



CHEMISTRY

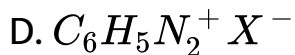
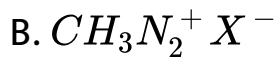
BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

MHTCET 2015

Chemistry

1. Which of the following will be most stable diazonium salt $RN_2^+ X^-$? .





Answer: d



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2. Electronic configuration of only one P block element is exceptional one molecule of that element consists of how many atoms of it ?

A. one

B. two

C. three

D. four

Answer: a



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3. The correct IUPAC name $[Co(NH_3)_3(NO_2)_3]$ is

A. Triammine trinitro N cobalt (III)

B. Triammine trinitro N cobalt (II)

C. Triammine cobalt (III) nitrite

D. Triammine trinitro N cobaltate (III)

Answer: a

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4. If M, W and V represent molar mass of solute then mass of solute and volume of solution in litres respectively which among following equation is true ?

A. $\pi = \frac{MWR}{TV}$

B. $\pi = \frac{TMR}{WV}$

C. $\pi = \frac{TWR}{VM}$

D. $\pi = \frac{TRV}{WM}$

Answer: c



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5. The replacement of diazonium group by fluorine is known as

- A. gattermann reaction
- B. sandmeyer reaction
- C. balz schiemann reaction
- D. etard reaction

Answer: c



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6. For which among the following reactions change in entropy is less than zero ?

- A. sublimation of iodine
- B. dissociation of hydrogen
- C. formation of water
- D. thermal decomposition of calcium carbonate

Answer: b

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7. $[Cr(NH_3)_6]Cr(SCN)_6$ and $[Cr(NH_3)_2(SCN)_4][Cr(NH_3)_4(SCN)_2]$ are the

examples of what type of isomerism ?

- A. Ionisation isomerism
- B. linkage isomerism
- C. coordination isomerism
- D. solvate isomerism

Answer: c

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8. For the reaction $O_{3(g)} + O_{(g)} \rightarrow 2O_{2(g)}$, if the rate law expression is , rate = $k[O_3][O]$ the molecularity and order of the reaction are respectively _____.

A. 2 and 2

B. 2 and 133

C. 2 and 1

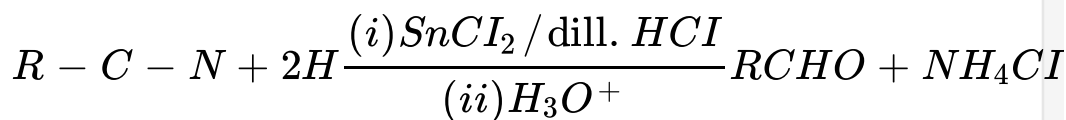
D. 1 and 2

Answer: A



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9.



this reaction is known as

A. Etard reaction

B. stephen reaction

C. hell volhard zelinsky reaction

D. balz schiemann reaction

Answer: b



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10. Select a ferromagnetic material from the following

A. dioxygen

B. chromium (IV) oxide

C. benzene

D. dihydrogen monoxide

Answer: b

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11. What is the volume of water consumed during acid hydrolysis of 1.368 kg of sucrose ?

A. 0.072 dm^3

B. 0.72 dm^3

C. 0.18 dm^3

D. 0.018 dm^3

Answer: a

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12. The process in which metal surface is made inactive is called

A. passivation

B. galvanising

C. corrosion

D. pickling

Answer: a



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13. Which among the following group 15 element forms most stable pentavalent compound ?

A. phosphorus

B. antimony

C. bismuth

D. arsenic

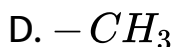
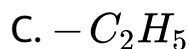
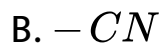
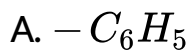
Answer: a



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14. Which among the following functional groups has been given the highest priority while assigning R-S

configuration



Answer: b



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15. Give $R = 8.314 \text{ JK}^{-1}\text{mol}^{-1}$ the work done during combustion of 0.090 kg of ethane (molar mass=30) at 300 K is

A. -18.7kJ

B. 18.7kJ

C. 6.234kJ

D. -6.234kJ

Answer: b



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16. Potassium dichromate is a good oxidising agent in acidic medium the oxidation state of chromium changes by

A. 2

B. 3

C. 4

D. 5

Answer: b



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17. Diethyl amine when treated with nitros acid yields

A. diethyl alcohol

B. N nitroso diethyl amine

C. N nitroso diethyl amne

D. triethyl ammonium nitrite

Answer: c



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18. What is the most abundant element on earth ?

A. hydrogen

B. nitrogen

C. oxygen

D. silicon

Answer: c



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19. The overall reaction taking place at anode during electrolysis of fused sodium chloride using suitable electrode is

- A. oxidation of chloride
- B. reduction of sodium ions
- C. reduction of chlorine
- D. oxidation of sodium atoms

Answer: a



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20. The only radioactive element among the lanthanoids is

- A. gadolinium
- B. holmium
- C. promethium
- D. neodymium

Answer: c



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21. Identify a metalloid from the following list of elements

A. carbon

B. neon

C. sodium

D. tellurium

Answer: d



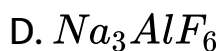
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22. What is the chemical composition of Nicol prism ?

A. Al_2O_3

B. $CaSO_4$

C. $CaCO_3$



Answer: c



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23. Identify the heteropolymer from the list given below

:

A. polythene

B. nylon 6

C. teflon

D. nylon 6-6

Answer: d



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24. What is the basicity of orthophosphorous acid ?

A. one

B. two

C. three

D. four

Answer: b



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25. The correct order of reactivity of aldehydes and ketones towards hydrogen cyanide is



Answer: d



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26. Which among the following is a feature of adiabatic expansion ?

A. $\Delta V < 0$

B. $\Delta U < 0$

C. $\Delta U > 0$

D. $\Delta T = 0$

Answer: d



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27. Molarity is defined as

A. the number of moles of solute dissolved in $1dm^3$
of the solution

B. the number of moles of solute dissolved in 1 kg of solvent

C. the number of moles of solute dissolved in 1dm^3 of the solvent

D. the number of moles of solute dissolved in 100 mL of the solvent

Answer: a



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28. What is the possible number of monohydroxy derivatives of a hydrocarbon consisting of five carbon

atoms with one methyl group as a branch ?

A. 2

B. 3

C. 4

D. 5

Answer: b



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29. Calculate the work done during compression of 2 mol of an ideal gas from a volume of $1m^3$ to $10dm^3$ 300 K against a pressure of 100 KPa .

A. 99 kJ

B. -99kJ

C. 114.9 kJ

D. -114.9kJ

Answer: a



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30. Which among the following alloys is used in making instruments for electrical measurements ?

A. stainless steel

B. manganin

C. spiegeleisen

D. duralumin

Answer: b



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31. Which of the following proteins is globular?

A. collagen

B. albumin

C. myosin

D. fibroin

Answer: b

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32. A mixture of benzaldehyde and formaldehyde when treated with 50% NaOH yields

- A. sodium benzoate and sodium formate
- B. sodium formate and benzyl alcohol
- C. sodium benzoate and methyl alcohol
- D. benzyl alcohol and methyl alcohol

Answer: b

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33. Which among the following solution is not used in determination of the cell constant ?

A. 10^{-2}MKCl

B. 10^{-1}MKCl

C. 1 MKCl

D. saturated KCl

Answer: d



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34. Which halogen forms an oxyacid that contains the halogen atom in tripositive oxidation state?

A. fluorine

B. chlorine

C. bromine

D. Iodine

Answer: b



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35. Name the metal that is purified by placing the impure metal on sloping hearth of reverberatory furnace and

heating that above its melting point in the absence of air

A. mercury

B. gallium

C. zirconium

D. copper

Answer: d



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36. Which among the following is a tranquilizer?

A. aspirin

B. valium

C. penicillin

D. suphanilamide

Answer: b



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37. chlorination of ethane is carried out in the presence of

A. anhydrous $AlBr_3$

B. mercuric chloride \ultraviolet light

C. zinc

D. chloride

Answer: c



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38. Identify a 'Chemical twin' among the following.

A. Zr-Ta

B. Nb-Tc

C. Hf-Re

D. Nb-Ta

Answer: d



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39. The relationship between rate constant and half life period of zero order reaction is give by

A. $t_{1/2} = [A_0]2K$

B. $t_{1/2} = \frac{0.693}{K}$

C. $t_{1/2} = \frac{(A_0)}{2K}$

D. $t_{1/2} = \frac{2[A_0]}{K}$

Answer: c



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40. Which polymer among the following does not soften on heating ?

A. bakelite

B. polythene

C. polystyrene

D. pvc

Answer: a



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41. Van't Hoff factor of a centinormal solution of $K_3[Fe(CN)_6]$ is 3.333. The precentage dissociation of

$K_3[Fe(CN_6)_6]$ is :

A. 33.33

B. 0.78

C. 78

D. 23.33

Answer: c



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42. Which of the following compounds is most acidic in nature ?

A. 4 chlorobutanoic acid

B. 3 chlorobutanoic acid

C. 2 chlorobutanoic acid

D. butanoic acid

Answer: c



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43. How is ore of aluminium concentrated ?

A. roasting

B. leaching

C. froth floatation

D. using wilfley table

Answer: b

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44. Which of the following compounds has highest boiling point ?

A. propan 1 ol

B. n butane

C. chloroethane

D. propanal

Answer: a

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45. Which metal among the following has the highest packing efficiency?

A. iron

B. tungsten

C. aluminium

D. polonium

Answer: c



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46. Which oxoacid of sulphur contains S-S bond in its structure?

- A. disulphurous acid
- B. disulphuric acid
- C. peroxydisulphuric acid
- D. hydrosulphurous acid

Answer: a



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47. Which among the following detergents is non ionic in character ?

- A. sodium lauryl sulphate
- B. pentaerythrityl stearate
- C. cetyl trimethyl ammonium chloride
- D. sodium n dodecyl benzene sulphonate

Answer: b

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48. Reaction of which among the following ethers with HI in cold leads to the formation of methyl alcohol?

- A. ethyl methyl ether
- B. methyl propyl ether

C. isopropyl methyl ether

D. tert butyl methyl ether

Answer: d



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49. During conversion of glucose into glucose cyanohydrin which functional group/ atom of glucose is replaced ?

A. hydrogen

B. aldehydic group

C. primary alcoholic group

D. secondary alcoholic group

Answer: b



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50. Half life period of first order reaction $A \rightarrow$ product is 6.93 h what is the value of rate constant ?

A. $1.596 h^{-1}$

B. $0.1h^{-1}$

C. $4.802 h^{-1}$

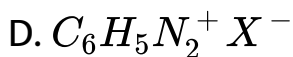
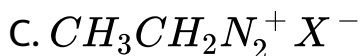
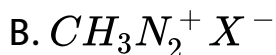
D. $10 h^{-1}$

Answer: b



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51. Which of the following is the most stable diazonium salt?



Answer: d



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52. Electronic configuration of only one P block element is exceptional one molecule of that element consists of how many atoms of it ?

A. one

B. two

C. three

D. four

Answer: a



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53. The correct IUPAC name $[Co(NH_3)_3(NO_2)_3]$ is

- A. Triammine trinitro N cobalt (III)
- B. Triammine trinitro N cobalt (II)
- C. Triammine cobalt (III) nitrite
- D. Triammine trinitro N cobaltate (III)

Answer: a



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54. If M, W and V represent molar mass of solute then mass of solute and volume of solution in litres respectively which among following equation is true ?

A. $\pi = \frac{MWR}{TV}$

$$\text{B. } \pi = \frac{TMR}{WV}$$

$$\text{C. } \pi = \frac{TWR}{VM}$$

$$\text{D. } \pi = \frac{TRV}{WM}$$

Answer: c



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55. The replacement of diazonium group by fluorine is known as

A. gattermann reaction

B. sandmeyer reaction

C. balz schiemann reaction

D. etard reaction

Answer: c



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56. For which among the following reactions change in entropy is less than zero ?

A. sublimation of iodine

B. dissociation of hydrogen

C. formation of water

D. thermal decomposition of calcium carbonate

Answer: b



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57. $[Cr(NH_3)_6]Cr(SCN)_6$ and $[Cr(NH_3)_2(SCN)_4][Cr(NH_3)_4(SCN)_2]$ are the examples of what type of isomerism ?

- A. Ionisation isomerism
- B. linkage isomerism
- C. coordination isomerism
- D. solvate isomerism

Answer: c



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58. For the reaction $O_3(g) + O(g) \rightarrow 2O_2(g)$ if the rate law expression is $\text{rate} = k[O_3][O]$ the molecularity and order of the reaction respectively are

A. 2 and 2

B. 2 and 133

C. 2 and 1

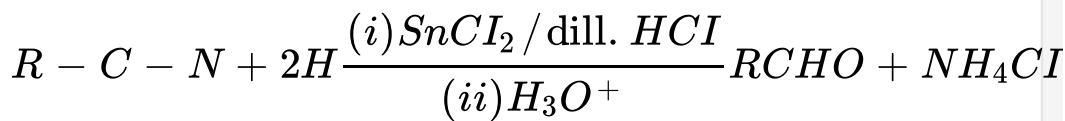
D. 1 and 2

Answer: a



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59.



this reaction is known as

- A. Etard reaction
- B. stephen reaction
- C. hell volhard zelinsky reaction
- D. balz schiemann reaction

Answer: b



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60. Select a ferromagnetic material from the following

A. dioxygen

B. chromium (IV) oxide

C. benzene

D. dihydrogen monoxide

Answer: b



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61. What is the volume of water consumed during acid hydrolysis of 1.368 kg of sucrose ?

A. 0.072 dm^3

B. 0.0720 dm^3

C. 0.18 dm^3

D. 0.018 dm^3

Answer: a



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62. The process in which metal surface is made inactive is called

A. passivation

B. galvanising

C. corrosion

D. pickling

Answer: a

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63. Which among the following group 15 element forms most stable pentavalent compound ?

A. phosphorus

B. antimony

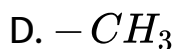
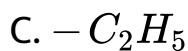
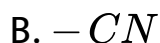
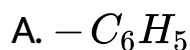
C. bismuth

D. arsenic

Answer: a

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64. Which among the following functional groups has been given the highest priority while assigning R-S configuration



Answer: b



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65. Give $R = 8.314 \text{ JK}^{-1}\text{mol}^{-1}$ the work done during combustion of 0.090 kg of ethane (molar mass=30) at 300 K is

A. -18.7kJ

B. 18.7kJ

C. 6.234kJ

D. -6.234kJ

Answer: b



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66. Potassium dichromate is a good oxidising agent in acidic medium the oxidation state of chromium changes by

A. 2

B. 3

C. 4

D. 5

Answer: b



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67. Diethyl amine when treated with nitros acid yields

- A. diethyl alcohol
- B. N nitroso diethyl amine
- C. N nitroso diethyl amne
- D. triethyl ammonium nitrite

Answer: c



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68. What is the most abundant element on earth ?

- A. hydrogen
- B. nitrogen
- C. oxygen

D. silicon

Answer: c



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69. The overall reaction taking place at anode during electrolysis of fused sodium chloride using suitable electrode is

- A. oxidation of chloride
- B. reduction of sodium ions
- C. reduction of chlorine
- D. oxidation of sodium atoms

Answer: d



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70. The only radioactive element among the lanthanoids is

A. gadolinium

B. holmium

C. promethium

D. neodymium

Answer: c



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71. Identify a metalloid from the following list of elements

A. carbon

B. neon

C. sodium

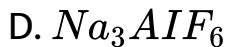
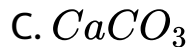
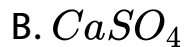
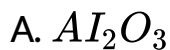
D. tellurium

Answer: d



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72. What is the chemical composition of Nicol prism ?



Answer: c



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73. Identify the heteropolymer from the list given below

A. polythene

B. nylon 6

C. teflon

D. nylon 6-6

Answer: d



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74. What is the basicity of orthophosphorous acid ?

A. one

B. two

C. three

D. four

Answer: b



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75. The correct order of reactivity of aldehydes and ketones towards hydrogen cyanide is



Answer: d



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76. Which among the following is a feature of adiabatic expansion ?

A. $\Delta V < 0$

B. $\Delta U < 0$

C. $\Delta U > 0$

D. $\Delta T = 0$

Answer: d



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77. Molarity is defined as

A. the number of moles of solute dissolved in $1dm^3$
of the solution

B. the number of moles of solute dissolved in 1 kg of
solvent

C. the number of moles of solute dissolved in $1dm^3$
of the solvent

D. the number of moles of solute dissolved in 100 mL
of the solvent

Answer: A



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78. What is the possible number of monohydroxy derivatives of a hydrocarbon consisting of five carbon atoms with one methyl group as a branch ?

A. 2

B. 3

C. 4

D. 5

Answer: b



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79. What is the amount of work done when two moles of ideal gas is compressed from a volume of 1m^3 to 10dm^3 at 300 K against a pressure of 100 kPa?

A. 99 kJ

B. -99kJ

C. 114.9 kJ

D. -114.9kJ

Answer: a



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80. Which among the following alloys is used in making instruments for electrical measurements ?

A. stainless steel

B. manganin

C. spiegeleisen

D. duralumin

Answer: b



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81. Which of the following proteins is globular?

A. collagen

B. albumin

C. myosin

D. fibroin

Answer: b



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82. A mixture of benzaldehyde and formaldehyde when treated with 50% NaOH yields

A. sodium benzoate and sodium formate

B. sodium formate and benzyl alcohol

C. sodium benzoate and methyl alcohol

D. benzyl alcohol and methyl alcohol

Answer: b



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83. Which among the following solution is not used in determination of the cell constant ?

A. 10^{-2}MKCl

B. 10^{-1}MKCl

C. 1 MKCl

D. saturated KCl

Answer: d

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84. Which halogen forms an oxyacid that contains the halogen atom in tripositive oxidation state?

- A. fluorine
- B. chlorine
- C. bromine
- D. iodine

Answer: b

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85. Name the metal that is purified by placing the impure metal on sloping hearth of reverberatory furnace and heating that above its melting point in the absence of air

A. mercury

B. gallium

C. zirconium

D. copper

Answer: d



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86. Which among the following is a tranquilizer?

A. aspirin

B. valium

C. penicillin

D. suphanilamide

Answer: b



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87. chlorination of ethane is carried out in the presence of

A. anhydrous $AlBr_3$

B. mercuric chloride `ultraviolet light

C. zinc

D. chloride

Answer: c



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88. Identify a chemical twin among the following

A. Zr-Ta

B. Nb-Tc

C. Hf-Re

D. Nb-Ta

Answer: d



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89. The relationship between rate constant and half life period of zero order reaction is give by

A. $t_{1/2} = [A_0]2K$

B. $t_{1/2} = \frac{0.693}{K}$

C. $t_{1/2} = \frac{(A_0)}{2K}$

D. $t_{1/2} = \frac{2[A_0]}{K}$

Answer: c



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90. Which polymer among the following does not soften on heating ?

A. bakelite

B. polythene

C. polystyrene

D. pvc

Answer: a



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91. Van 't Hoff factor of centimolar solution of $K_3[Fe(CN)_6]$ is 3.333 calculate the per cent dissociation of $K_3[Fe(CN)_6]$

A. 33.33

B. 0.78

C. 78

D. 23.33

Answer: c



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92. Which of the following compounds is most acidic in nature ?

- A. 4 chlorobutanoic acid
- B. 3 chlorobutanoic acid
- C. 2 achlorobutanoic acid
- D. butanoic acid

Answer: c



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93. How is ore of aluminium concentrated ?

A. roasting

B. leaching

C. froth floatation

D. using wilfley table

Answer: b



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94. Which of the following compounds has highest boiling point ?

A. propan 1 ol

B. n butane

C. chloroethane

D. propanal

Answer: a



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95. Which metal among the following has the highest packing efficiency?

A. iron

B. tungsten

C. aluminium

D. polonium

Answer: c

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96. Which oxoacid of sulphur contains S-S bond in its structure?

- A. disulphurous acid
- B. disulphuric acid
- C. perdisulphuric acid
- D. hydrosulphurous acid

Answer: a

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97. Which among the following detergents is non ionic in character ?

- A. sodium lauryl sulphate
- B. pentaerythrityl stearate
- C. cetyl trimethyl ammonium chloride
- D. sodium n dodecyl benzene sulphonate

Answer: b



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98. Reaction of which among the following ethers with HI in cold leads to the formation of methyl alcohol?

- A. ethyl methyl ether
- B. methyl propyl ether
- C. isopropyl methyl ether
- D. tert butyl methyl ether

Answer: d



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99. During conversion of glucose into glucose cyanohydrin which functional group/ atom of glucose is

replaced ?

- A. hydrogen
- B. aldehydic group
- C. primary alcoholic group
- D. secondary alcoholic group

Answer: b



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100. Half life period of first order reaction $A \rightarrow \text{product}$ is 6.93 h what is the value of rate constant ?

- A. 1.596 h^{-1}

B. $0.1h^{-1}$

C. $4.802 h^{-1}$

D. $10 h^{-1}$

Answer: b



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