

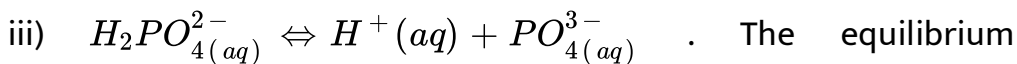
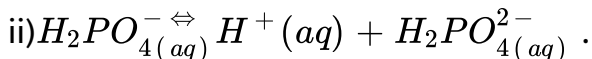
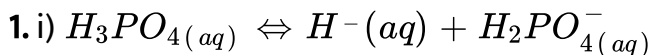


CHEMISTRY

BOOKS - TS EAMCET PREVIOUS YEAR PAPERS

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Chemistry



constants for the above reactions at a certain temperature are

K_1 , K_2 and K_3 respectively. The equilibrium constant for the

reaction. $H_3PO_4(aq) \rightleftharpoons 3H^+(aq) + PO_4^{3-}(aq)$ in terms

K_1 , K_2 and K_3 is

A. $K_1 + K_2 + K_3$

B. $\frac{K_1}{K_2 + K_3}$

C. $\frac{K_3}{K_1 K_3}$

D. $K_1 K_2 K_3$

Answer: D

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2. Which among the following are having diamagnetic property ?

(i) B_2 (ii) N_2

(iii) O_2 (iv) C_2

A. ii, iii

B. I, iv

C. ii, iv

D. I, ii

Answer: C

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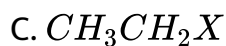
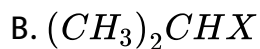
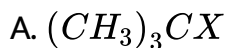
3. Which one of the following statements is not correct?

- A. The hydration enthalpies of alkali metal ions decrease down group .
- B. Lithium halides are some what covalent in nature.
- C. Alkali metals react with water liberating oxygen gas
- D. KO_2 is paramagnetic

Answer: C

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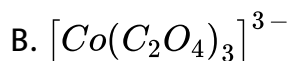
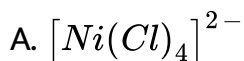
4. Which one of the following is more reactive towards S_N2 reaction?

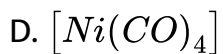
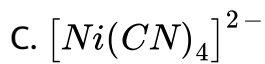


Answer: D

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5. Identify, from the following the diamagnetic, tetrahedral complex

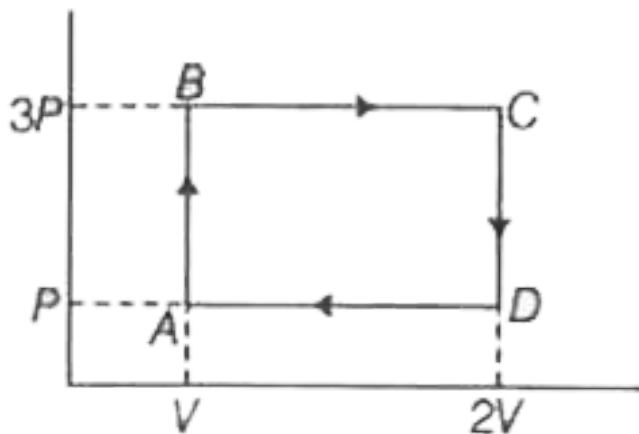




Answer: D

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6. What are X and Y in the following reactions ?



A.



B.



C.



D.

Answer: A

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7. Which of the following forms holes in the Ozone layer?

A. CO

B. SO_2

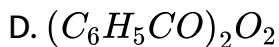
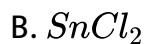
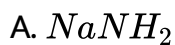
C. CO_2

D. CF_2Cl_2

Answer: D

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8. Which one of the following is not used as an initiator in ionic polymerisation?



Answer: D

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9. Identify the statement which is not correct ?

- A. Dehydronbromination of 2-bromopentane gives pent-1-ene as the major product
- B. Freon 12 is manufactured by Samarts reaction
- C. $CHCl_3$ is stored in closed ,dark coloured botties
- D. Chronic exposure to $CHCl_3$ causes liver damage

Answer: A



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10. To prepare XeF_6 , Xe and F_2 are mixed at 573K and 60 -70 bar in the ratio of

- A. 20: 1

B. 1:5

C. 5:1

D. 1:20

Answer: D



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11. Which one of the following solutions of compounds show highest osmotic pressure? (AB, AB_2 and A_2B_3 are ionic compounds)

A. 5.0 M urea $i = 1.0$ and temperature is $67^\circ C$

B. 1.5 M A_2B_2 type $i = 4.1$ and temperature is $27^\circ C$

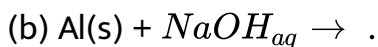
C. 3.0 M AB type $i = 1.6$ and temperature is $27^\circ C$

D. 2.5 M AB_2 type $i = 2.5$ and temperature is $57^\circ C$

Answer: D

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12. In which of the following reactions, Hydrogen is liberated?



A. I, ii

B. ii, iii

C. I, iii

D. I, ii, iii

Answer: D

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13. 31 g of ethylene glycol ($C_2H_6O_2$) is dissolved in 600g of water.

The freezing point depression of the solution is (K_f for water is

$1.86 \text{ K kg mol}^{-1}$)

A. 0.77 K

B. 1.55 K

C. 4.65 K

D. 3.10 K

Answer: B



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14. The equilibrium constant (K_c) for the following equilibrium

$2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$ at 563K is 100. at equilibrium, the

number of moles of SO_3 in the 10 litre flask is twice the number of moles of SO_2 , then the numbers of moles of oxygen is

- A. 0.4
- B. 0.3
- C. 0.2
- D. 0.1

Answer: A

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15. The energy and radius of electron present in second orbit of He^+ respectively are

- A. $-1.09 \times 10^{-18} J, 105.8 pm$
- B. $-8.72 \times 10^{-18} J, 211.6 pm$

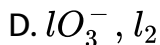
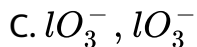
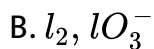
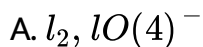
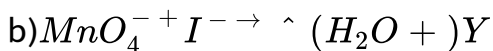
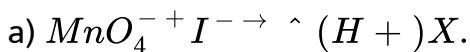
C. $-4.36 \times 10^{-18} J, 52.9 pm$

D. $-2.18 \times 10^{-18} J, 105.8 pm$

Answer: D

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16. What are X_{-} and Y_{-} in the following reactions?



Answer: B



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17. Assertion (A) : Na^+ and Mg^{2+} ions are isoelectronic but the ionic radius of Na^+ is greater than the of Mg^{2+} . Reason (R) : The effective nuclear charge of Na^+ ion is less than that of Mg^{2+} ion.

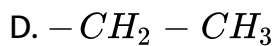
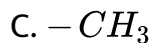
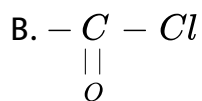
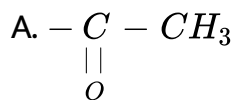
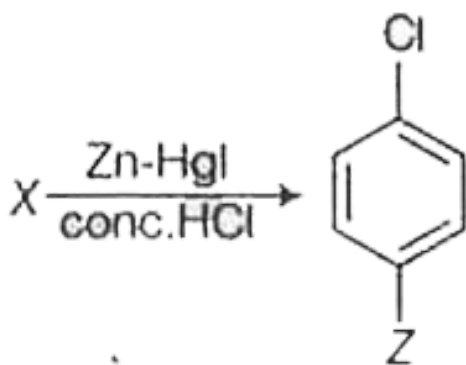
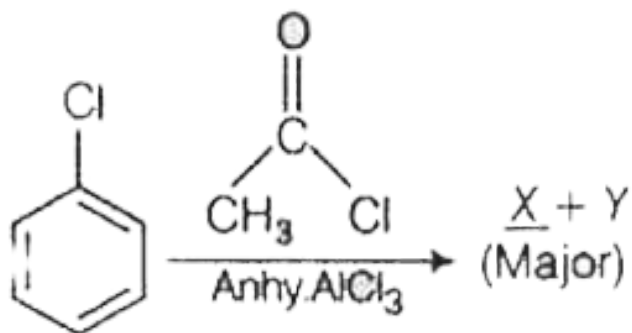
- A. Both (A) and (R) are correct but (R) is not the correct explanation of (A)
- B. Both (A) and (R) are correct and (R) is correct explanation of (A)
- C. (A) is not correct but (R) is correct
- D. (A) is correct but (R) is not correct .

Answer: B



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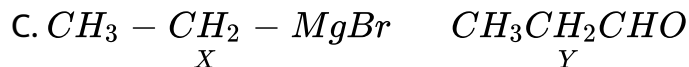
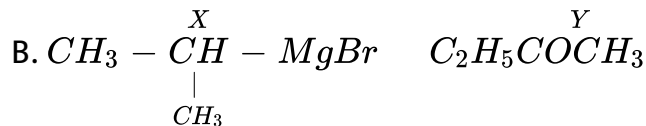
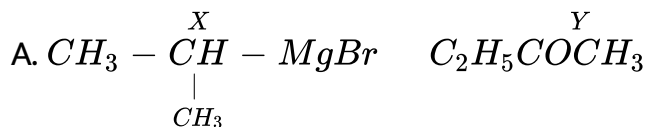
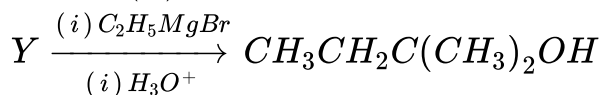
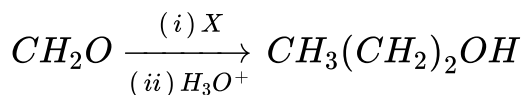
18. What is Z in the following sequence of reaction ?



Answer: D

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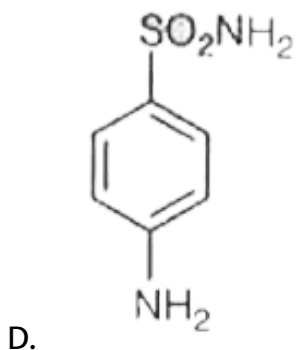
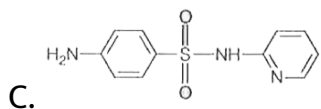
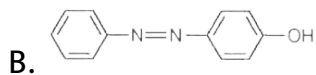
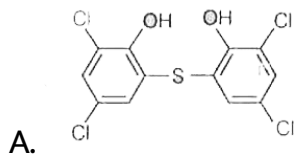
19. What are X and Y in the following reactions ?



Answer: B

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20. Which of the following structure represents the compound, generally added to soaps to impart antiseptic properties ?



Answer: A

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21. The work functions of Ag, Mg, K and Na respectively in eV are 4.3, 3.7, 2.25, 2.30. when an electromagnetic radiation of wavelength of 300 nm is allowed to fall on these metal surfaces, the number of metals from which the electrons are ejected is.

$$(1eV = 1.6022 \times 10^{-19} J)$$

A. 4

B. 3

C. 2

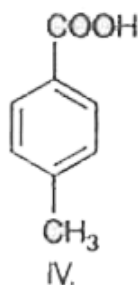
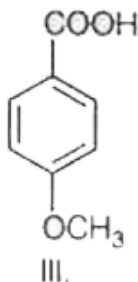
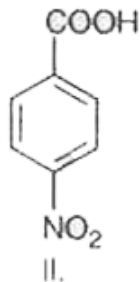
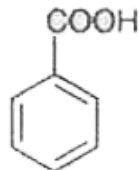
D. 5

Answer: B



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22. The increasing order of acidity of the following carboxylic acids is



A. $III > IV > II > I$

B. $II > III > II > I$

C. $I > II > IV > III$

D. $III > IV > I > II$

Answer: D

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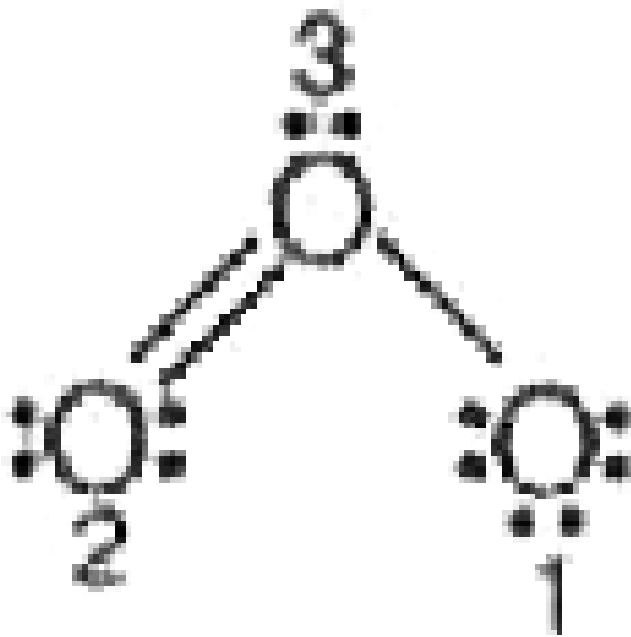
23. Colloidal solution of gold is in different colours like red, purple, blue and golden because of

- A. variable oxidation states of gold
- B. size difference in the particles of gold
- C. presence of impurities
- D. difference in the concentration of gold particles

Answer: B

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24. The Lewis structure for O_3 molecule is given below. The correct formal charges on oxygen atoms labelled 1, 2, 3 are respectively.



- A. $-1, 0, +1$
- B. $+1, 0, -1$
- C. $+1, -1, 0$
- D. $0, +1, -1$

Answer: A

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25. Identify the statements which are not correct from the following

a) Carbohydrates are stored as glycogen in animals .

b) In glycylalanine, $-\overset{\overset{O}{||}}{C}-$ of peptide bond belongs to alanine .

c) Base - sugar - phosphate unit is known as nucleoside .

d) Obesity is due to hypothyroidism . the correct answer is

A. *i, iv*

B. *ii, iii, iv*

C. *i, iii, iv*

D. *ii, iii*

Answer: D



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26. The enthalpy of formation ($\Delta_r H$) of methanol, formaldehyde and water -239, -116 and -286KJmol^{-1} respectively. The enthalpy change for the oxidation of emthanol to formaldehyde and water in KJ is

A. - 136

B. - 173

C. 163

D. - 163

Answer: D

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27. Copper matte contains

A. CuO , FeS

B. Cu_2S, FeS

C. CuO, Cu_2S

D. Cu_2S, FeO

Answer: B

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28. At $27^\circ C$ in a 10L flask 4.0g of an ideal gaseous mixture containing He (molar mass 4.0 g mol^{-1}) and Ne (molar mass 20 g mol^{-1}) has a pressure of 1.23 atm. What is the mass% of neon? ($R = 0.082 \text{ LatmK}^{-1} \text{ mol}^{-1}$)

A. 25.2

B. 62.5

C. 84.2

D. 74.2

Answer: B

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29. $S + \text{conc. } H_2SO_4 \rightarrow X + Y$ here X is a gas and Y is a liquid and both are triatomic molecules. The number of electron lone pairs present on the central atoms of X and Y are respectively.

A. 2, 1

B. 1, 0

C. 1, 2

D. 2, 2

Answer: C

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30. Identify the correct statements from the following

Electromeric effect is a permanent effect.

Hyper conjugation is a temporary effect.

Fractional distillation is used to separate two liquids from a mixture if the difference in their boiling points is less .

Different compounds are adsorbed on an adsorbent to different extents. the correct answer is

A. ii,iii,iv

B. i,ii,iii

C. ii,iv

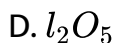
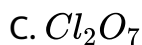
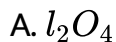
D. iii,iv

Answer: D



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31. Which of the following is used in the estimation of carbon monoxide?



Answer: D



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32. Which one of the following statements is not correct?

A. In CO_2 molecule, carbon hybridisation is sp

B. fullerenes are made by heating graphite in an electric arc in presence of argon gas .

C. Both $[SiF_6]^{2-}$ and $[SiCl_6]^{2-}$ ions are known

D. In CO molecule, there are one 'sigma' (σ) and two 'pi' (π) bonds.

Answer: C



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33. The drug, which was designed to prevent the interactions of histamine with the receptors present in the stomach wall is:

A. prontosil

B. cimetidine

C. aspartame

D. equanil

Answer: B

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34. Identify the correct statements for a ring system to exhibit aromaticity

a) It must not be planar .

b) It must possess $(4n + 2)\pi$ electrons.

c) it must br planar .

d) It must possess $4n\pi$ electrons . the correct answer is

A. ii, iv

B. i, ii

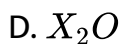
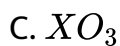
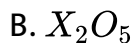
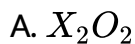
C. i, iv

D. ii,iii

Answer: D

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35. Two oxides of a non-metal X contain 50% and 40% of non-metal respectively. If the formula of the first oxide is XO_2 , then the formula of second oxide is



Answer: C

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36. An element has a body centered cubic structure with a unit cell edge length of 400 pm. Atomic mass of an element is 24g mol^{-1}

What is the density of the element? ($N_A = 6 \times 10^{23}\text{ mol}^{-1}$)

A. 2.50g cm^{-3}

B. 1.80g cm^{-3}

C. 3.60g cm^{-3}

D. 1.25g cm^{-3}

Answer: D

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37. 20% of a first order reaction was found to be completed at 10 a.m at 11.30 a.m on the same dat, 20% of the reaction was found to be remaining . The half life period in minutes of the reaction is

A. 90

B. 45

C. 60

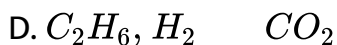
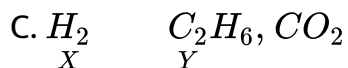
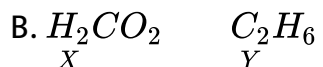
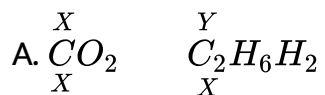
D. 30

Answer: B



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38. The gaseous products formed at cathode (X) and anode (Y), when an aqueous solution acetate is electrolysed are



Answer: C

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39. How many milliliters of 20 volume of H_2O_2 solution is needed to react completely with 500mL of acidified 1N $KMnO_4$ solution?

A. 224

B. 280

C. 140

D. 56

Answer: C

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40. Same amount of electricity is passed through aqueous solutions of $AgNO_3$ and $CuSO_4$. The number of Ag and Cu atoms deposited are x and y respectively. The correct relationship between x and y is

A. $x < y$

B. $x = 2y$

C. $x = y$

D. $y = 2x$

Answer: B

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41. Which of the following equations does represent the velocity (v) of the ejected electrons when a metal is made to strike with light

of frequency ν and threshold frequency of the metal is ν_0 ?

(m_e = mass of electron and h is Plank's constant)

A.
$$v = \sqrt{\frac{h(\nu - \nu_0)}{m_e}}$$

B.
$$v = \sqrt{\frac{2h(\nu - \nu_0)}{m_e}}$$

C.
$$v = \sqrt{\frac{h(\nu - \nu_0)}{2m_e}}$$

D.
$$v = \sqrt{h(\nu - \nu_0)m_e}$$

Answer: B



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42. an element with mass number 181 contains 32% more neutrons as compared to protons. What is the symbol of that element ?

A. Pt

B. Pd

C. Au

D. Hg

Answer: A

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43. The electron gain enthalpy $\Delta_e H$ is -349 kJ mol^{-1} . If the ground state energy of $\text{Cl}(\text{g})$ is $x \text{ kJ mol}^{-1}$. The ground state energy (in kJ mol^{-1}) of $\text{Cl}^{-}(\text{g})$ is

A. $x + 349$

B. x

C. $x - 349$

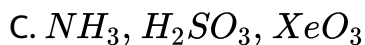
D. $\frac{x - 349}{17}$

Answer: C



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44. Identify the correct set of molecules with different geometries and central atoms with different hybridisations.



Answer: D



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45. Observe the following molecules :

PCl_5 , BrF_5 , ClF_5 , PF_5ClF_3 , XeF_4 , XeF_2 , IF_5 The number of

molecules having square pyramidal geometry from the above is

A. 4

B. 5

C. 3

D. 6

Answer: C



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46. If the kinetic energy and RMS speed of a gas at a certain temperature are 4.0 kJ mol^{-1} and $5.0 \times 10^4 \text{ cm s}^{-1}$ respectively. The molecular weight of the gas is

A. 16

B. 32

C. 64

D. 44

Answer: B



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47. In how many of the following compounds of sulphur, the oxidation state of sulphur atom is + 6 ?



A. 3

B. 5

C. 4

D. 6

Answer: C



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48. What is the nature of reaction at 298 K, if the entropy change and enthalpy change for a chemical reaction are 7.4 cal K^{-1} and $-2.5 \times 10^3 \text{ cal}$ respectively?

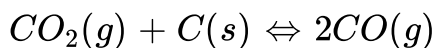
- A. Reversible
- B. Spontaneous
- C. Non-spontaneous
- D. Irreversible

Answer: B



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49. The value of K_C for the equilibrium reaction



at T (K) is 0.036. If the equilibrium concentration of $CO_2(g)$ is 0.

004 M, the concentration of CO (g) in mol L⁻¹ is

A. 3.6×10^{-2}

B. 2.0×10^{-2}

C. 1.2×10^{-2}

D. 1.2×10^{-3}

Answer: C



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50. 50 mL of 0.02 M NaOH solution is mixed 50 mL of 0.6 M

acetic acid solution, the pH of resulting solution is

(pK_a of acetic acid is 4.76, $\log 5 = 0.70$)

A. 5.06

B. 4.06

C. 5.46

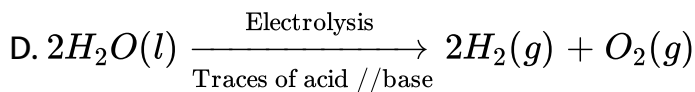
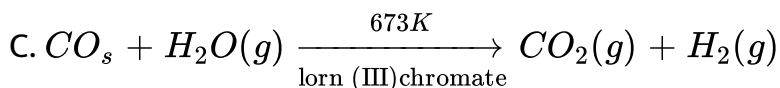
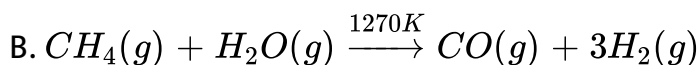
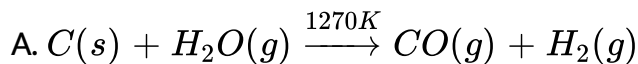
D. 4.46

Answer: D



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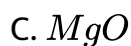
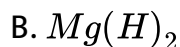
51. Which of the following is water-gas shift reaction ?



Answer: C

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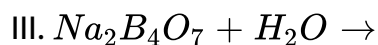
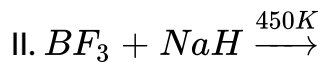
52. Magnesium is burnt in air to form A and B . When B is hydrolysed , C and D are formed . D is the reactant in the manufacture of nitric acid by Ostwald's process . What is C ?



Answer: B

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53. Which of the following reactions can be used to prepare diborane ?



A. I, II, III

B. II, III only

C. III, IV only

D. I, II, IV

Answer: D



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54. Identify the correct statements .

I. Germanium exists only in traces

II. The order of electronegativity of Si, Ge, Sn, is $Sn > Ge > Si$

A. I, II only

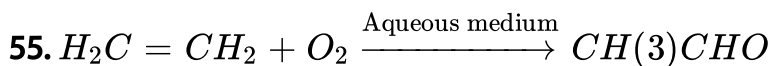
B. II, III only

C. I, III only

D. I, II, III

Answer: C

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What is the catalyst used in the above given reaction ?

A. Pd(II)

B. Pt

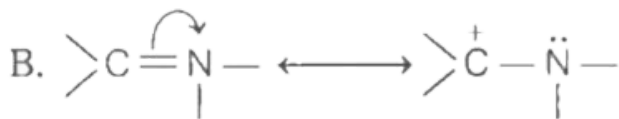
C. ZnO

D. Rh

Answer: A

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56. In the following resonance structures the curved arrow indicates that electrons are shifted from



A. atom of adjacent bond in both (A) and (B)

B. π - bond to adjacent atom in both (A) and (B)

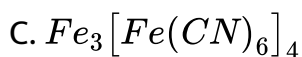
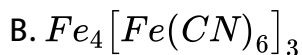
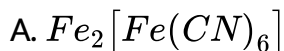
C. π - bond to adjacent atom in (A) and atom to adjacent bond
in (B)

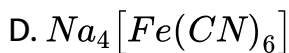
D. atom to adjacent bond in (A) and pi - bond to adjacent atom
in (B)

Answer: D

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57. In the detection of nitrogen of an organic compound by Lassaigne's test, Prussian blue colour is obtained . This is due to the formation of which of the following complexes ?

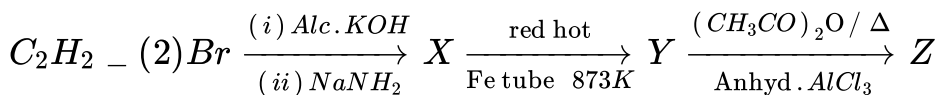




Answer: B

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58. Identify Z in the following sequence of reactions



A. Acetophenone

B. Anisole

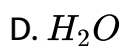
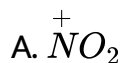
C. Toluene

D. Chlorobenzene

Answer: A

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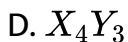
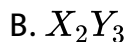
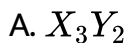
59. Which one of the following is not present in the nitration mixture ?



Answer: C

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60. A compound is formed from elements X and Y. The atoms of Y (anions) form ccp lattice. The atoms of X (cations) occupy half of the octahedral voids and half of tetrahedral voids. What is the formula of the compound ?



Answer: A

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61. The vapour pressures of chloroform ($CHCl_3$), dichloromethane (CH_2Cl_2) at 298 K are 200 mm Hg and 415 mm Hg respectively. An ideal solution is prepared by mixing 59.75 g of $CHCl_3$ and 21.25 g of CH_2Cl_2 , the mole fractions of chloroform and dichloromethane in vapour phase respectively are

A. 0.509, 0.491

B. 0.491, 0.509

C. 0.201, 0.799

D. 0.799, 0.201

Answer: B



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62. The elevation in boiling point of an aqueous solution of NaCl is $0.01\text{ }^{\circ}\text{C}$. If its van't Hoff factor is 1.92, the molality of NaCl solution is

(K_b for water = $0.52\text{ k kg mol}^{-1}$)

A. 0.01m

B. 0.001m

C. 0.005m

D. 0.02m

Answer: A

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63. $CuSO_4$ solution is electrolysed for 15 minutes to deposit 0.4725 g of copper at the cathode. The current in amperes required is

(Faraday = 96500 C mol^{-1} , atomic weight of copper = 63)

A. 0.804

B. 1.608

C. 1.206

D. 0.402

Answer: B

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64. The rate constants for a reaction at 400 K and 500 K are $2.60 \times 10^{-5} \text{ s}^{-1}$ and $2.60 \times 10^{-3} \text{ s}^{-1}$ respectively. The activation energy of the reaction in kJ mol^{-1} is

A. 38.3

B. 57.4

C. 114.9

D. 76.6

Answer: D

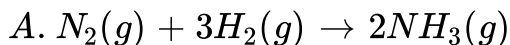


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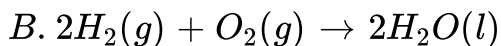
65. Match the following :

List-I (Reaction)

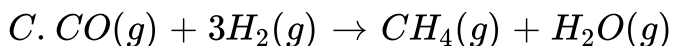
List-II(Catalyst)



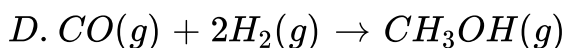
I. Ni



II. Pt



III. $ZnO - Cr_2O_3$



IV. Fe

A.

A	B	C	D
III	II	I	IV

B.

A	B	C	D
IV	III	II	I

C.

A	B	C	D
IV	II	I	III

D.

A	B	C	D
IV	I	III	II

Answer: C



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66. The pair of metals refined by "vapour phase refining" is

A. Ni,Cu

B. Sn,Ni

C. Zr,Ni

D. Cu,Zr

Answer: C



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67. White phosphorus, when heated with conc. NaOH solution in an inert atmosphere of CO_2 forms phosphine and a sodium salt of oxoacid of phosphorus 'X'. The oxidation state of phosphorus in 'X' is

A. +3

B. +4

C. +1

D. +5

Answer: C

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68. The number of P-OH bonds present in pyrophosphoric acid and hypophosphoric acid is respectively.

A. 4,3

B. 2,4

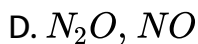
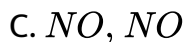
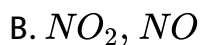
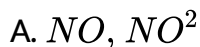
C. 3,4

D. 4,4

Answer: D

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69. Sodium nitrite is reacted with H_2SO_4 to form $NaHSO_4$, HNO_3 , water and X. Gold is dissolved in aqua-regia to form water, $AuCl_4^-$ and Y, X and Y are respectively

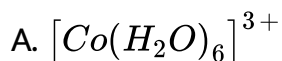


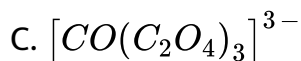
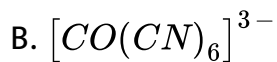
Answer: C



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70. Which of the following complex ions is most stable ?



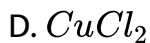
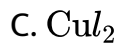
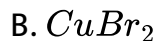
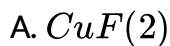


Answer: C



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71. The copper (II) halide which does not exist is



Answer: C



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72. Match the following :

List - I

- A. Addition polymer
- B. Condensation polymer
- C. Acrilan
- D. Rubber

List - II

- I. Bakelite
- II. 2-Methyl-1,3-butadiene
- III. 2,3-dimethyl-1,3-butadiene
- IV. Vinyl cyanide
- V. Polythene

- A.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
<i>V</i>	<i>I</i>	<i>IV</i>	<i>II</i>
- B.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
<i>V</i>	<i>I</i>	<i>II</i>	<i>III</i>
- C.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
<i>I</i>	<i>V</i>	<i>IV</i>	<i>II</i>
- D.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
<i>I</i>	<i>V</i>	<i>II</i>	<i>III</i>

Answer: A



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73. Identify the correct statements from the following .

I. When DNA is hydrolysed adenine and thymine are obtained in equal quantities.

II. When RNA is hydrolysed adenine and uracil are obtained in equal quantities .

III. Amylose is branched polymer with $\alpha 1 \rightarrow 4$ and $\alpha 1 \rightarrow 6$ glycosidic linkages.

IV. Addison disease is due to the abnormal functioning of adrenal cortex .

A. I,II,III only

B. I,II,III,IV

C. I,II,IV only

D. I,IV only

Answer: D



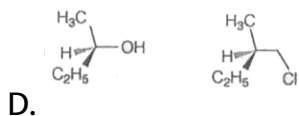
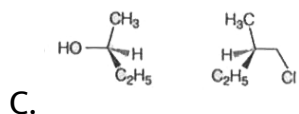
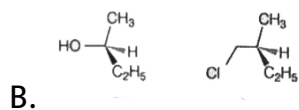
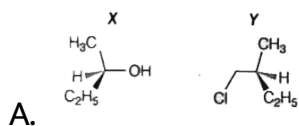
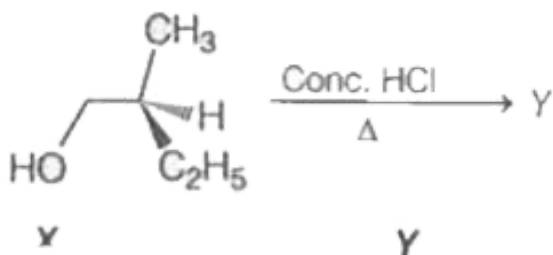
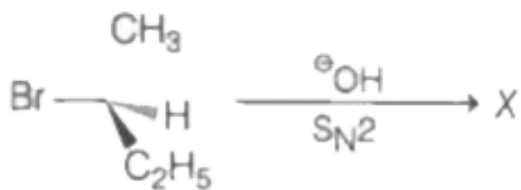
74. Identify the correct pair from the following :

- A. Cobeine-analgesix : Equanil - tranquilizer
- B. Chlramphenicol-tranquilizer : Nardil-antibiotic
- C. Histamine-tranquilizer : Salversan-antibiotic
- D. Norethindrone-antacid : Alitame-artificial sweetening agent

Answer: A

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75. What are X and Y in the following reactions ?

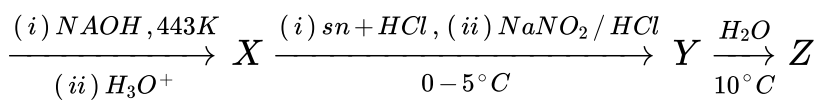


Answer: A

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76. What is Z in the following sequence of reactions ?

p - chloronitrobenzene



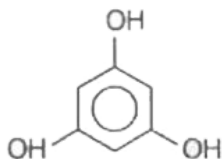
A.



B.



C.

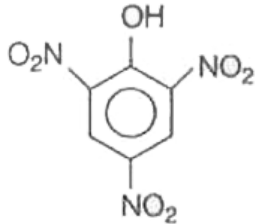


D.

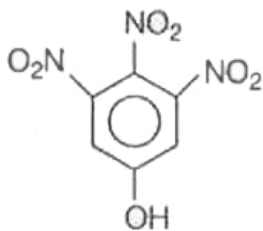
Answer: C

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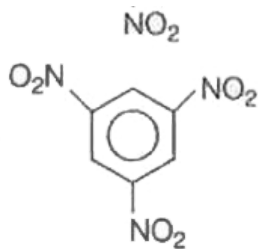
77. An organic compound $A(C_6H_7N)$ on reaction with $NaNO_2/HCl$ at 273-278 K followed by warming with water gives B. B reacts with conc. HNO_3 to give C. What is C?



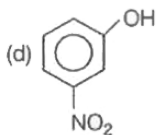
A.



B.



C.



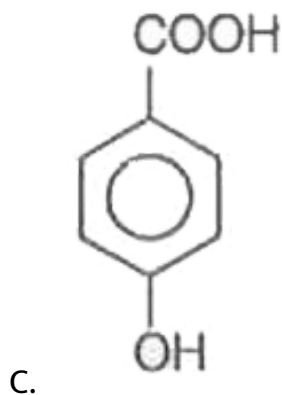
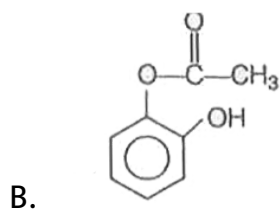
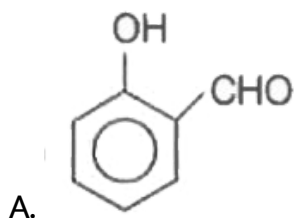
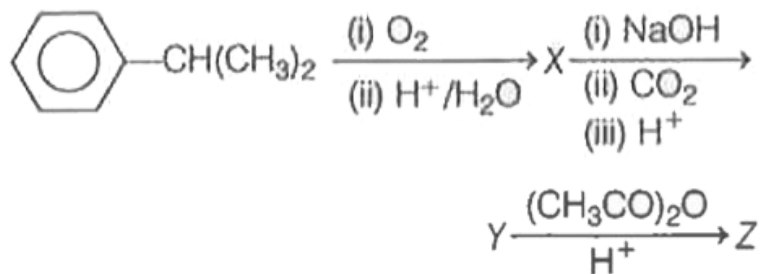
D.

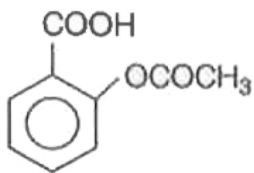
Answer: A



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78. What is Z in the above sequence of reactions



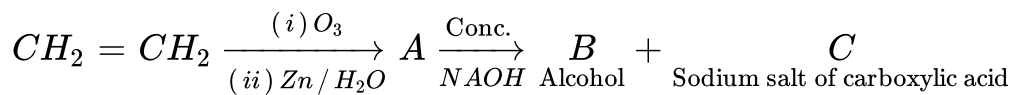


D.

Answer: D

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79.



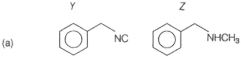

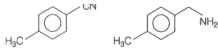
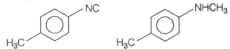
The reaction of A to give B and c is an example of

- A. HVZ reaction
- B. Stephen reaction
- C. Ethard reaction
- D. Cabbuzzaro reaction

Answer: D

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80. An organic compound $X(C_7H_7Cl)$ when reacted with KCN/C_2H_5OH gave major product Y. Z is formed when Y is reduced with $LiAlH_4$. What are Y and Z?

- A. 
- B. 
- C. 
- D. 

Answer: B

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81. The distance energy of an electron of mass 5.0×10^{-10} kg is 2.0×10^{-25} J. The wavelength of the electron in nm is approximately

A. 1204.3

B. 1203.03

C. 1104.3

D. 994.3

Answer: C

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82. The suitable photon is employed to locate an electron (mass = 9.11×10^{-31} kg) in an atom which distance of 10.98 nm. The uncertainty involved in the measurement of its velocity in $m s^{-1}$ is

A. $\frac{1.565 \times 10^6}{\pi}$

B. $\frac{1.6565 \times 10^4}{\pi}$

C. $\frac{1.6565 \times 10^{-8}}{\pi}$

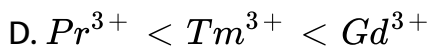
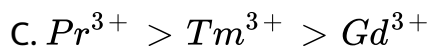
D. $\frac{1.6565 \times 10^8}{\pi}$

Answer: B



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83. Which one of the following is the correct order of ionic radii ?



Answer: A

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84. Observe the following molecules / ions

$H_2, N_2, O_2, N_2^+, O_2^+, O_2^-, F_2$. Identify correct statement .

- A. H_2, N_2, O_2F_2 show diamagnetic property
- B. O_2, O_2, O_2^-, N_2^+ show paramagnetic property
- C. N_2, F_2, O_2^+, O_2^- show diamagnetic property
- D. H_2N_2, O_2^+, O_2^- show paramagnetic property

Answer: B

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85. Match the following :

List I		List II	
A.	BrF_3	I.	AB_4E , see-saw
B.	SF_4	II.	AB_4E_2 , square planar
C.	XeF_4	III.	AB_5E , square pyramidal
D.	ClF_3	IV.	AB_3E_2 , T - shape
		V.	AB_5E_2 , square pyramidal

The correct answer is

	A	B	C	D		A	B	C	D
(a)	V	I	II	IV	(b)	III	I	II	V
(c)	III	I	II	IV	(d)	V	I	III	II

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86. If the most probable speed of CO_2 at 27°C is 400ms^{-1} . The root mean square velocity of CO_2 at the same temperature in ms^{-1} is approximately

A. 600

B. 490

C. 267

D. 245

Answer: B



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87. 20 mL of Fe^{2+} solution of certain concentration has completely reacted with 20 mL of 0.01 M $K_2Cr_2O_7$ in acidic medium. If 20 mL of same Fe^{2+} solution has reacted completely with 20 mL of $KMnO_4$ solution in acid medium the molarity of $KMnO_4$ solution is

A. 0.01M

B. 0.12M

C. $0.10M$

D. $0.012M$

Answer: D

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88. K_p for the conversion of oxygen to ozone at 400 K is 1.0×10^{-30} its standard Gibbs energy change in kJ mol^{-1} is approximately

A. 229.8

B. 114.9

C. -229.8

D. -114.9

Answer: A



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89. At 100 K the partial pressure of CO_2 (g) and CO (g) for the reaction

$CO_2(g) + C(s) \rightleftharpoons 2CO(g)$ in a closed vessel at equilibrium are 0.15 and 0.60 bar respectively. The K_c for this reaction at the same temperature is approximately

A. 2.0×10^{-4}

B. $2.89 \times 10^{10^{-2}}$

C. 2.89×10^{-3}

D. 5.78×10^{-3}

Answer: B



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90. At T (K) , the ionisation constant of ammonia in solution is 2.5×10^{-5} the pH of 0.01 M ammonia solution and the ionisation constant of its conjugate acid respectively at that temperature are (log 2= 0.30)

A. 10.7, 4.0×10^{-8}

B. 10.7, 4.0×10^{-10}

C. 3.3, 4.0×10^{-8}

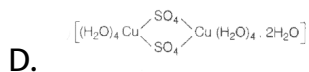
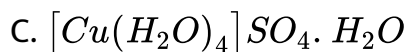
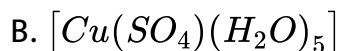
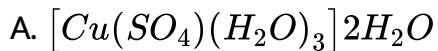
D. 3.3, 4.0×10^{-10}

Answer: B



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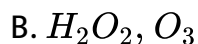
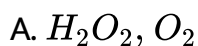
91. Which of the following correctly represents copper sulphate pentahydrate ?



Answer: C

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92. A compound (MO_2) of group I element (M) hydrolysed to form M^+ , OH^- , X and Y. When X reacts with I_2 in basic medium the products formed are I^- water and Y. Then X and Y respectively



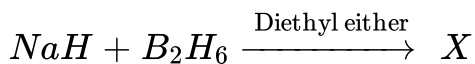
C. H_2, O_2

D. O_2, H_2

Answer: A

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93. What is X in the following reaction



A. $Na[BH_4]$

B. $NaBO_2$

C. H_3BO_3

D. $(C_2H_5OC_2H_4)^+ (BH_4)^-$

Answer: A

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94. Which one of the following is used as refrigerant for ice - cream and frozen foods ?

A. *DryCo*

B. Liquid CH_4

C. Dry ice

D. Liquid H_2

Answer: C



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95. Acid rain is caused by the presence of X and Y in air . X, Y respectively

A. SO_2 , NO_2

B. CFC , O_3

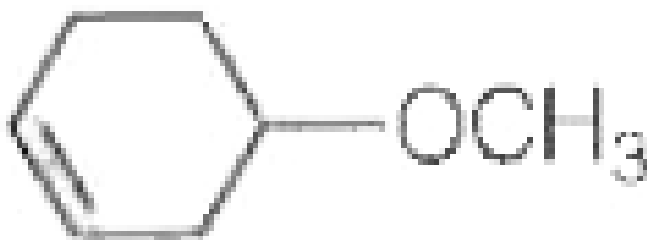
C. CO , CFC

D. SO_2 , O_3

Answer: A

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96. IUPAC name of



is

- A. 5-methoxycyclohexene
- B. methoxycyclohex-3-ene
- C. methoxycyclohex-4-ene
- D. 4-methoxycyclohexene

Answer: D

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97. Wurtz reaction of bromoethane gives n-butane . Sodium salt of X on heating with sodalime also results in n-butane . Compound X is

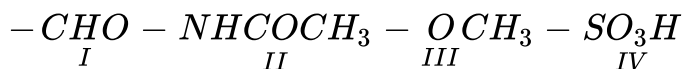
- A. CH_3CH_2COOH
- B. $CH_3(CH_3)_3COOH$
- C. $CH_3(CH_2)_4COOH$



Answer: B

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98. Identify ortho and para directing group from the following



A. *III, IV*

B. *II, III*

C. *III, IV*

D. *I, IV*

Answer: B

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99. If 0.5 mol . Of a metal forms hexagonal close packed structure the total number of voids and tetrahedral voids respectively in mol are

A. 1.5, 1.0

B. 1.0, 0.5

C. 1.0, 1.5

D. 0.5, 1.0

Answer: A

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100. At 300 K an ideal solution is formed by mixing 460 g of toluene with 390 k benzene. If the vapour pressure of pure toluene and respectively the mole fraction of toluene in vapour phase is

A. 0.196

B. 0.588

C. 0.294

D. 0.444

Answer: D



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101. If aqueous solution contains 9% and 1% (W / W) of two non-volatile non- electrolytes X (molecular weight 180) and Y (molecular weight 50) respectively the boiling point of solution in $^{\circ} C$ approximately is

$$(k_b = 0.52 \text{kgmol}^{-1})$$

A. 101.4

B. 100,4

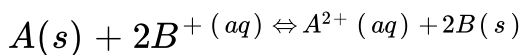
C. 102.4

D. 100.8

Answer: B

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102. If the E_{cell} of an equilibrium reaction



at 298 K is 0.59 V, the equilibrium constant K, is

A. 1.0×10^{10}

B. 1.0×10^2

C. 1.0×10^{-20}

D. 1.0×10^{20}

Answer: D



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103. Which one of the following statements is correct ?

- A. In collision theory $e^{-E_A/AT}$ corresponds to the fraction of molecules that have energy equal or greater than E_a
- B. The number of collision of reacting molecules per second per unit volume of the reaction mixture is activated complex
- C. Molecularity is the number of molecules involved in a complex reaction
- D. A catalyst catalyses the non- spontaneous reaction

Answer: A



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104. Which one of the following enzymes converts proteins into amino acid ?

A. Maltase

B. Pepsin

C. Trypsin

D. Zymase

Answer: C

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105. X_2 is used in the refining of Ti metal by van Arkel method Y_2 does not liberate O_2 from water and does not form H_2 and H_2O with water x_2 and y_2 are respectively

A. i_2 , Cl_2

B. Cl_2, I_2

C. I_2, I_2

D. Cl_2, Cl_2

Answer: C



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106. Which one of the following statement is not correct regarding phosphine ?

A. It is a weak base

B. It reacts with $CuSO_4$ solution to form $CuHPO_4$

C. It is formed by the reaction of Ca, P_2 with HCl

D. It is used in smoke screens

Answer: B



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107. Aqueous sulphite reacts with dilute sulphuric acid to form X (g). The liberated X (g) is passed into acidified $KMnO_4$ solution.

What is the oxidation state of Mn in the product formed?

A. +6

B. +4

C. +2

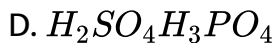
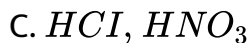
D. +3

Answer: C



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108. Phosphorus reacts with SO_2Cl_2 to form PCl_5 and X . At 723 K, HCl gas reacts with O_2 in the presence of $CUCl_2$ to form water and Y . Y reacts with X in water to form two acids A and B . What are A and B respectively ?



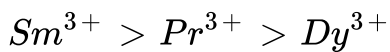
Answer: A



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109. Identify the correct statements from the following :

I Eu^{2+} acts as strong of Pr^{3+} , Dy^{3+} and Sm^{3+} follow the order



II E^{2+} acts strong reducing reagent.

III Pu exhibits + 7 oxidation state.

A. I, II only

B. I, III only

C. I, II, III

D. II, III only

Answer: D



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110. If the crystal field splitting energy of a tetrahedral complex (Δ_t) of the type $[ML_4]^{n+}$ is x e V what is the crystal field splitting energy with respect to an octahedral complex $[ML_6]^{n+}$?

A. $\frac{9x}{4} eV$

B. $\frac{9x}{8} eV$

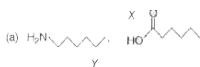
C. $\frac{4x}{9} eV$

D. $\frac{4x}{5} eV$

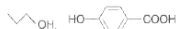
Answer: A

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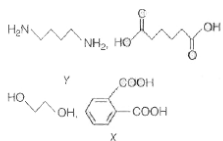
111. The monomers of nylon - 6,6 (X) and terylene (Y) are



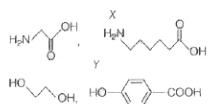
A.

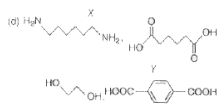


B.



C.



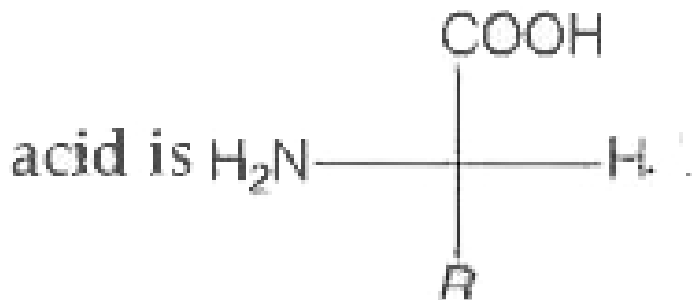


D.

Answer: D

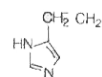
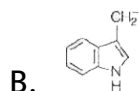
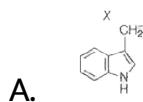
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112. The general structural formula of α - amino

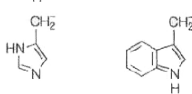


tryptophan (X

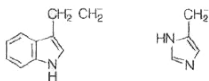
) and histidine (Y) are respectively



C.



D.



Answer: A

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113. Which of the following statements are correct ?

I . Binding of inhibitor at allosteric site changes the shape of the active site.

II Shape of the receptor does not change after attachment of chemical messenger to it.

III A chemical messenger gives message to the celly by entering it.

IV . Erythromycin is an example of bacteriostatic antibiotic

A. I, II

B. II, III

C. I, IV

D. III, IV

Answer: C



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114. Assertion (A) S_N1 hydrolysis of optically active -2 bromooctane results in the formation of (\pm) - octan -2-ol .

Reason (R) The reaction proceeds through a planar carbocation which can be attacked by the nucleophile from either side.

The correct answer is

A. (A) and (R) are correct (R) is the correct explanation of (A)

B. (A) and (R) are correct (R) is not the correct explanation of

(A)

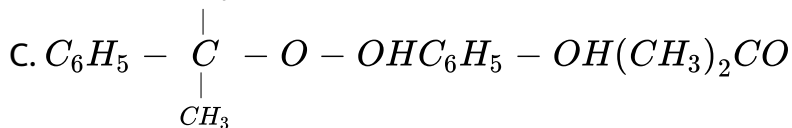
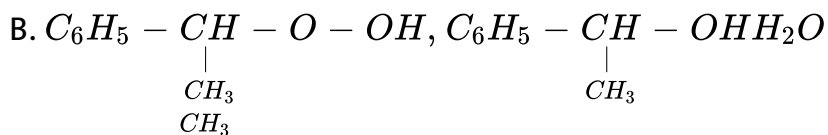
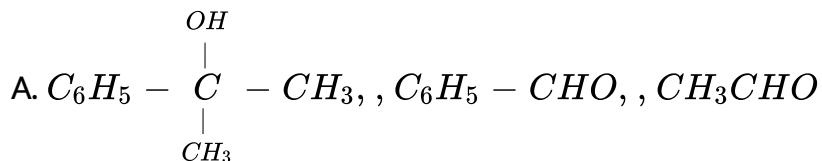
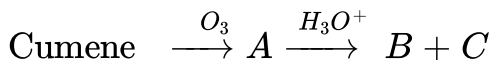
C. (A) is correct but (R) is not correct

D. (A) is not correct but (R) is correct

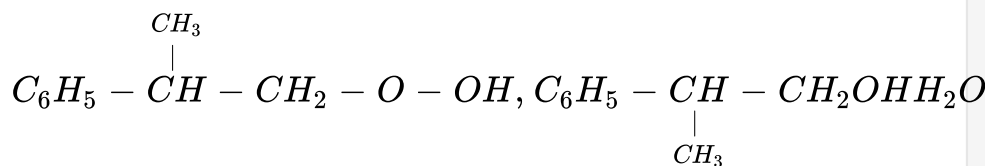
Answer: A

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115. What are A, B and C in the following



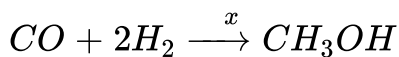
D.



Answer: C

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116. What is X in the following reaction ?



A. $623k / 300atm$

B. $KMnO_4 / H^{\ominus}$

C. Zn / Δ

D. $ZnO - Cr_2O_3, 200 - 300atm, 573 - 673k$

Answer: D

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117. Alkenes (X) and carbonyl compounds (Y) participate in which of the following addition reaction

- | (X) | (Y) |
|-------------------|---------------|
| (a) Electrophilic | Electrophilic |
| (b) Nucleophilic | Electrophilic |
| (c) Electrophilic | Nucleophilic |
| (d) Nucleophilic | Nucleophilic |

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118. Which one of the following used for purification of aldehydes ?

A. NaOCl

B. NaHSO_4

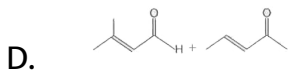
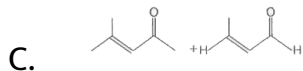
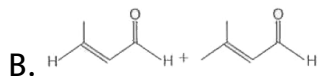
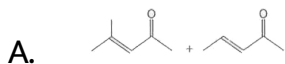
C. $\text{C}_5\text{H}_5\text{SO}_2\text{Cl}$

D. Na_2SO_4

Answer: B

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119. Mixed aldol products obtained from aldol condensation of ethanal and propanone are



Answer: D

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120. What are X and Y in the following reaction ?



- (X)
- (a) $\text{CH}_3\text{CH}_2\text{OH}$
 - (b) CH_3MgX
 - (c) CH_3CHO
 - (d) $\text{CH}_2 = \text{CH}_2$

- (Y)
- $\text{H}_3\text{PO}_2, \text{H}_2\text{O}$
 - H_3PO_3
 - H_2O
 - $\text{NaNO}_2 / \text{HCl}$

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