Test Booklet Code

F6

NEET 2023

Questions, Answer Key & Solutions

Date: 07 May, 2023 | TIME: (02:00 PM to 05:20 PM)

Duration: 200 minutes (03 Hrs. 20 Min.) | Max. Marks: 720

Important Instructions:

- The Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars on OFFICE Copy carefully with blue/black ball point pen only.
- 2. The test is of 3 hours 20 minutes duration and Test Booklet contains 200 multiple-choice questions (four options with a single correct answer) from Chemistry, Physics and Biology (Botany and Zoology). 50 questions in each subject are divided into two Sections (A and B) as per details given below:
 - (a) Section A shall consist of 35 (Thirty-five) Questions in each subject (Questions Nos 1 to 35, 51 to 85, 101 to 135 and 151 to 185). All questions are compulsory.
 - (b) Section B shall consist of 15 (Fifteen) questions in each subject (Question Nos 36 to 50, 86 to 100, 136 to 150 and 186 to 200). In Section B, a candidate needs to attempt any 10 (Ten) questions out of 15 (Fifteen) in each subject.

Candidates are advised to read all 15 questions in each subject of Section B before they start attempting the question paper. In the event of a candidate attempting more than ten questions, the first ten questions answered by the candidate shall be evaluated.

- 3. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 720.
- 4. Use Blue/Black Ball Point Pen only for writing particulars on this page/marking responses on Answer Sheet.
- 5. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
- 6. On completion of the test, the candidate must hand over the Answer Sheet (ORIGINAL and OFFICE Copy) to the Invigilator before leaving the Room/Hall. The candidates are allowed to take away this Test Booklet with them.
- 7. The CODE for this Booklet is **F6**. Make sure that the CODE printed on the Original Copy of the Answer Sheet is the same as that on this Test Booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
- 8. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Roll No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
- 9. Use of white fluid for correction is **NOT** permissible on the Answer Sheet.
- 10. Each candidate must show on-demand his/her Admit Card to the Invigilator.
- 11. No candidate, without special permission of the centre Superintendent or Invigilator, would leave his/her seat.
- 12. The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and sign (with time) the Attendance Sheet twice. Cases, where a candidate has not signed the Attendance Sheet second time, will be deemed not to have handed over the Answer Sheet and dealt with as an Unfair Means case.
- 13. Use of Electronic/ Manual Calculator is prohibited.
- 14. The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Room/Hall. All cases of unfair means will be dealt with as per the Rules and Regulations of this examination.
- 15. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
- 16. The candidates will write the Correct Test Booklet Code as given in the Test Booklet/Answer Sheet in the Attendance Sheet.
- 17. Compensatory time of one hour five minutes will be provided for the examination of three hours and 20 minutes duration, whether such candidate (having a physical limitation to write) uses the facility of scribe or not.

In case of any ambiguity in translation of any question, English version shall be treated as final. प्रश्नों के अनुवाद में किसी अस्पष्टता की स्थिति में, अंग्रेजी संस्करण को ही अन्तिम माना जायेगा।					
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Name of Examination Centre (in Capital le	etters <mark>) :</mark>	nance" Resonance			
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PART: CHEMISTRY

51. Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**:

Assertion A: Metallic sodium dissolves in liquid ammonia giving a deep blue solution, which is paramagnetic.

Reasons R: The deep blue solution is due to the formation of amide.

In the light of the above statements, choose the correct answer from the options given below:

- (1) Both A and R are true but R is NOT the correct explanation of A.
- (2) A is true but R is false.
- (3) A is false but R is true.
- (4) Both A and R are true and R is the correct explanation of A.

नीचे दो कथन दिए गए है। एक को 'अभिकथन A' और दूसरे को 'कारण R' चिन्हित किया गया है।

अभिकथन A: धात्विक सोडियम द्रव अमोनिया में घुलकर गहरे नीले रंग का विलयन देता है, जो अनुचुंबकीय होता है।

कारण R : गहरा नीला विलयन ऐमाइड के बनने के कारण होता है। ऊपर दिए गए कथनों के आधार पर, नीचे दिए गए विकल्पों में से सही उत्तर चूनिए :

(1) A और R दोनों सत्य है, परन्तु R, A की सही व्याख्या नहीं है।

- (2) A सत्य है परन्तु R असत्य है।
- (3) A असत्य है परन्तु R सत्य है।
- (4) A और R दोनों सत्य है और R, A की सही व्याख्या है।

Ans. (2)

Sol. A is true but R is false

The deep blue solutions is due to ammoniated electron.

extra $M + (x + y) NH_3 \longrightarrow [M(NH_3)_x]^+ + [e^-(NH_3)_y]^-$ Ammoniated cation Ammoniated electron

Blue colour is due to ammoniated electron Paramagnetic Nature is due to Ammonited electron.

- 52. The conductivity of centimolar solution of KCl at 25°C is 0.0210 ohm⁻¹ cm⁻¹ and the resistance of the cell containing the solution at 25°C is 60 ohm. The value of cell constant is -
 - (1) 3.28 cm⁻¹
- (2) 1.26 cm⁻¹
- (3) 3.34 cm⁻¹
- (4) 1.34 cm⁻¹

25°C पर KCI के सेंटीमोलर विलयन की चालकता 0.0210 ohm⁻¹ cm⁻¹ है और 25°C पर विलयन वाले सेल का प्रतिरोध 60 ohm है। सेल स्थिरांक का मान है :

- (1) 3.28 cm⁻¹
- (2) 1.26 cm⁻¹
- (3) 3.34 cm⁻¹
- (4) 1.34 cm⁻¹

Ans. (2)

Sol. For KCI Solution

 $K = 0.0210 \text{ ohm}^{-1} \text{ cm}^{-1}$

 $R = 60 \Omega$

conductivity (K) = $\left(\frac{\ell}{a}\right)\frac{1}{R}$

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cell constant
$$\left(\frac{\ell}{a}\right) = (K) R$$

- $= 0.0210 \times 60$
- $= 1.26 \text{ cm}^{-1}$
- 53. For a certain reaction, the rate = $k[A]^2[B]$, when the initial concentration of A is tripled keeping concentration of B constant, the initial rate would
 - (1) increase by a factor of six.
 - (2) increase by a factor of nine.
 - (3) increase by a factor of three.
 - (4) decrease by a factor of nine.
- Ans. (2)
- Sol. Rate = $k[A]^2[B]$

$$r_1 = k(a)^2$$
 (b)

$$r_2 = k(3a)^2(b)$$

$$\frac{r_2}{r_1} = 9$$

$$r_2 = 9r_1$$

54. Identify product (A) in the following reaction:

$$\frac{Z_{n-Hg}}{conc.HCI}(A) + 2H_2O$$

Ans. (4)

- Sol.
- 55. Which one is an example of heterogenous catalysis?
 - (1) Hydrolysis of sugar catalysed by H⁺ ions.
 - (2) Decomposition of ozone in presence of nitrogen monoxide.
 - (3) Combination between dinitrogen and dihydrogen to form ammonia in the presence of finely divided iron.

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- (4) Oxidation of sulphur dioxide into sulphur trioxide in the presence of oxides of nitrogen.
- Ans. (3)
- **Sol.** In heterogeneous catalysis physical state of reactant and catalyst is different.
 - Haber's process
 - $N_2(g) + 3H_2(g) \xrightarrow{500 \, ^\circ, 200 \, \text{atm}} 2NH_3(g)$
- 56. Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**: **Assertion A:** Helium is used to dilute oxygen in diving apparatus.
 - **Reasons R:** Helium has high solubility in O₂. In the light of the above statements, choose the **correct** answer from the options given below:
 - (1) Both A and R are true and R is NOT the correct explanation of A.
 - (2) A is true but R is false.
 - (3) A is false but R is true.
 - (4) Both A and R are true and R is the correct explanation of A.
- Ans. (2)
- **Sol.** Helium is used to dilute oxygen in diving apparatus because at high pressure Helium have low solubility is Blood.
- Amongst the following, the total number of species NOT having eight electrons around central atom in its outer most shell, is NH₃, AlCl₃, BeCl₂, CCl₄, PCl₅
 - (1) 2
- (2) 4

(3) 1

(4) 3

- Ans. (3)
- Sol.

Species	Structure	Total electron around central atom in outer most shell	
NH ₃	(i) H H	8	
AICl ₃	CI Al CI CI	6	
BeCl ₂	Cl – Be – Cl	4	
CCI ₄ Resonance	CI CI	Consumer Start Settler Components Consumer Settler Settler Components Consumer Settler Settl	
PCIs Resonance Education for better tenurrow	CI CI CI CI	10 Resonance	

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- 58. The **correct** order of energies of molecular orbitals of N₂ molecule, is:
 - σ 1s < σ^* 1s < σ 2s < σ^* 2s < σ 2pz <

 $(\pi 2p_x = \pi 2p_y) < (\pi^* 2p_x = \pi^* 2p_y) < \sigma^* 2p_z$

- (2) σ 1s < σ * 1s < σ 2s < σ * 2s < σ 2pz <
 - $\sigma^* 2p_z < (\pi 2p_x = \pi 2p_y) < (\pi^* 2p_x = \pi^* 2p_y)$
- (3) $\sigma 1s < \sigma^* 1s < \sigma 2s < \sigma^* 2s < (\pi 2p_x = \pi 2p_y) < \sigma^* 2s < (\pi 2p_x = \pi 2p_y) < \sigma^* 2s < (\pi 2p_x = \pi 2p_y) < \sigma^* 2s < (\pi 2p_x = \pi 2p_y) < \sigma^* 2s < \sigma^* 2s$
 - $(\pi^*2p_x = \pi^*2p_y) < \sigma 2p_z < \sigma^* 2p_z$
- (4) $\sigma 1s < \sigma^* 1s < \sigma 2s < \sigma^* 2s < (\pi 2p_x = \pi 2p_y) < \sigma^* 2s < (\pi 2p_x = \pi 2p_y) < \sigma^* 2s < (\pi 2p_x = \pi 2p_y) < \sigma^* 2s < (\pi 2p_x = \pi 2p_y) < \sigma^* 2s < \sigma^* 2s$ $\sigma 2p_z < (\pi^* 2p_x = \pi^* 2p_y) < \sigma^* 2p_z$

Ans. (4)

- Sol. By Molecular orbital theory Energy order of N₂ molecule is σ 1s < σ *1s < σ 2s < < σ *2s < (π 2P_x = π 2Py) < σ 2P_z < (π *2P_x = π *2Py) < σ *2P_z
- 59. Match List-I with List -II:

List -I

- A. Coke
- B. Diamond
- C. Fullerene
- D. Graphite

- List II
- I. Carbon atoms are sp³ hybridised.
- II. Used as a dry lubricant
- III. Used as a reducing agent
- IV. Cage like molecules

Choose the correct answer from the options given below:

(1) A-IV, B-I, C-II, D-III (2) A-III, B-I, C-IV, D-II (3) A-III, B-IV, C-I, D-II (4) A-II, B-IV, C-I, D-III सूची -। का सूची -।। के साथ मिलान कीजिए।

सची -।

- A. कोक
- B. हीरा
- C. फुलरीन
- D. ग्रेफाइट

सΜ

- सची ॥
- कार्बन परमाण sp³ संकरित होते है।
- II. शष्क स्नेहक के रूप में उपयोग किया जाता है।
- III. अपचायक की भां उपयोग किया जाता है।
- IV. पिंजरानुमा अण्

(1) A-IV, B-I, C-II, D-III

(2) A-III, B-I, C-IV, D-II (3) A-III, B-IV, C-I, D-II (4) A-II, B-IV, C-I, D-III

Ans. (2)

Sol. List -I

- List-II
- (A) Coke I. used as reducing agent
- (B) Diamond II. carbon atoms are sp³ Hybridised
- (C) Fullerene III. Cage like molecules (D) Graplite IV. used as dry lubricant
- 60. The number of σ bonds, π bonds and lone pair of electrons in pyridine, respectively are:
 - (1) 12, 3, 0
- (2) 11, 3, 1
- (3) 12, 2, 1
- (4) 11, 2, 0

(2) Ans.

Sol. **Pyridine**

 σ Bonds = 11

 π Bonds = 3

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61. The element expected to form largest ion to achieve the nearest noble gas configuration is :

Ana (2)

(2)

(2) N

(3) Na

(4) O

Ans. (

Sol. Element

For Noble gas electronic configuration

F

N

N³⁻

Na O Na⁺ O²⁻

order of ionic size \Rightarrow N³⁻ > O²⁻ > F⁻ > Na⁺

62. Given below are two statements: one is labelled as **Assertion A** and the other is labelled as Reason R : **Assertion A**: A reaction can have zero activation energy.

Reasons R: The minimum extra amount of energy absorbed by reactant molecules so that their energy becomes equal to threshold value, is called activation energy.

In the light of the above statements, choose the correct answer from the option given below:

- (1) Both A and R are true and R is NOT the correct explanation of A.
- (2) A is true but R is false.
- (3) A is false but R is true.
- (4) Both A and R are true and R is the correct explanation of A.

Ans. (1)

- **Sol.** Radioactive substance have zero activation energy. So Assertion is true, but reason is not correct explanation because it simple give definition of activation energy.
- **63.** Consider the following reaction and identify the product (P).

3 - Methylbutan -2 - ol

(1) CH_3 $Ch = CH - CH_3$

CH₃

Ans. (4)

Sol.

Since, halide is present on allylic position hence, this is an example of allylic halide

 $HBr \rightarrow H^+ + Br^-$

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64. Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**:

Assertion A: In equation $\Delta_r G = -nFE_{cell}$, value of $\Delta_r G$ depends on n.

Reasons R: E_{cell} is an intensive property and $\Delta_r G$ is an extensive property.

In the light of the above statements, choose the correct explanation of answer from the options given below:

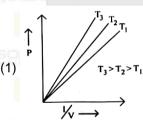
- (1) Both A and R are true and R is NOT the correct explanation of A.
- (2) A is true but R is false
- (3) A is false but R is true.
- (4) Both A and R are true and R is the correct explanation of A.

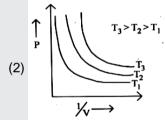
Ans. (4)

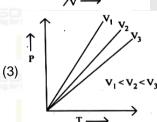
Sol. $\Delta G = - \text{ nf } E_{cell}$

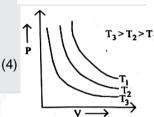
value of ΔG depends on value of n and because ΔG is an extensive property while E_{cell} is an intensive property

65. Which amongst the following options is correct graphical representation of Boyle's Law?









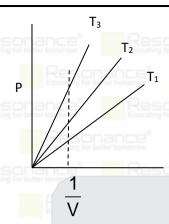
Ans. (1)

Sol. Boyles' Law

 $P\alpha \frac{1}{V}$ [at constant Temperature and constant amount of gas.]

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PV = nRT

for same value of $\frac{1}{V}$ higher the value of P, higher is temperature. So order of temperature.

$$\Rightarrow T_3 > T_2 > T_1$$

- 66. In Lassaigne's extract of an organic compound, both nitrogen and sulphur are present. Which gives blood red colour with Fe3+ due to the formation of -
 - (1) NaSCN
 - (2) $[Fe(CN)_5NOS]^{4-}$
 - (3) [Fe(SCN)]²⁺
 - (4) $Fe_4[Fe(CN)_6]_3.xH_2O$

Ans.

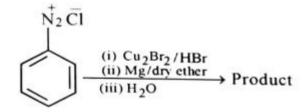
Sol. In lassaigne 's extract, when both Nitrogen and Sulphur are present, blood red colour is formed with Fe³⁺ due to formation of [Fe(SCN)]2+

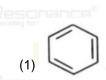
Na + S + C + N →NaSCN

 $Fe^{3+} + SCN^{-} \rightarrow [Fe(SCN)]^{2+}$

(Blood red colour)

67. Identify the product in the following reaction:





MgBr





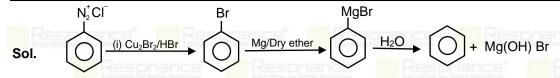
(1) Ans.

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NEET (UG) 2023 | DATE: 07-05-2023 | CHEMISTRY



- 68. Select the correct statements from the following
 - A. Atoms of all elements are composed of two fundamental particles.
 - **B.** The mass of the electron is 9.10939×10^{-31} kg.
 - C. All the isotopes of a given element show same chemical properties
 - **D.** Protons and electrons are collectively known as nucleons.
 - **E.** Dalton's atomic theory, regarded the atom as an ultimate particle of matter.
 - (1) C, D and E only
 - (2) A and E only
 - (3) B, C and E only
 - (4) A, B and C only

Ans. (3)

- Sol. (A) Atoms of all elements are composed of three fundamental Particles
 - (B) Mass of electron is 9.1 x 10⁻³¹ kg.
 - (C) All isotopes of a given element show same chemical properties
 - (D) Proton and Neutron are collectively known as nucleorys
 - (E) Dalton's atomic theory, regard the atom as an ultimate particle of matter correct option B, C, E
- A compound is formed by two elements A and B. The element B forms cubic close packed structure and 69. atoms of A occupy 1/3 of tetrahedral voids. If the formula of the compound is AxBy, the then value of x+ y is in options

(1) 4

(2) 3

(3)2

(4) 5

Ans. (4)

Effective number of atoms B in a unit cell = 4 [CCP] Sol.

Effective number of atoms A in a unit cell = 8 [TV] $\frac{1}{2} = \frac{8}{2}$

Formula of compound = $A_{8/2}$ $B_4 \Rightarrow A_2B_3$

 $A_xB_y = A_2B_3$

so, x + y = 5

70. Given below are two statements:

> Statement I: A unit formed by the attachment of a base to 1' position of sugar is known as nucleoside Statement II: When nucleoside is linked to phosphorous acid at 5' -position of sugar moiety, we get nucleotide.

In the light of the above statements, choose the **correct** answer from the options given below:

- (1) Both Statement I and Statement II are false. (2) Statement I is true but Statement II are false.
- (3) Statement I is false but Statement II is true. (4) Both Statement I and Statement II are true.

Ans. (4)

Sol.

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- 71. Which amongst the following molecules on polymerization produces neoprene?
 - (1) CI $H_2C = C - CH = CH_2$
 - (2) $H_2C = CH C = CH$
 - (3) CH_3 | $H_2C = C CH = CH_2$
 - (4) $H_2C = CH CH = CH_2$
- Ans. (1)

Sol.
$$n CH_2 = C - CH = CH_2$$

Polymerisation

 CI
 CI
 $CH_2 - C = CH - CH_2$

- 72. Taking stability as the factor, which one of the following represents correct relationship?
 - (1) Inl₃ > Inl
 - (2) AICI > AICI3

Chloroprene

- (3) TII > TII₃
- (4) $TICI_3 > TICI$
- Ans. (3)
- Sol. due to Inert pair effect in TII (+1) Oxidation State is more stable than (+3) Oxidation State in TII₃.
- 73. Some tranquilizers are listed below. Which one from the following belongs to barbiturates?
 - (1) Meprobamate
 - (2) Valium
 - (3) Veronal
 - (4) Chlordiazepoxide
- Ans. (3)
- **Sol.** veronal is the barbiturates (fact based on NCERT page no. 445)

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NEET (UG) 2023 | DATE: 07-05-2023 | CHEMISTRY

- 74. Which of the following statements are **NOT** correct?
 - A. Hydrogen is used to reduce heavy metal oxides to metals.
 - B. Heavy water is used to study reactions mechanism.
 - C. Hydrogen is used to make saturated fats from oils
 - D. The H-H bond dissociation enthalpy is lowest as compared to single bond between two atoms of any element.
 - E. Hydrogen reduces oxides of metal that are more active than iron.

Choose the most appropriate answer from the options given below.

- (1) B, D only
- (2) D, E only
- (3) A, B, C only
- (4) B, C, D, E only
- Ans. (2)
- **Sol.** (D) Molecule Bond dissociation enthalpy

H₂ 435.88 KJ/Mole F₂ 158.8 KJ/Mole

The H-H Bond dissociation enthalpy of dihydrogen is highest for single bond between two atom of any element.

- (E) Hydrogen can not reduce oxides of metal that are more active than iron.
- so statement D & F are incorrect.
- 75. Intermolecular forces are forces of attraction and repulsion between interacting particles that will include
 - A. dipole dipole forces.
 - B. dipole Induced dipole forces.
 - C. hydrogen bonding.
 - D. covalent bonding.
 - E. dispersion forces

Choose the most appropriate answer form the options given below:

- (1) A, B, C, D are correct.
- (2) A, B, C, E are correct.
- (3) A, C, D, E are correct.
- (4) B, C, D, E are correct.
- Ans. (2)
- **Sol.** Covalent band is not intermolecular force of attraction it is band between two atom.
- **Extra** Apart from covalent bonding all the other given inter molecular forces will be included for interacting particles.

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- **76.** Amongst the given options which of the following molecules/ ion acts as a Lewis acid?
 - (1) H₂O
 - (2) BF₃
 - (3) OH-
 - (4) NH₃
- Ans. (2)
- Sol. BF₃ act as Lewis acid it has vacant orbitls (6 electron on central atom)
- 77. The **right** option for the mass of CO₂ produced by heating 20 g of 20% pure limestone is (Atomic mass of Ca = 40)

$$\left[CaCO_3 \xrightarrow{1200 \text{ K}} CaO + CO_2 \right]$$

- (1) 1.76 g
- (2) 2.64 g
- (3) 1.32 g
- (4) 1.12g

- Ans. (1)
- **Sol.** Mass of pure line stone (CaCO₃) = $\frac{20 \times 20}{100}$ = 4 gram

$$CaCO_3(s) \xrightarrow{1200 \text{ k}} CaO(s) + CO_2(g)$$

$$\left(\frac{4}{100}\right)$$
 mole.

$$\left(\frac{4}{100}\right)$$
 mole

Mass of
$$CO_2 = \frac{4}{100} \times 44 = 1.76$$
 gram

- **78.** The relations between n_m.(n_m. = the number of permissible values of magnetic quantum number (m)) for a given value of azimuthal quantum number (*I*)
 - $(1) I = 2n_m + 1$
 - (2) $n_m = 2l^2 + 1$
 - (3) $n_m = l + 2$
 - (4) $I = \frac{n_m 1}{2}$
- Ans. (4)
- **Sol.** Total Passible value of nm = $(2\ell+1)$

So
$$\ell = \left(\frac{n_{m-1}}{2}\right)$$

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- **79.** The stability of Cu²⁺ is more then Cu⁺ salts in aqueous solution due to -
 - (1) enthalpy of atomization.
 - (2) hydration energy
 - (3) second ionisation enthalpy
 - (4) first ionisation enthalpy
- Ans. (2)
- Sol. Cu (I) compounds are unstable in aqueous solution and undergoes disproportion $2Cu^+ \longrightarrow Cu^{2+} + Cu$

The stability of Cu^{2+} (aq) rather than Cu^{+1} (aq) is due to the much more negative ΔH^0_{Hyd} . of Cu^{2+} (aq) than Cu^{+} (aq), which is more than compensates for the second ionisation enthalpy of Cu.

- **80.** Which one of the following statements is correct?
 - (1) All enzymes that utilise ATP in phosphate transfer require Ca are the cofactor.
 - (2) The bone in human body I an inert and unchanging substance.
 - (3) Mg plays roles in neuromuscular function and interneuroanl transmission
 - (4) The daily requirement of Mg and Ca in the human body is estimated to be 0.2 0.3 g
- Ans. (4)
- **Sol.** The daily requirement is the human body has been estimated to be 200-300 mg.
 - (1) All enzymes that utilize ATP in phosphate transfer require magnesium as the co factor.
 - (2) The bone is human body is not inert and unchanging substance.
 - (3) Ca plays roles in neuromuscular function and interneuronal transmission.
- 81. Which of the following reactions will NOT give primary amine as the product?

$$CH_3CN \xrightarrow{(i) LiAlH_4} Product$$

(1)

(2)
$$CH_3NC \xrightarrow{(i) LiAlH_4} Product$$

(3) $CH_3CONH_2 \xrightarrow{(i) LiAlH_4} Product$

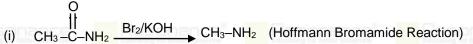
$$CH_3 CONH_2 \xrightarrow{Br_2 / KOH} Product$$

- (4)
- Ans. (2)

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Sol.



(ii)
$$CH_3-CN$$
 $LiAlH_4$ $CH_3-CH_2-NH_2$ H_3O^+

(iv)
$$CH_3-C-NH_2$$

$$\begin{array}{c} O \\ \downarrow \\ LiAIH_4 \\ \hline H_3O^{\dagger} \end{array}$$

$$CH_3-CH_2-NH_2$$

(iii) Is forming 2° Amine

82. The given compound (O)

is an example of

- (1) aryl halide
- (2) allylic halide
- (3) vinylic halide
- (4) benzylic halide

Ans. (2)

Sol.

83. Complete the following reaction:

(C) is_

Sol.
$$HCN \rightarrow H^+ + CN^-$$

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$$\begin{array}{c|c}
 & O & HCN \\
\hline
 & O & CN \\
\hline
 & O & A
\end{array}$$

$$\begin{array}{c|c}
 & OH \\
\hline
 & CN \\
\hline
 & CN
\end{array}$$

$$\begin{array}{c|c}
 & COOH \\
\hline
 &$$

Dehydration followed by hydrolysis of cyanide group

- 84. Homoleptic complex from the following complexes is:
 - (1) Damminechloridonitrito N platinum (II)
 - (2) Pentaamminecarbonatocabalt (III) choride
 - (3) Trimminetriaquachromium (III) choride
 - (4) Potassium trioxalatoaluminate (III)

Ans. (4)

Sol.

Complex	Nature of complex
(1) [Pt(NH ₃) ₂ Cl(NO ₂)]	Hetroleptic
(2) [Co(NH ₃) ₅ (CO ₃)]Cl	Hetroleptic
(3) [Cr(NH ₃) ₅ (H ₂ O) ₃]Cl ₃	Hetroleptic
(4) K ₃ [Al(C ₂ O ₄) ₃]	Homoleptic

Homoleptic complexes are the complexes in which all ligands are identical: K₃[Al(C₂O₄)₃]

- **85.** Weight (g) of two moles of the organic compound, which is obtained by heating sodium ethanoate with sodium hydroxide in presence of calcium oxide is:
- (1) 32
- (2) 30
- (3)18
- (4) 16

Ans. (1)

Mass of 1 mole of CH₄ = 16gm

Hence, mass of 2 mole of CH₄ = 32gm

86. Consider the following reaction:

$$CH_2-O$$
 HI $A+B$

Identify products A and B.

(1)
$$A = \left\langle \begin{array}{c} \\ \\ \end{array} \right\rangle$$
 CH₂OH and B = $\left\langle \begin{array}{c} \\ \\ \end{array} \right\rangle$

(2)
$$A = CH_2I$$
 and $B = CH_2I$

(3)
$$A = \bigcirc CH_3 \text{ and } B = \bigcirc -1$$

(4)
$$A = \langle CH_3 \text{ and } B = \langle CH_3 \text{ OH } CH_3 \text{ OH }$$

Ans. (2)

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$$A \qquad \qquad A \qquad \qquad B$$

87. Which amongst the following will be most readily dehydrated under acidic conditions?

(1)
$$H_3C$$
 H OH OH

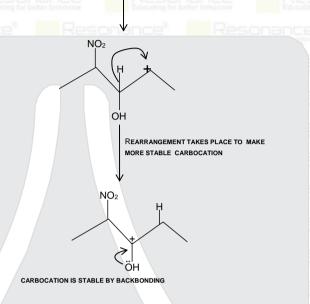
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$$\begin{array}{c}
NO_2 \\
H \\
OH
\end{array}$$

$$\begin{array}{c}
NO_2 \\
H \\
OH
\end{array}$$

Sol.



- The equilibrium concentrations of the species in the reaction $A + B \rightleftharpoons C + D$ are 2, 3,10 and 6 mol 88.
 - L⁻¹. respectively at 300K. ΔG^0 for the reaction is (R = 2 cal / mol K)
 - (1) -137.26 cal
- (2) -1381.80 cal
- (3) -13.73 cal
- (4) 1372.60 cal

Ans. (2)

Sol.

Concentrations

$$k_c = \frac{10 \times 6}{2 \times 3} = 10$$

$$\Delta G^{\circ} = -2.303 \text{ RT} \ell \text{ogk}_{c}$$

$$= -2.303 \times 2 \times 300 \ log_{10}$$

$$= -1381.80$$
cal

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- **89.** Given below are two statements:
 - Statement I: The nutrient deficient water bodies lead to eutrophication.

Statement II: Eutrophication leads to decrease in the level of oxygen in the water bodies. In the light of the above statements, choose the correct answer from the options given below:

- (1) Both Statement I and Statement II are false.
- (2) Statement I is correct but Statement II is false.
- (3) Statement I is incorrect but Statement II is true.
- (4) Both Statement I and Statement II are true.
- Ans. (3)
- **Sol.** The correct option is 3

Statement -I is incorrect, the correct explanation is that in eutrophication water bodies nutrient enriched Statement -II true

- **90.** Which amongst the following options is the correct relation between change in enthalpy and change in internal energy?
 - (1) $\Delta H = \Delta U + \Delta n_g RT$

(2) $\Delta H - \Delta U = -\Delta nRT$

(3) $\Delta H + \Delta U = \Delta nR$

(4) $\Delta H = \Delta U - \Delta n_g RT$

- Ans. (1)
- **Sol.** Relations between change in enthalpy and change $\Delta H = \Delta U + \Delta n_0 RT$
- 91. Match List I with List II:

List I (Oxoacids of Sulphur)

- List II (Bonds)
- A. Peroxodisul- phuric acid
- i. Two S-OH, Four S=O, One S-O-S

B. Sulphuric acid

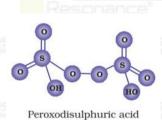
- ii. Two S-OH, One S=O
- C. Pyrosulphuric acid
- iii. Two S-OH, Four S=O, One S-O-O-S

D. Sulphurous acid

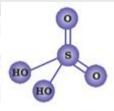
iv. Two S-OH, Two S=O

Choose the correct answer from the options given below:

- (1) A-III, B-IV, C-I, D-II
- (2) A-I, B-III, C-IV, D-II
- (3) A-III, B-IV, C-II, D-I
- (4) A-I, B-III, C-II, D-IV
- Ans. (1)
- Sol. (A)



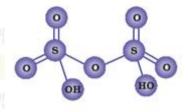
(H₂S₂O₈)



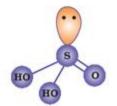
Sulphuric acid (H₂SO₄)

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Pyrosulphuric acid (Oleum) $(H_2S_2O_7)$



Sulphurous acid (H₂SO₃)

(C) A \rightarrow III, B– IV, C– I, D–II

92. Identify the major product obtained in the following reaction:

$$\bigcap_{H}^{O} + 2 \left[Ag(NH_3)_2 \right]^{+} +$$

 $3^-OH \xrightarrow{\Delta}$ major product

(4)

Ans. (2)

+
$$2[Ag(NH_3)_2]^+ + 3\overline{O}H$$

Ammonical silver (Tollen 's text)

(D)

Sol.

Reduced by aldehyde

So, aldehyde oxidised to carboxylate in basic medium

93 Pumice stone is an example of -

(1) gel

(2) solid sol

(3) foam

(4) sol

Ans. (2)

Sol. Pumic stone.

Example	Disperse phase	Dispersemedium	Type of Colloid
Pumic Stone	Gas	Solid	Solid sol.

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- **94.** The reaction that does NOT take place in a blast furnace between 900 K to 1500 K temperature range during extraction of iron is:
 - (1) FeO + CO→ Fe + CO₂

(2) C+CO₂ →+2CO

(3) CaO+SiO₂, → CaSiO₃

(4) $Fe_2O_3 + CO \rightarrow 2FeO + CO_2$

- Ans. (4)
- **Sol.** In Blast furnace following reaction are take place in temperature range 900K to 1500K

FeO + CO \longrightarrow Fe + CO₂

 $C + CO_2 \longrightarrow 2CO$

 $CaO + SiO_2 \longrightarrow CaSiO_3$ (Slag)

While reaction at temperature range 500K to 800K

 $Fe_2O_3 + CO \longrightarrow 2FeO + CO_2$

- 95. Which of the following statements are **INCORRECT?**
 - A. All the transition metals except scandium form MO oxides which are ionic.
 - B. The highest oxidation number corresponding to the group number in transition metal oxides is attained in Sc₂O₃ to Mn₂O₇.
 - C. Basic character increases from V₂O₃ to V₂O₄ to V₂O₅.
 - D. V₂O₄ dissolves in acids to give VO₄⁻³ salts.
 - E. CrO is basic but Cr₂O₃, is amphoteric.

Choose the correct answer from the options given below:

- (1) B and D only (2) C and D only
- (3) B and C only
- (4) A and E only

Ans. (3)

- Sol. Refrence NCERT Class-XIIth d =Block (page-No 231
 - (A) correct statement
 - (B) Correct statement
 - (C) $V_2O_3 \Rightarrow Basic$

V₂O₄ ⇒ Less Basic

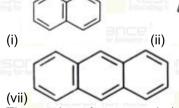
 $V_2O_5 \Rightarrow$ Amphoteric (But mainly acidic)

- (D) $V_2O_4 + 4H^+ \longrightarrow 2VO^{2+} + 2H_2O$
- (E) CrO ⇒ Basic

Cr₂O₃ ⇒ Arnphoteric

So option B and C are in correct.

96. Consider the following compound / species :











The number of compounds / species which obey Huckel's rule is

(1) 6

(2) 2

(3) 5

(4)

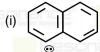
Ans. (4)

Sol. Huckel's rule

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compound should follow (4n + 2) π electron



 π electron = 10



 π electron = 6



 π electron = 4



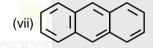
 π electron = 4



 π electron = 2



 π electron = 8



 π electron = 14

(i), (ii), (v) & (vii) follows Huckel's rule.

- 97. What fraction of one edge centred octahedral void lies in one unit cell of fcc?
 - $(1) \frac{1}{3}$
- (2) $\frac{1}{4}$
- $(3) \frac{1}{12}$
- $(4) \frac{1}{2}$

Ans. (2)

- **Sol.** Contribution of edge centered octahedral void in fcc unit cell = $\frac{1}{4}$
- **98.** Which complex compound is most stable?
 - (1) $[Co(NH_3)_3(NO_3)_3]$

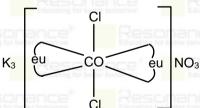
(2) [CoCl₂(en)₂]NO₃

(3) $[Co(NH_3)_6]_2(SO_4)_3$

(4) $[Co(NH_3)_4(H_2O)Br](NO_3)_2$

Ans. (2)

Sol. Because its form stable chelate complex.



Complex which contain chelating ligand have more stability.

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99. On balancing the given redox reaction.

$$aCr_2O_7^{2-} + bSO_3^{2-}(aq) + cH^+(aq) \rightarrow$$

$$2aCr^{3+}(aq) + bSO_4^{2-}(aq) + \frac{c}{2}H_2O(\ell)$$

the coefficients a, b and c are found to be, respectively-

- (1) 3,8,1
- (2) 1,8,3
- (3) 8,1,3
- (4) 1,3,8

Ans. (4)

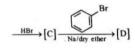
Sol. $a \operatorname{Cr}_2 \operatorname{O}_7^{2-} + b \operatorname{SO}_3^{2-} + c \operatorname{H}^+ \to 2a \operatorname{Cr}^{3+} + b \operatorname{SO}_4^{2-} + \frac{c}{2} \operatorname{H}_2 \operatorname{O}_4$

Reductions Half \Rightarrow Cr₂O₇²⁻ +14H⁺ +6e \rightarrow 2Cr³⁺ +7H₂O

Oxidation Half \Rightarrow $SO_3^{2-} + H_2O \rightarrow SO_4^{2-} + 2H^+ + 2e^- \times 3$

$$Cr_2O_7^{2-} + 3SO_3^{2-} + 8H^+ \rightarrow 2Cr^{3+} + 3SO_4^{2-} + \frac{8}{2}H_2O_4^{2-}$$

- a = 1
- b = 2
- c=8
- 100. Identify the final product [D] obtained in the following sequence of reactions $CH_3CHO \xrightarrow[i]{LiAlH_4} [A] \xrightarrow{H_2SO_4} [B]$



- (1)
- (3) $HC \equiv C^{\Theta} Na^{\dagger}$
- Ans. (4)

- (2) C₄H₁₀
- (4)

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- An aspirant of NEET- 2024 who has scored in the past NEET exams or tentatively scoring more than 500 Marks in NEET 2023 from any institute who aspires to get in Top Ranks.
- NEET Qualified student who has decided to repeat and is determined to scale new heights in NEET - 2024.

Course Starts from

8th, 22nd, 29th May | 5th & 19th June 2023

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