NEET-2020 Model Paper-2

Chemistry

1) 32 grams of a hydrated magnesium sulphate $MgSO_4 \cdot x H_2O$ when dissolved in 84 grams of H_2O, the solution freezes at $-4.836^0 C$. If $K_f = 1.86 K\, kg\, mol^{-1}$ and $MgSO_4$ is a strong electrolyte. The number of water attached to $MgSO_4$ is
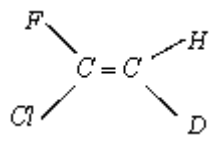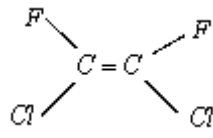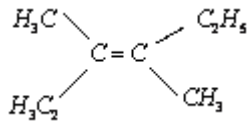1. 6
2. 8
3. 7
4. 3

2) The correct statement(s) regarding H_2O, H_2S, H_2Se and H_2Te is/are
1. The volatility first increases from H_2O to H_2S and then decreases from H_2S to H_2Te
2. The covalent character of these hydrides decreases from H_2O to H_2Te
3. Thermal stability order is $H_2O < H_2S < H_2Se < H_2Te$
4. The reducing character decreases from H_2O to H_2Te

3) Rate of diffusion is highest for
1. CO_2
2. Cl_2
3. SO_2
4. C_3H_6

4) Which of the following will not show geometrical isomerism

1.

2.

3.

4.
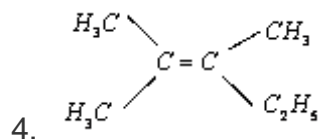
5) Fluorine and chlorine are good oxidizing agents, which of the following property is not required to compare their oxidizing power
1. Ionization potential
2. Hydration enthalpy
3. Electron gain enthalpy
4. Bond dissociation enthalpy

6) Base catalysed Aldol condensation occurs with
I: Propionaldehyde   II: Benzaldehyde
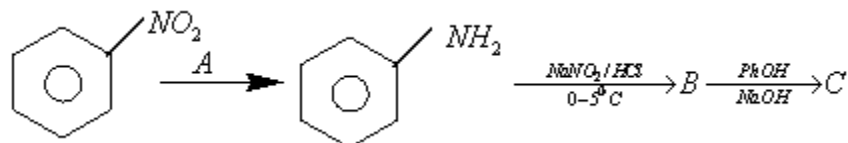III: 2-methyl propional dehyde   IV: 2,2-Dimethyl propional dehyde
Select the correct option
1. Only I
2. Both I and II
3. Both I and III
4. I,III and IV

7) Wrong match is
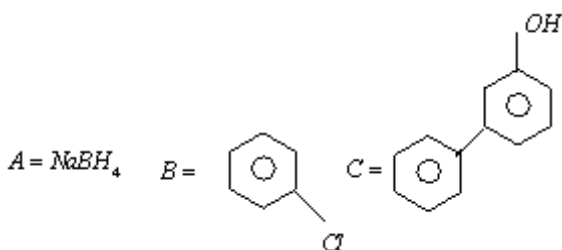1. $CO.....Pi$ acceptor ligand
2. $CO_2(CO)_8$ ....contains bridged carbonyl group
3. $Li[AlH_4]...$ cationic complex   4) $Ni(CO)_4 ....EAN$ is 36

8) Consider the following reaction sequence

Choose the correct alternate

1.

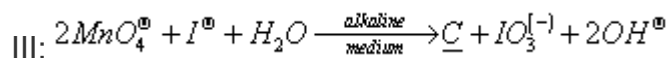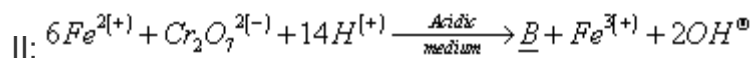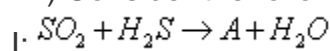2.

3.

$A = NaBH_4$ $B =$ $C =$

4.

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9) Incorrect statement is
1. All carbon-carbon bond lengths in fullerene are equal
2. Graphtie is a lubricant
3. Fullerene is aromatic
4. Diamond has 3D network structure

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10) For a reaction $R \rightarrow P$, that produces 99.99% product at equilibrium. The Gibbs free energy change at $750K$ is
1. $-57.4\,Kj/mol$
2. $57.4\,kJ/mol$
3. $60.93\,kJ/mol$
4. $-60.92\,kJ/mol$

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11) Consider the following reactions

I: $SO_2 + H_2S \rightarrow A + H_2O$

II: $6Fe^{2(+)} + Cr_2O_7^{2(-)} + 14H^{(+)} \xrightarrow[medium]{Acidic} \underline{B} + Fe^{3(+)} + 2OH^{\ominus}$

III: $2MnO_4^{\ominus} + I^{\ominus} + H_2O \xrightarrow[medium]{alkaline} \underline{C} + IO_3^{(-)} + 2OH^{\ominus}$

The oxidation state of S in A, Cr in B and Mn in C are respectively
1. 0, +2 and +6
2. 0,+3 and +4
3. 0, +3 and +2
4. 0, +2 and +4

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12) Which of the options is not correct regarding XeF_6
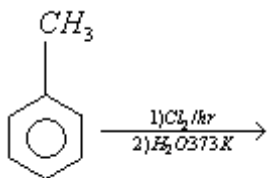1. It acts as a Lewis acid when its reacts with RbF

2. It undergoes complete hydrolysis to give XeO_3

3. It fluorinates SiO_2 to give $XeOF_4$

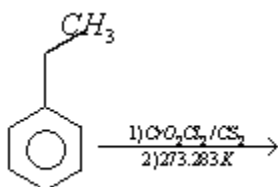4. Hybridization of XeF_6 Is sp^3d^2 with octahedral geometry

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13) Most acidic is
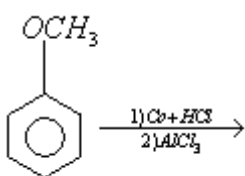1. Methanol
2. Ethanol
3. n-propyl alcohol
4. n-butyl alcohol

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14) Which of the following reactions does not yield aldehyde

1.

CH_3 (toluene)

$$\xrightarrow[\text{2)}H_2O\,373K]{\text{1)}Cl_2/h\nu}$$

2.

CH_3 (with CH_2CH_3 group)

$$\xrightarrow[\text{2)}273.283K]{\text{1)}CrO_2Cl_2/CS_2}$$

3.

OCH_3

$$\xrightarrow[\text{2)}AlCl_3]{\text{1)}Co+HCl}$$

4.

Br

$$\xrightarrow[\substack{\text{2)}CH_3-I \\ \text{3)}Hydrolysis}]{\text{1)}Mg/\,dry\,Ether}$$

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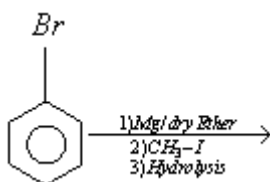
15) For a reaction, graph between logarithm of concentration of reactant (vs) time (t) given below. The order and slope for this reaction are respectively

1. Ist and $\dfrac{-k}{2.303}$

2. Ist and $\dfrac{-2.303}{k}$

3. Ist and $\dfrac{+k}{2.303}$

4. Ist and $\dfrac{+2.303}{k}$

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16) In the give reactions sequence $MSO_4 \xrightarrow{NH_4OH} X\downarrow \xrightarrow[Excess]{NH_4OH} Y \xrightarrow{H_2S} Z\downarrow$. M and Z are respectively

1. Zn, ZnS
2. Al, Al_2SO_3
3. Cu, ZnS
4. Fe, FeS

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17) Thermodynamic stability is least for

1. $BeCO_3$

2. $NaHCO_3$

3. $CaCO_3$

4. Na_2CO_3

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18) The stability of a dispersed phase in a Lyophobic colloidal is due to
1. The adsorption of charged substance on dispersed phase
2. The viscosity of the medium
3. The formation of an electrical layer between two phases
4. None of these

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19) The nitrogen containing compound produced in the reaction of HNO_3 with P_4O_{10}
1. is paramagnetic

2. can also be prepared by reaction of P_4 and HNO_3
3. Reaction with Na metal producing a brown gas

4. Contains One $N \equiv N$ bond

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20) If the freezing point of a 0.01 molal aqueous solution of a cobalt (III) chloride – ammonia complex (which behaves as a strong electrolyte) is $-0.0558^0 C$, the no.of chloride(s) in the coordination sphere of the complex is $\left(k_f \, of \, H_2O = 1.86 \, K \, kg \, mol^{-1}\right)$
1. 1
2. 2
3. 3
4. 4

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21) Electronine configuration of valence shell of four elements A,B,C and D are given below.

I: ns^2np^2 II: ns^2np^3 III: ns^2np^4 IV: ns^2np^5

The correct increasing order of IE_3 is
1. II<I<III<IV
2. I<III<II<IV
3. I<II<IV<III
4. II<III<IV<I

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22) Consider the following steps

Copper pyrate $\xrightarrow{\text{in air}}$ A+B+C

$A+O_2 \longrightarrow D+C$
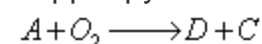
Which of the following statements is/are incorrect

1. A is Cu_2S and B is FeS

2. A is Cu_2S and B is FeO

3. C is SO_2
4. D is FeO

23) If the kinetic energy in joules of CH_4 (molar mass=16 g/mol) at T(K) is X. The kinetic energy in joules of O_2 (molar mass)=32g/mol at the same temperature.
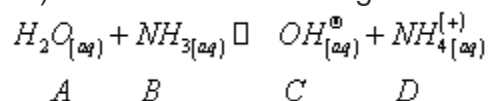1. X
2. 2X
3. X^2
4. $\dfrac{X}{2}$

24) Which of the following is incorrect match
1. Element with highest 2nd I.E-Cu
2. Element with highest 3rd I.E=Zn
3. M in $M(CO)_6$ is –Fe
4. Element with highest heat of atomization=Ni

25) The incorrect statement(s) for cubic close packed (ccp) three dimensional structure is/are
1. The no.of nearest neighbours of an atom in the topmost layer is 12
2. The packing efficiency of an atom is 74%
3. The no.of octahedral and Tetrahedral voids are 1 and 2 respectively
4. The unit cell edge length is $2\sqrt{2}$ times the radius of the atom.

26) Consider the following acid base equilibrium
$$H_2O_{(aq)} + NH_{3(aq)} \rightleftharpoons OH^{\ominus}_{(aq)} + NH^{(+)}_{4(aq)}$$
$$\quad A \qquad B \qquad\qquad C \qquad\quad D$$
   Choose the correct option regarding above reaction
1. C is conjugate base of B
2. D is conjugate acid of A but not of B
3. C is conjugate base of A while D is conjugate base of B
4. B provides amphoteric medium

27) Consider the following properties
I: Internal Energy
II: Entropy
III: Free Energy IV: Enthalpy
V: Irreversible work Expansion
VI: Reversible work expansion
State functions are
1. I,II,III,IV and V
2. I,II,III and VI
3. I,II,IV and VI
4. II,III and IV

28) A mole of PCl_5 is heated in a 2L vessel to establish an equilibrium

$PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$. At equilibrium the degree of decomposition of PCl_5 is 0.5. The total number of moles at equilibrium will be:
1. 1.5
2. 3
3. 4
4. 6

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29) Which of the following statements is/are true regarding diagonal relationship between Be and Al?

I:The chlorides of both Be and Al have $Cl^{\circleddash}$ bridged chloride structure in vapour phase.

II:Be and Al hydroxides dissolves in excess of Alkali to give a beryllate o $\left[Be(OH)_4\right]^{2\circleddash}$
and aluminate in $\left[Al(OH)_4\right]^{\circleddash}$ respectively.
1. Only I
2. Only II
3. Both I and II
4. Neither I or II

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30) Which among the following compounds will give 2^0 alcohol on reacting with Grignard reagent followed by acid hydrolysis

I:HCHO   II:C_2H_5CHO III: CH_3COCH_3 IV: $HCOOC_2H_5$
Select the correct answer
1. Only II
2. Only III
3. Both I and IV
4. Both II and IV

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31) During electrophoresis of a colloidal sol. The dispersed phase migrates towards cathode. Which of the following electrolyte has the maximum coagulation power to coagulate the sol?
1. Potassium ferrocyanide
2. Barium chloride
3. Calcium phosphate
4. Aluminium fluoride

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32) Herbicide among the following is
1. $NaClO_3$
2. Na_3AsO_3
3. $NaCl$
4. Both 1 and 2

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33) $CH_3 - CH_2 - Br$ undergoes wurtz reaction we may expect some of the following products
I:$CH_3CH_2CH_2CH_3$ II:$CH_2 = CH_2$ III:$CH_3 - CH_3$
Select the correct option

1. Only I
2. I and II
3. I,II and III
4. I and III

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34) Peroxide ion
I: has completely filled anti-bonding molecular orbitals
II: is diamagnetic
III: has Bond order one
IV: is isoelectronic with neon
Which of these are correct
1. II, III
2. I,II, IV
3. I,II,III
4. I,IV

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35) The osmotic pressure is exhibited by 450ml of solution containing 1g of polymer of molecular weight 1,85,000 at $37^0 C$ is
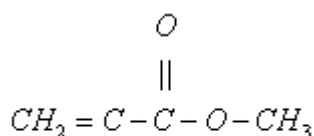1. 30.9 Pascals
2. 420 Pascals
3. 19.8 Pascals
4. 16.25 Pascals

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36) Reaction of which of the following with water is a disproportionation reaction?
1. XeF_2
2. XeF_4
3. XeF_6
4. Both XeF_4 and XeF_6

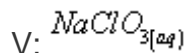37) Head to tail addition takes place in chain growth polymerization when monomer is
1. $C_6 H_5 - CH = CH_2$
2. $CH_2 = CH - CH = CH_2$
3.
$$CH_2 = C - \overset{\overset{O}{\|}}{C} - O - CH_3$$
$$\underset{CH_3}{|}$$
4. $CH_2 = CH - C \equiv N$

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38) What products are formed during the electrolysis of a concentrated aqueous solution of NaCl using on electrolytic cell in which electrodes are separated by a porous pot?
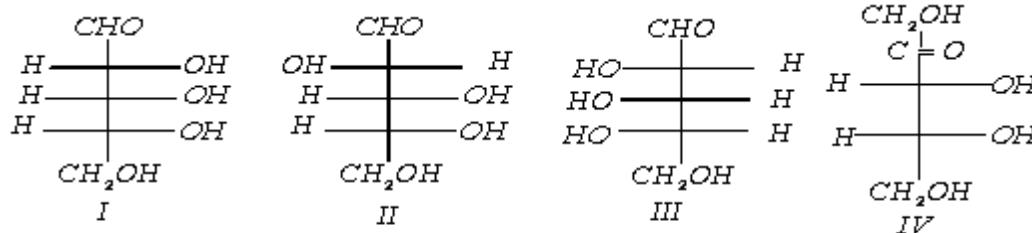I: $Cl_{2(g)}$ II: $NaOH_{(aq)}$ III: $H_{4(g)}$ IV: $NaClO_{(aq)}$

V: $NaClO_{3(aq)}$

Select the correct choice
1. I and II
2. I,II and V
3. I,III and V
4. I,II and III

39) Choose the response that provides the best match between the terms given and the structures shown

Diastereomers	Enantiomers
1. I, III, IV	I,III
2. I,II	I, III
3. I, II, III	I, III
4. I, IV	I, II

40) A Change in oxidation no. is observed when

1. Aqueous solution of $CrO_4^{2\ominus}$ is acidified
2. SO_2 gas is passed into $Cr_2O_7^{2\ominus} / H^{(+)}$
3. $Cr_2O_7^{2\ominus}$ solution is made alkaline
4. CrO_2Cl_2 is dissolved in $NaOH$

41) Ozone and hydrogen peroxide resemble each other in many properties. Which of the following is used to distinguish ozone and hydrogen peroxide.
1. $KMnO_4 / H^+$
2. PbS
3. Starch iodide paper
4. All of these

42) The standard Gibbs energy charge at 300K for the reaction $2A \rightleftharpoons B+C$ is 2494.2J.
At a given time, the composition of the reaction mixture is $[A]=\frac{1}{2}$ $[B]=2$ and $[C]=\frac{1}{2}$.
The reaction proceeds in the $[R=8.314 kJ/mol]$
1. forward direction because $Q_c < K_c$
2. reverse direction because $Q_c < K_c$

3. forward direction because $Q_c > K_c$

4. Reverse direction because $Q_c > K_c$

43) The purpose of adding dil. H_2SO_4 acid in the preparation of mohr's salt is

1. To prevent the hydrolysis of $FeSO_4$
2. To increase the solubility of the salts used
3. To neutralize ammonium salt
4)To prevent the precipitation of Carbonates of metals

44) When adinine is attached to ribose sugar, it is called adenosine to make a nucleotide from it, it would require
1. oxygenation
2. addition of phosphate
3. Hydrogenation
4. Addition of a base

45) $\log \dfrac{K_p}{K_c} + \log RT = 0$ is a relationship for the reaction

1. $PCl_5 \rightleftharpoons PCl_3 + Cl_2$
2. $2SO_2 + O_2 \rightleftharpoons 2SO_3$
3. $H_2 + I_2 \rightleftharpoons 2HI$
4. $N_2 + 3H_2 \rightleftharpoons 2NH_3$

NEET-2 Answers

Chemistry

1) 3 2) 1 3) 4 4) 4 5) 1 6) 3 7) 3 8) 2 9) 1 10) 1 11) 2 12) 4

13) 1 14) 4 15) 1 16) 1 17) 1 18) 3 19) 3 20) 1 21) 4 22) 2 23) 1 24) 3

25) 1 26) 3 27) 3 28) 4 29) 3 30) 4 31) 1 32) 4 33) 2 34) 1 35) 1 36) 2

37) 1 38) 4 39) 2 40) 2 41) 1 42) 4 43) 1 44) 2 45) 1