. What is the mass of 1 millimole NH_3?

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89. Give four defects of 'Mendeleev's periodic table.

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90. What is internal energy?

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91. What do you mean by adeabetic process?

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92. State one demerit of wurtz reaction?

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93. State Dulong-petits law 1 write one limitation of it.

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94. If the equivalent weight of the mental M be x in MmOn. Find its atomic weight in terms of n, m and x.

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95. What is Quantum Numbers?

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96. Calculate the kinetic energy of an electron having potential energy 1.5 ev. in SI unit.

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97. Why graphaite is sleepary? What is aquadag?

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98. Which one is weak acid and why?

$ICH_2COOH, BrCH_2COOH, ClCH_2COOH$

.

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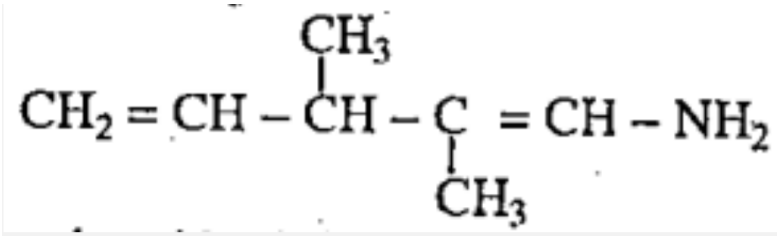
99. Give the IUPACname of the following:



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100. What is acid rain?

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101. Write three defects of Bohr theory?

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102. What is magnetic quantum numbe'r?'.If the principle quantum number be 4 find the azimithal quntum numbers for the same.

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103. What do you mean by electron affinity? State its change down a group.

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104. Arrange the Cations as per increasing radius `Mg_(2+) , Na^(o+) &Al^(3+)Whatdo yoy mean by covalent radius.

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105. What is polesing power? What Shall be the increasing order of polesising power of $Mg^{2+}, Na^{\oplus}$ ^ 2&AI^{3+} ? .

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106. Find the increasing order of covalent nature of $AlCl_3, MgCl_2$ and NaCl. What is Ionisation potential.

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107. Define Co-efficient of Viscosity of a liquid. Write its S.I Unit.

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108. Calculate q, w & $\Delta u$when a gas is Compressed from 15 lit to 5 lit at 5 atmospheric pressure in iso thermal irreversible process.

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109. Write Hess's law of constant heat summation. Write the mathematical expression-for entropy.

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110. Balance the following reaction by oxidation no method

$H_2O + HNO_2 \rightarrow H_2O + HNO_3$.

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111. Balance the following reaction by oxidation no method Cu + NO ---> CuO +N2

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112. Balance the following reaction by oxidation no method

$FeCl_3 + SnCl_2 \rightarrow FeCl_2 + SnCl_4.$

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113. State one method to remove permanent hardnessof water. Why H_2S is a gas at ordinary room temperature?

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114. Why CsI is lesssoluble in water? Whatis used as anode in the extraction of Na in Down process?

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115. How N_2 is estimated in Duma's process.

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116. What is self Catalysis? Write Arrheneous equ for the specific rate constant of a reaction.Find $d\frac{A}{dt} : dB/dt$ for the reaction $2A \rightarrow 3B$

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117. Write ostwald dilution law 1 what is buffer solution? State with example, the activity of an acidic buffer- solution.

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118. Boric acid is a weak acid, but in presence of Glycerol, it acts as a strong acid why?

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119. State reasons :CF_6^{2-} does not form but SiF_6^{2-} forms write Chemical for rule of 'Borax.

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120. What happens when:$LiBH_4$ is reacted with BF_3 in dry ether medium.What is inorganic Graphaite?

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121. What happens when:CO_2 gas is passed through BaO_2 Suspension in water.What is inorganic Graphaite?

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122. What is Ziegler natta Catalyst? State one use of it. State with example Markownikoffs rule.

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123. How would you differ,Chemically ethane & ethylene.

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124. How would you differ,Propyne & acetylene.

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125. What is P-2 Catalyst?

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