



CHEMISTRY

BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

PRACTICE SET 08

Paper 1 Objective Type

1. The freezing point of a 0.05 molal solution of a non-electrolyte in water

is $[K_f = 1.86K/m]$

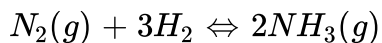
- A. $-1.86^\circ C$
- B. $-0.93^\circ C$
- C. $-0.093^\circ C$
- D. $0.93^\circ C$

Answer: C



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2. In the synthesis of ammonia



If the quantity of N_2 reacted is 700mL , the quantity of H_2 and NH_3 would be

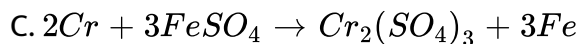
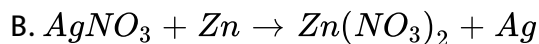
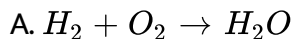
- A. $300\text{mL}H_2$ and $200\text{mL}NH_3$
- B. $300\text{mL}H_2$ and $300\text{mL}NH_3$
- C. $300\text{mL}H_2$ and $100\text{mL}NH_3$
- D. $100\text{mL}H_2$ and $200\text{mL}NH_3$

Answer: A

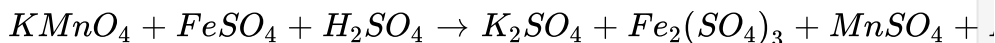


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3. Which of the following reactions cannot be a base for electrochemical cell?



D.



Answer: D

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4. Rate of a reaction increases with the rise of temperature. The reason is

A. number of collision increases

B. number of activated molecules increases

C. energy of activation decreases

D. None of the above

Answer: B

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5. Which statement is not correct about fullerene C_{60} ?

A. It contains 20-six membered rings and 12-five membered rings

B. All carbon atoms undergo sp^2 - hybridisation

C. A six membered ring is fused with six membered ring only

D. A five membered ring is fused with six membered ring only

Answer: C

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6. The percentage of s-character in the hybridised orbitals of B in BF_3 is

A. 25

B. 30

C. 75

D. 33.3

Answer: D

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7. Bleaching powder is obtained by treating chlorine with

A. CaO

B. $CaCO_3$

C. $CaSO_4$

D. $Ca(OH)_2$

Answer: D

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8. The oxide of chromium which will show acidic character is



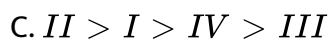
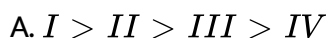
Answer: C



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9. Arrange the following free radicals in order of decreasing stability.

Methyl (I), Vinyl(II), Allyl(III), Benzyl(IV)

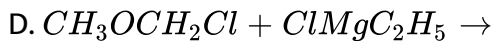
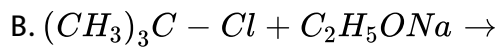
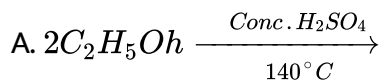


D. $IV > III > I > II$

Answer: D

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10. Ether is not formed in which of the reactions?



Answer: B

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11. At relatively high pressure, van der Waal's equation reduces to

A. $pV = RT$

B. $pV = Rt - \frac{a}{V}$

C. $pV = RT - \frac{a}{V^2}$

D. $pV = RT + pb$

Answer: D

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12. Based on the first law of thermodynamics, which one of the following is correct?

A. For an isochoric process $\Delta E = -Q$

B. For an adiabatic process $\Delta E = -W$

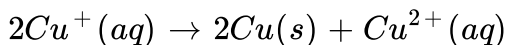
C. For an isothermal process $Q = +W$

D. For a cyclic process $Q = -W$

Answer: D

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13. The standard emf for the cell reaction,



is $0.36V$ at $298K$. The equilibrium constant of the reaction is

A. 5×10^6

B. 1.4×10^{12}

C. 7.4×10^{12}

D. 1.2×10^6

Answer: D

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14. What is the activation energy for a reaction if its rate constant doubles when the temperature is raised from $20^\circ C$ to $35^\circ C$? ($R = 8.314$ Jmol/K)

A. 34.7 kJ/mol

B. 15.1 kJ/mol

C. 342 kJ/mol

D. 269 kJ/mol

Answer: A



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15. The most unsymmetrical system is

A. cubic

B. hexagonal

C. triclinic

D. orthorhobic

Answer: C



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16. Calcium silicate (slag) formed in the slag formation zone is extraction of iron from haematite ore

- I. does not dissolve in molten iron
- II. being lighter floats on the molten iron
- III. Is used in cement industry
- IV. prevents the re-oxidation of molten iron

A. I,II

B. I,III

C. I,IV

D. I,II,III,IV

Answer: D



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17. In NO_3^- ion, the number of bond pairs and lone pairs of electrons on nitrogen atom respectively are

A. 2,2

B. 3,1

C. 1,3

D. 4,0

Answer: D



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18. Element with maximum atomic number is

A. lanthanum

B. actinium

C. scandium

D. hafnium

Answer: B

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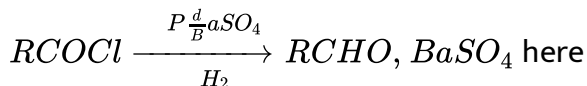
19. Benzene does not undergo addition reaction easily because

- A. it has a cyclic structure
- B. double bonds in it are very strong
- C. resonance stabilised system is to be preserved
- D. it has six hydrogen atoms

Answer: C

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20. In the Rosenmund's reaction



- A. promotes catalytic activity of Pd
- B. removes the HCl formed in the reaction
- C. deactivates palladium
- D. activates palladium

Answer: C

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21. In which of the following reactions, there is no change in valency?

- A. $SO_2 + 2H_2S \rightarrow 2H_2O + 3S$
- B. $2Na + O_2 \rightarrow Na_2O_2$
- C. $Na_2O_2 + H_2SO_4 \rightarrow Na_2SO_4 + H_2O_2$
- D. $4KClO_3 \rightarrow 3KClO_4 + KCl$

Answer: C

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22. Which of the following is incorrect?

- A. H_2O_2 is a weak acid
- B. H_2O_2 is a weak alkali
- C. H_2O_2 acts as an oxidising agent
- D. H_2O_2 is a reducing agent

Answer: A



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23. Given $l/a = 0.5cm^{-1}$, $R = 50ohm$, $N = 1.0$. The equivalent conductance of the electrolytic cell is .

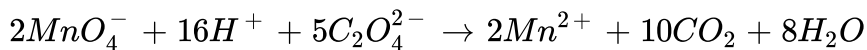
- A. $10cm^2g/\Omega$ equiv
- B. $20cm^2g/\Omega$ equiv
- C. $300cm^2g/\Omega$ equiv

D. $100\text{cm}^2\text{g}/\Omega$ equiv

Answer: A

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24. Oxalic acid is oxidised by a acidified KMnO_4 as follows:



The rate of this reaction increases with time because

- A. CO_2 formed escapes
- B. of presence of sulphuric acid $[\text{H}^+]$
- C. of formation of Mn^{2+} which acts as an auto catalyst
- D. KMnO_4 is a string oxidising agent

Answer: C

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25. The process of extracting metals by electrolysis of their oxides, hydroxides or chlorides in the fused state is called

- A. electrometallurgy
- B. electro refining
- C. zone refining
- D. hydrometallurgy

Answer: A



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26. In group-16 the element whose hydride is neutral in nature is

- A. *S*
- B. *O*
- C. *Se*
- D. *Te*

Answer: B

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27. Which is incorrect statement for XeF_2 ?

- A. It has linear structure
- B. It is hydrolysed rapidly in aqueous solution of a base
- C. It oxidises Cl^{-1} and I^{-1} respectively
- D. It cannot acts as F^{-} donor

Answer: D

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28. Transuranic elements begin with

- A. Ce

B. Cm

C. Pu

D. Np

Answer: D



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29. Fourth member of homologous series of chloroalkane can never be

A. 1° alkyl halide

B. 2° alkyl halide

C. 3° Alkyl halide

D. neo-alkyl halide

Answer: D



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30. When ethanal reacts with PCl_5 , then product formed is

- A. vic-dichloride
- B. gem-dichloride
- C. 2,2-dichloroethanal
- D. sym-dichloroethane

Answer: B



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31. Ozone is prepared by passing silent electric discharge through oxygen. In this reaction,

- A. energy is given out
- B. energy is absorbed
- C. oxygen is loaded with energy
- D. oxygen is dissociated into atoms

Answer: B

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32. Which of the following metal ion solution forms a precipitate with $NaOH$ which is not soluble in an excess of the base?

A. Fe

B. Sn

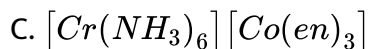
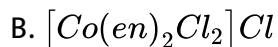
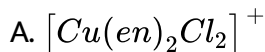
C. Pb

D. Zn

Answer: A

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33. Of the following complexes which one will show coordination isomerism?



Answer: C



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34. During dehydration of alcohols to alkenes by heating with conc.

H_2SO_4 , initial step is

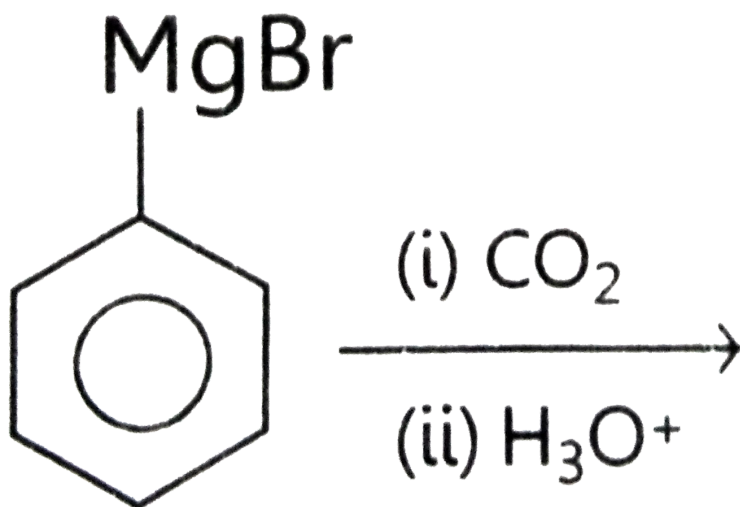
A. formation of an ester

B. protonation of alcohol group

C. formation of carbocation

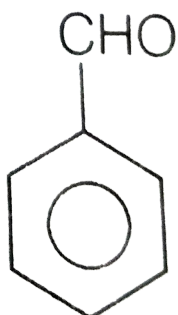
D. elimination of water

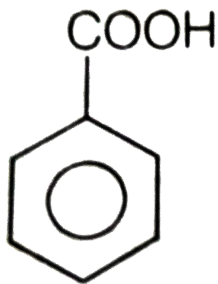
Answer: B



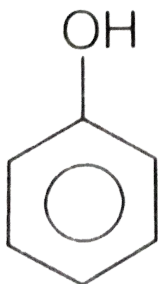
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In the above reaction, product *P* is

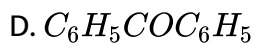




B.



C.



Answer: B

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36. n-butylamine (I), diethylamine (II) and N,N-dimethylethylamine (III) have the same molar mass. The increasing order of their boiling point is

A. $III < II < I$

B. $I < II < III$

C. $II < III < I$

D. $III < I < II$

Answer: A

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37. Benzene diazonium chloride on reaction with phenol in weakly basic medium gives

A. diphenyl ether

B. p-hydroxy azobenzene

C. chlorobenzene

D. benzene

Answer: B

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38. Which of the following is an examples of fibrous protein?

A. Insulin

B. Haemoglobin

C. Fibroin

D. Glycogen

Answer: C



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39. Natural rubber is not used in making footwear for polar regions because

A. natura rubber becomes soft at temperature lower than $10^{\circ} C$

B. nature rubber becomes brittle at temperature lower than $10^{\circ} C$

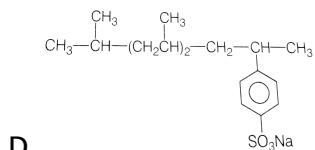
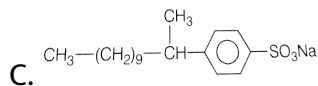
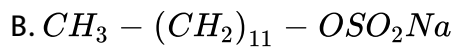
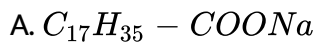
C. natural rubber melts at temperature lower than $10^{\circ} C$

D. natural rubber becomes stronger at temperature lower than $10^{\circ}C$

Answer: B

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40. Which of the following soaps/detergents is least biodegradable?



Answer: D

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41. Which has the highest heat of vaporisation?

- A. HF
- B. HBr
- C. HCl
- D. HI

Answer: A



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42. Aqueous solution of $CuSO_4$ is acidic because

- A. it is bi-bivalentelectrolyte
- B. Cu^{2+} reacts with water
- C. SO_4^{2-} reacts with water
- D. ionic product of water is small

Answer: B

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43. For the same metal ion stability constant is more for the ligand

A. I^-

B. Cl^-

C. F^-

D. None of these

Answer: C

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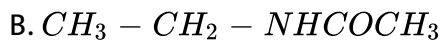
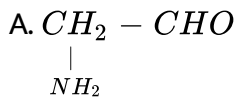
44. Among the following select the alkane that is expected to have lowest boiling point

- A. Hexane
- B. 2-methylpentane
- C. 3-methylpentane
- D. 2,2-dimethylbutane

Answer: D

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45. $CH_3COOH \xrightarrow{NH_3} \xrightarrow{\Delta} ?$ The product of the reaction is isomeric with

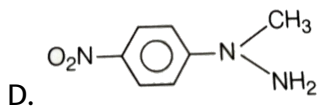
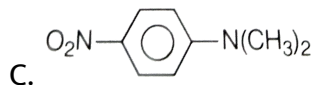
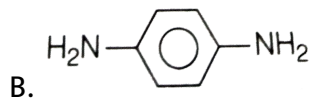
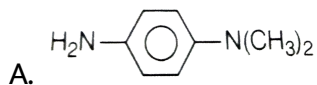
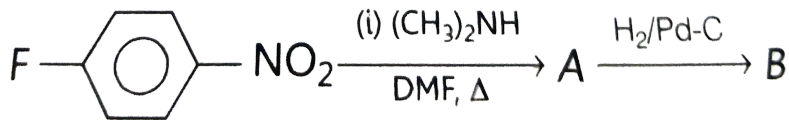


D. Only a and c

Answer: D

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46. Complete the following reaction



Answer: A



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47. A lipid having tetracyclic structure is

A. triglyceride

B. wax

C. phospholipid

D. sterol

Answer: D

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48. Amongst cellulose poly (vinyl chloride), nylon and natural rubber, the polymer in which the intermolecular force of attraction is weakest in

A. nylon

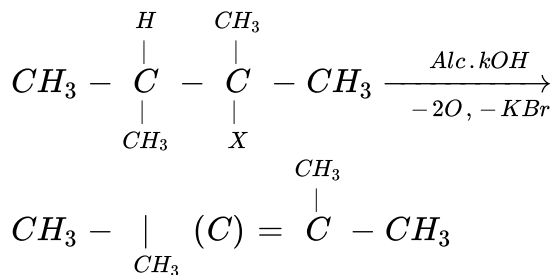
B. poly(vinyl chloride)

C. cellulose

D. natural rubber

Answer: D

49. The following reaction



is an example of

- A. α -elimination
- B. β -elimination
- C. Hofmann elimination
- D. None of the above

Answer: B

50. Which of the following statement is incorrect for physical adsorption?

- A. It is instantaneous
- B. Monomolecular layer forms on the adsorbent
- C. Less activation energy is required for it
- D. Generally it results at low temperature and adsorption decreases with increases in temperature.

Answer: B



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Paper 2 Objective Type

1. The solution set of linear constraints $x - 2y \geq 0$, $2x - y \leq -2$ and $x, y \geq 0$ is

A. $\left(-\frac{4}{3}, -\frac{2}{3} \right)$

B. $(1, 1)$

C. $\left(0, \frac{2}{3}\right)$

D. $(0, 2)$

Answer: A



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2. Rate of a reaction increases with the rise of temperature. The reason is

A. $c\sqrt{ab}$

B. $2c\sqrt{ab}$

C. $-c\sqrt{ab}$

D. $-2c\sqrt{ab}$

Answer: B



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