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Test Booklet Code
S3

NEET 2022

Questions, Answer Key & Solutions

Date: 17 July, 2022 | TIME: (02:00 PM to 05:20 PM)

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

Important Instructions:

1. 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** duration and Test Booklet contains 200 multiple-choice questions (four options with a single correct answer) from **Physics, Chemistry 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 S3. 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।

Name of the Candidate (in Capital letters): _____

Roll Number: in figures: | | | | | | | | | in words: _____

Name of Examination Centre (in Capital letters) : _____

Candidate's Signature: _____ Invigilator's Signature: _____

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PART : CHEMISTRY

Section-I
Single Choice Type

This section contains **35 Single choice questions.** Each question has 4 choices (1), (2), (3) and (4) for its answer, out of which **Only One** is correct.

51. Given below are half cell reactions :

$MnO_4^- + 8H^+ + 5e^- \rightarrow Mn^{2+} + 4H_2O$,

$E^{\circ}_{Mn^{2+}/MnO_4^-} = -1.510V$

$\frac{1}{2}O_2 + 2H^+ + 2e^- \rightarrow H_2O$

$E^{\circ}_{O_2/H_2O} = +1.223V$

Will the permanganate ion, MnO_4^- liberate O_2 from water in the presence of an acid ?

(1) Yes, because $E^{\circ}_{cell} = +2.733$ V

(2) No, because $E^{\circ}_{cell} = -2.733$ V

(3) Yes, because $E^{\circ}_{cell} = +0.287$ V

(4) No, because $E^{\circ}_{cell} = -0.287$ V

Ans. (3)

Sol. $E^{\circ}_{cell} = (E^{\circ}_{RP})_C - (E^{\circ}_{RP})_A$

$= E^{\circ}_{MnO_4^-|Mn^{2+}} - E^{\circ}_{O_2|H_2O}$

$= 1.51 - 1.223 = 0.287$

As E°_{cell} is positive so $E^{\circ}_{MnO_4^-}$ Liberate O_2 form water.

52. Identify the incorrect statement from the following

(1) Ionisation enthalpy of alkali metals decreases from top to bottom in the group.

(2) Lithium is the strongest reducing agent among the alkali metals.

(3) Alkali metals react with water to form their hydroxides.

(4) The oxidation number of K in KO_2 is + 4

Ans. (4)

Sol. Incorrect statement :

In KO_2 Oxidation number of K is +1

53. Identify the incorrect statement from the following.

(1) In an atom, all the five 3d orbitals are equal in energy in free state

(2) The shapes of d_{xy}, d_{yz} and d_{zx} orbitals are similar to each other ; and $d_{x^2-y^2}$ and d_{z^2} are similar to each other.

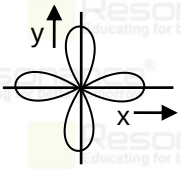
(3) All the five 5d orbitals are different in size when compared to the respective 4d ortibals.

(4) All the five 4d orbitals have shapes similar to the respective 3d orbitals.

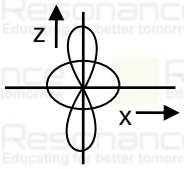
Ans. (2)

Sol. In correct statement :

Shape of dxy, dyz & dxz are same but shape of $d_{x^2-y^2}$ – d_{z^2} is different



$d_{x^2-y^2}$



d_{z^2}

54. Gadolinium has a low value of third ionisation enthalpy because of

(1) high electronegativity

(2) high basic character

(3) small size

(4) high exchange enthalpy

Ans. (4)

Sol. Gd = $[_{54}Xe]\ 4p^7\ 5d^1\ 6s^2$

After removal of 3rd electron it gain half filled electronic configuration.

So due to high exchange enthalpy, this state acquires extra stability.

55. The IUPAC names of an element with atomic number 119 is :

(1) unununnium

(2) ununoctium

(3) ununennium

(4) unnilennium

Ans. (3)

Sol.

Atomic number	IUPAC Name
119	Ununennium

56. Match List-I with List-II.

	List-I (Hydrides)		**List-II (Nature)**
(a)	MgH_2	(i)	Electron precise
(b)	GeH_4	(ii)	Electron deficient
(c)	B_2H_6	(iii)	Electron rich
(d)	HF	(iv)	Ionic

Choose the correct answer from the options given below :

(1) (a) – (i), (b) – (ii), (c) – (iv), (d) – (iii)

(2) (a) – (ii), (b) – (iii), (c) – (iv), (d) – (i)

(3) (a) – (iv), (b) – (i), (c) – (ii), (d) – (iii)

(4) (a) – (iii), (b) – (i), (c) – (ii), (d) – (iv)

Ans. (3)

Sol.

	Hydride	Nature
(a)	MgH_2	Ionic
(b)	GeH_4	Electron precise
(c)	B_2H_6	Electron deficient
(d)	HF	Electron rich

Meaning of electron precise hydride $\Rightarrow$ hydride which contain as a number of electron which require for covalent bond formation.

57. $RMgX + CO_2 \xrightarrow[\text{ether}]{\text{dry}} Y \xrightarrow{H_3O^+} RCOOH$

What is Y in the abové reaction?

(1) $RCOO^- X^+$ (2) $(RCOO)_2Mg$

(3) $RCOO^-Mg^+X$ (4) $R_3CO^-Mg^+X$

Ans. (3)

Sol. $RMgX + O = C = O \xrightarrow[\text{ether}]{\text{dry}} O = \underset{\displaystyle R}{\overset{\displaystyle |}{C}} - O^- Mg^+X \xrightarrow{H_3O^+} R–COOH$

58. Match List - 1 with List-LI.

List-I (Drug class)	**List-II (Drug molecule)**
(a) Antacids	(i) Salvarsan
(b) Antihistamines	(ii) Morphine
(c) Analgesics	(iii) Cimetidine
(d) Antimicrobials	(iv) Seldane

Choose the correct answer from the options given below:

(1) (a) - (i), (b) - (iv), (c) - (ii), (d) - (iii)

(2) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)

(3) (a) - (iii), (b) - (ii), (c) - (iv), (d) – (i)

(4) (a) - (iii), (b) - (iv), (c) - (ii), (d) – (i)

Ans. (4)

Sol. Antacids $\rightarrow$ Cimetidine

Antihistamines $\rightarrow$ Seldane

Analgesics $\rightarrow$ Morphine

Antimicrobials $\rightarrow$ Salvarsan

59. Which of the following statement is not correct about diborane?

(1) The four terminal Hydrogen atoms and the two Boron atoms lie in one plane.

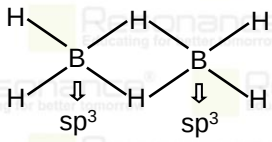
(2) Both the Boron atoms are sp^2 hybridised.

(3) There are two 3-centre-2-electron bonds.

(4) The four terminal B-H bonds are two centre two electron bonds.

Ans. (2)

Sol. Not correct statement about B_2H_6



In B_2H_6 both Boron are sp^3 hybridise.

60. The incorrect statement regarding enzymes is:
(1) Enzymes are polysaccharides.
(2) Enzymes are very specific for a particular reaction and substrate.
(3) Enzymes are biocatalysts.
(4) Like chemical catalysts enzymes reduce the activation energy of bio processes.

Ans. (1)

Sol. Enzymes are globular proteins.

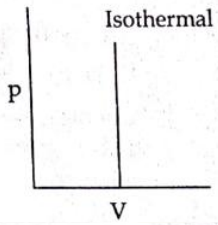
61. Given below are two statements : one is labelled as
Assertion (A) and the other is labelled as **Reason (R)**
Assertion (A) : In a particular point defect, an ionic solid is electrically neutral, even if few of its cations are missing from its unit cells.
Reason (R): In an ionic solid, Frenkel defect arises due to dislocation of cation from its lattice site to interstitial site, maintaining overall electrical neutrality In the light of the above statements, choose the most appropriate answer from the options given below.
(1) **(A)** is correct but **(R)** is not correct
(2) **(A)** is no correct but **(R)** is correct
(3) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of (A)
(4) Both **(A)** and **(R)** are correct but **(R)** is not the correct explanation of (A)

Ans. (4)

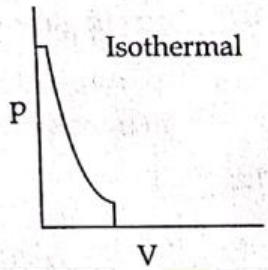
Sol. Assertion is true $\Rightarrow$ After defect Ionic solid are electrical neutral.
Reason is true $\Rightarrow$ Frenkel defect is dislocation of ion from their lattice site.
* Assertion is true & Reason true but Reason is not correct explanation of assertion.

62. Which of the following p-V curve represents maximum work done?

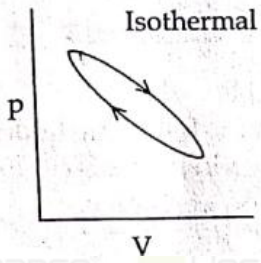
(1)



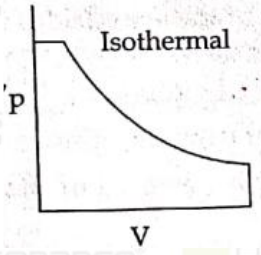
(2)



(3)



(4)



Ans. (4)

Sol. In P-V diagram work done is area under the curve. So maximum is area under the curve, maximum is work done.

63. Given below are two statements: .

Statement I: Primary aliphatic amines react with HNO_2 to give unstable diazonium salts

Statement II: Primary aromatic amines react with HNO_2 to form diazonium salts which are stable even above 300 K.

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

(1) Statement **I** is correct but Statement **II** is incorrect

(2) Statement **I** is incorrect but Statement **II** is Correct.

(3) Both Statement **I** and Statement **II** are correct.

(4) Both Statement **I** and Statement **II** are incorrect

Ans. (1)

Sol. $R–NH_2 \xrightarrow{HNO_2} RN_2^+Cl^-$ (unstable)

$C_6H_5–NH_2 \xrightarrow[HNO_2]{273–278K} C_6H_5N_2^+Cl^-$ (stable)

but unstable at 300 K.

64. The IUPAC name of the complex - $[Ag(H_2O)_2][Ag(CN)_2]$ is:

(1) dicyanidosilver(I) diaquaargentate(I)

(2) diaquasilver(I) dicyanidoargentate(I)

(3) dicyanidosilver(II) diaquaargentate(II)

(4) diaquasilver(ll) dicyanidoargentate(II)

Ans. (2)

Sol. $[Ag(H_2O)_2][Ag(CN)_2] \longrightarrow [Ag(H_2O)_2]^+ + [Ag(CN)_2]^-$

IUPAC Name

Diaquasilver(I) dicyanido argentite (I)

65. Which compound amongst the following is not an aromatic compound?

(1) 

(2) 

(3) 

(4) 

Ans. (2)

Sol. 

Not aromatic because it not planner due to sp^3 hybridised carbon atom.

66. Given below are two statements:

Statement I: In the coagulation of a negative sol, the flocculating power of the three given ions is in the order - $Al^{3+} > Ba^{2+} > Na^+$

Statement II: In the coagulation of a positive sol, the flocculating power of the three given salts is in the order - $NaCl > Na_2SO_4 > Na_3PO_4$

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

(1) Statement **I** is correct but Statement **II** incorrect.

(2) Statement **I** is incorrect but Statement **II** is correct

(3) Both Statement **I** and Statement **II** are correct

(4) Both Statement **I** and Statement **II** are incorrect.

Ans. (1)

Sol. **Statement I :** For negative sol coagulation greater the charge on cation greater is flocculation power.
Statement II : For positive sol coagulation greater is charge on anion greater is flocculation power.
Result : Statement I is correct & Statement II is in correct.

67. Match List-I with List - II.

List–I	**List–II**
(a) Li	(i) absorbent for carbon dioxide
(b) Na	(ii) electrochemical cells
(c) KOH	(iij) coolant in fast breeder reactors
(d) Cs	(iv) photoelectric cell

Choose the correct answer from the options given below:
(1) (a) – (i), (b) – (iii), (c) – (iv), (d) – (ii)
(a) (a) – (ii), (b) – (iii), (c) – (i), (d) – (iv)
(3) (a) – (iv), (b) – (i), (c) – (iii), (d) – (ii)
(4) (a) – (iii), (b) – (iv), (c) – (ii), (d) – (i)

Ans. (2)

Sol.

	List I	**List II**
(a)	Li	Electrochemical Cell
(b)	Na	Coolant in Fast breeder reactors
(c)	KOH	Absorbent for carbondioxide
(d)	Cs	Photo electric cell

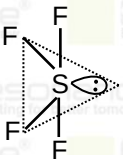
68. Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R).**
Assertion (A): ICl is more reactive than I_2.
Reason (R) : I-Cl bond is weaker than I-I bond.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) (A) is correct but (R) is not correct
(2) (A) is not correct but (R) is correct.
(3) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(4) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

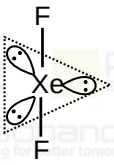
Ans. (3)

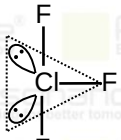
Sol. **Assertion :** Interhalogen are more reactive than I_2.
Reason : I–Cl have partial Ionic character due to electro negativity difference between I & Cl where as I_2 form covalent bond.

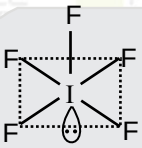
69. Amongst the following which one will have maximum lone pair - lone pair' electron repulsions?
(1) SF_4 (2) XeF_2 (3) ClF_3 (4) IF_5

Ans. (2)

Sol. (1) $SF_4 \Rightarrow$ 

(2) $XeF_2 \Rightarrow$ 

(3) $ClF_3 \Rightarrow$ 

(4) $IF_5 \Rightarrow$ 

Maximum $\ell p \leftrightarrow \ell p$ repulsion is maximum in XeF_2

70. Given below are two statements:

Statement I:

The acidic strength of monosubstituted nitrophenol is higher than phenol because of electron withdrawing nitro group.

Statement II: o-nitrophenol, m-nitrophenol and p-nitrophenol will have same acidic strength as they have one nitro group attached to the phenolic ring.

In the light of true above statements choose the most appropriate answer from the options given below:

(1) Statement I is correct but Statement ii is incorrect.

(2) Statement I is incorrect but Statement II is correct.

(3) Both Statement I and Statement I are correct.

(4) Both Statement I and Statement II are incorrect.

Ans. (1)

Sol. **Statement-I :** Due to –I, –M effect of $–NO_2$ group monosubstituted phenol is more acidic then phenol.

Statement-II : At –m– position only –I effect of $–NO_2$ group but at –O– and –P– position –I, –M both effect are present.

71. Which one is not correct mathematical equation for Dalton's Law of partial pressure? Here p = total pressure of gaseous mixture

(1) $p_i = x_i p$, where p_i = partial pressure of i^{th} gas x_i = mole fraction of i^{th} gas in gaseous mixture

(2) $p_i = x_i p_i^o$, where x_i = mole fraction of i^{th} gas in gaseous mixture p_i^o = pressure of i^{th} gas in pure state

(3) $p = p_1 + p_2 + p_3$

(4) $p = n_1 \frac{RT}{V} + n_2 \frac{RT}{V} + n_3 \frac{RT}{V}$

Ans. **(2)**

Sol. Not correct statement.

(1) $p_i = x_i p$, is correct.

(2) $p_i = x_i p_i^o \Rightarrow$ incorrect

(3) $p = p_1 + p_2 + p_3 \Rightarrow$ correct

(4) $p = n_1 \frac{RT}{V} + n_2 \frac{RT}{V} + n_3 \frac{RT}{V}$

$p = p_1 + p_2 + p_3 \Rightarrow$ correct

72. Given below are two statements:

Statement I: The boiling points of the following hydrides of group 16 elements increases in the order - $H_2O < H_2S < H_2Se < H_2Te$.

Statement II:

The boiling points of these hydrides increase with increase in molar mass.

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

(1) Statement I is correct but Statement II is incorrect

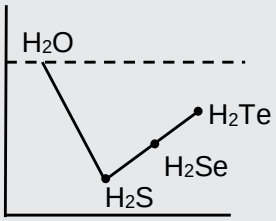
(2) Statement I is incorrect but Statement II is correct

(3) Both Statement I and Statement II are correct

(4) Both Statement I and Statement II are incorrect

Ans. (4)

Sol. Statement I: Boiling point order of group 16^{th} hydride.



So correct order $\Rightarrow H_2S < H_2Se < H_2Te < H_2O$

B.P. = 273 K, 213 K, 232 K, 269 K

Statement II: Boiling point increase with increase in molar mass but H_2O have more boiling point due to hydrogen bond.

73. In one molal solution that contains 0.5 mole of a solute, there is

(1) 100 mL of solvent (2) 1000 g of solvent

(3) 500 mL of solvent (4) 500 g of solvent

Ans. (4)

Sol. One molal solution $\Rightarrow$ 1 mole solute dissolve in 1 kg of solvent.

so 0.5 mole of solute dissolve in 0.5 kg of solvent.

74. Choose correct statement:

(1) Diamond is sp^3 hybridised and graphite is sp^2 hybridized.

(2) Both diamond and graphite are used as dry lubricants.

(3) Diamond and graphite have two dimensional network.

(4) Diamond is covalent and graphite is ionic.

Ans. (1)

Sol. Correct statement

(1) Diamond $\Rightarrow sp^3$ hybridise

Graphite $\Rightarrow sp^2$ hybridise

(2) Only graphite is used as dry lubricants

(3) Diamond have 3D network structure.

(4) Both diamond and graphite are covalent

75. What mass of 95% pure $CaCO_3$ will be required to neutralise 50 mL of 0.5 M HCl solution according to the following reaction?

$CaCO_{3(s)} + 2HCl_{(aq)} \rightarrow CaCl_{2(aq)} + CO_{2(g)} + 2H2O_{(l)}$

[Calculate upto second place of decimal point]

(1) 3.65 g (2) 9.50 g (3) 1.25 g (4) 1.32 g

Ans. (4)

Sol. $CaCO_{3(s)} + 2HCl_{(aq)} \rightarrow CaCl_{2(aq)} + CO_{2(g)} + 2H2O_{(l)}$

0.5×50

$\frac{1}{2}(25)$ milimole 25 milimole

mass of pure $CaCO_3$

$= \left(\frac{25}{2}\right) \times 100 \times 10^{-3}$

$= \frac{2.5}{2}$ gram.

Let mass of 95% impure $CaCO_3$ is x gram

So $(x)\ \frac{95}{100} = \left(\frac{2.5}{2}\right)$

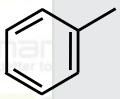
$x = \frac{2.63}{2} = 1.315$ gram

$\simeq 1.32$

Ans. = 4

76. Which of the following is suitable to synthesize chlorobenzene?

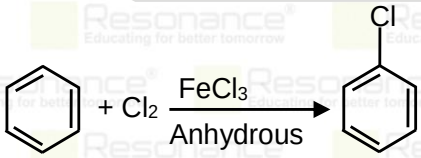
(1)  , HCl

(2)  ,HCl, Heating

(3) Benzene, Cl_2, anhydrous $FeCl_3$

(4) Phenol, $NaNO_2$, HCl, CuCl

Ans. (3)

Sol. 

77. The pH of the solution containing 50 mL each of 0.10 M sodium acetate and 0.01 M acetic acid is [Given pK_a of CH_3COOH = 4.57]

(1) 4.57 (2) 2.57 (3) 5.57 (4) 3.57

Ans. (3)

Sol. CH_3COOH + CH_3COONa

0.01 M, 50 ml 0.1 M, 50 ml

this act as buffer solution

$pH = pK_a + \log \frac{[CH_3COONa]}{[CH3COOH]}$

$= 4.57 + \log \left(\frac{0.1}{0.01}\right)$

$= 4.57 + \log 10$

$= 4.57 + 1$

$= 5.57$

78. Which amongst the following is incorrect statement?

(1) H_2^+ ion has one electron.

(2) O_2^+ ion is diamagnetic.

(3) The bond order of O_2^+, O_2, O_2^- are 2.5, 2, 1.5 and 1, respectively.

(4) C_2 molecule has four electrons in its two degenerate π molecular orbitals.

Ans. (2)

Sol. Incorrect statement.

(i) $H_2^{\oplus}$ ion have 1 electron

(ii) $O_2^{\oplus}$ ion is paramagnetic

(iii)

species	$O_2^{\oplus}$	O_2	O_2^-	O_2^{2-}
	2.5	2	1.5	1

(iv) EC of C_2 is

$(\sigma 1s)^2 (\sigma^* 1s)^2 (\sigma 2s)^2 (\pi^* 2s)^2 (\pi 2p_x^2 = 2py^2)$

79. Which statement regarding polymers is not correct?

(1) Thermoplastic polymers are capable of repeatedly softening and hardening on heating and cooling respectively.

(2) Thermosetting polymers are reusable.

(3) Elastomers have polymer chains held together by weak intermolecular forces.

(4) Fibers posses high tensile strength.

Ans. (2)

Sol. Thermosetting polymers are not reusable because on extensive heating they from cross linking.

80. Match List-I with List-II.

	List-I (Products formed)		**List-II** (Reaction of carbonyl compound with)
(a)	Cyanohydrin	(i)	NH_2OH
(b)	Acetal	(ii)	RNH_2
(c)	Schiff's base	(iii)	Alcohol
(d)	Oxime	(iv)	HCN

Choose the correct answer from the options given below:

(1) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)

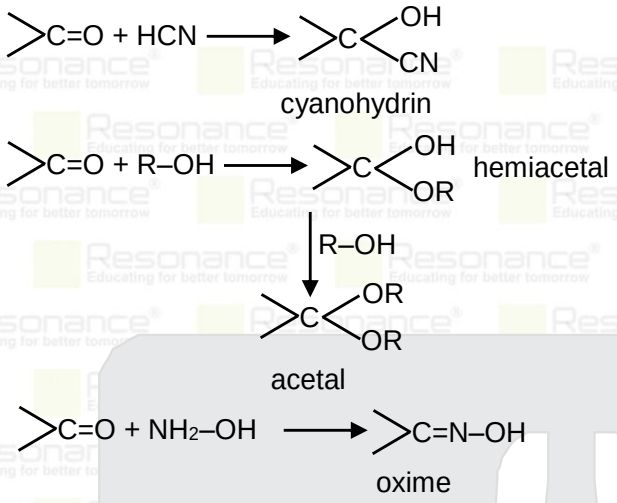
(2) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

(3) (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)

(4) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

Ans. (2)

Sol.



81. Given below are two statements:

Statement I:

The boiling points of aldehydes and ketones are higher than hydrocarbons of comparable molecular masses because of weak molecular association in aldehydes and ketones due to dipole – dipole interactions.

Statement II:

The boiling points of aldehydes and ketones are lower than the alcohols of similar molecular masses due to the absence of H-bonding.

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

(1) **Statement I** is correct but **Statement II** is incorrect

(2) **Statement I** is incorrect but **Statement II** is correct

(3) Both **Statement I** and **Statement II** are correct

(4) Both **Statement I** and **Statement II** are incorrect

Ans. (3)

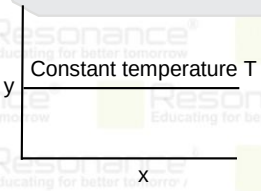
Sol. **Statement I:**

Hydrocarbon are non polar. But aldehyde and ketone are polar due to polar >C=O bond. Therefore dipole - dipole interaction present.

Statement II:

Alcohol having H-bonding but aldehyde and Ketene does not having H-bonding.

82. The given graph is a representation of kinetics of a reaction.



The y and x axes for zero and first order reactions, respectively are

(1) zero order (y = rate and x = concentration), first order (y = $t_{1/2}$ and x = concentration)

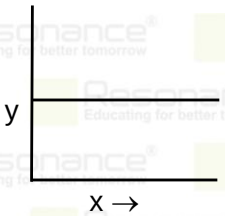
(2) zero order (y = rate and x = concentration), first order (y = rate and x = $t_{1/2}$)

(3) zero order (y = concentration and x = time), first order (y = $t_{1/2}$ and x = concentration)

(4) zero order (y = concentration and x = time), first order (y = rate constant and x = concentration)

Ans. (1)

Sol.



For zero order Rate = $K[A]^o$

For 1st order $\frac{T_1}{2} = \frac{\ln 2}{K}$

83. The incorrect statement regarding chirality is:

(1) Enantiomers are superimposable mirror images on each other.

(2) A racemic mixture shows zero optical rotation.

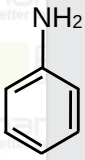
(3) S_N1 reaction yields 1:1 mixture of both enantiomers.

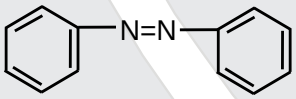
(4) The product obtained by S_N2 reaction of haloalkane having chirality at the reactive site shows inversion of configuration.

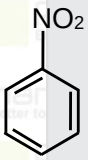
Ans. (1)

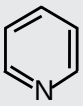
Sol. Enantiomers are not superimposable mirror image on each other.

84. The Kjeldahl's method for the estimation of nitrogen can be used to estimate the amount of nitrogen in which one of the following compounds?

(1) 

(2) 

(3) 

(4) 

Ans. (1)

Sol. $-NO_2$, diazo, pyridine cannot be converted into ammonium sulphate.

85. At 298 K, the standard electrode potentials of Cu^{2+}/Cu, Zn^{2+}/Zn, Fe^{2+}/Fe and Ag are 0.34 V, –0.76V, –0.44 V and 0.80 V, respectively.

On the basis of standard electrode potential, predict which of the following reaction can not occur?

(1) $FeSO_4(aq) + Zn(s) \rightarrow ZnSO_4(aq) + Fe(s)$

(2) $2CuSO_4(aq) + 2Ag(s) \rightarrow 2Cu(s) + Ag_2SO_4(aq)$

(3) $CuSO_4(aq) + Zn(s) \rightarrow ZnSO_4(aq) + Cu(s)$

(4) $CuSO_4(aq) + Fe(s) \rightarrow FeSO_4(aq) + Cu(s)$

Ans. (2)

Sol. $E^0_{Cu^{2+}/Cu} = 0.34$ V

$E^0_{Zn^{2+}/Zn} = -0.76$ V

$E^0_{Fe^{2+}/Fe} = -0.44$ V

$E^0_{Ag^{+}/Ag} = 0.80$ V

Reaction which not occur:

(1) $E^0_{cell} = -0.44 - (-0.76) = +ve$ possible

(2) $E^0_{cell} = 0.34 - (+0.80) = -ve$ not possible

(3) $E^0_{cell} = 0.34 - (-0.76) = +ve$ possible

(4) $E^0_{cell} = 0.34 - (-0.44) = +ve$ possible

Section-II
Single Choice Type

This section contains **15 Single choice questions.** Each question has 4 choices (1), (2), (3) and (4) for its answer, out of which **Only One** is correct.

86. Match List-I with List-II.

	List-I (Ores)		**List-II** (Composition)
(a)	Haematite	(i)	Fe_3O_4
(b)	Magnetite	(ii)	$ZnCO_3$
(c)	Calamine	(iii)	Fe_2O_3
(d)	Kaolinite	(iv)	$[Al_2(OH)_4Si_2O_5]$

Choose the correct answer from the options given below:

(1) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

(2) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)

(3) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

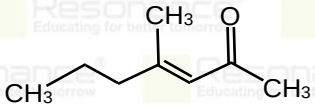
(4) (a)-(iii), (b)-(i), (c)-(ii), (d)-(iv)

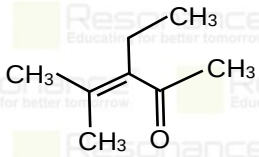
Ans. (4)

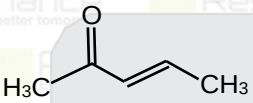
Sol.

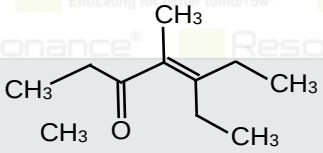
	List-I (Ores)		**List-II** (Composition)
(a)	Haematite	(i)	Fe_2O_3
(b)	Magnetite	(ii)	Fe_3O_4
(c)	Calamine	(iii)	$ZnCO_3$
(d)	Kaolinite	(iv)	$[Al_2(OH)_4Si_2O_5]$

87. Which one of the following is not formed when acetone reacts with 2-pentanone in the presence of dilute NaOH followed by heating?

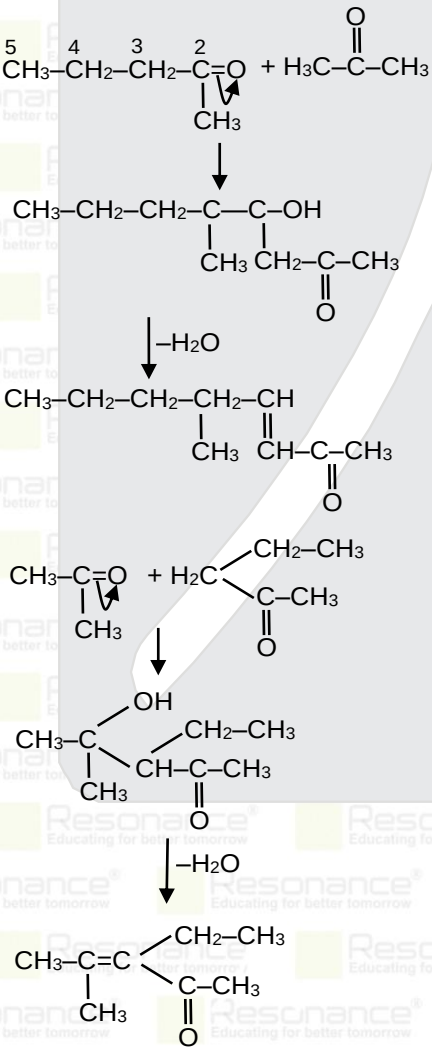
(1) 

(2) 

(3) 

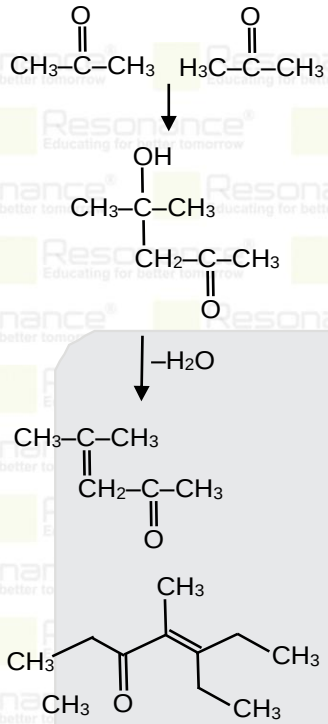
(4) 

Ans. (4)

Sol. (1) 

(2)

(3)



(4)

It is the Self product of pentan-3-one.

88. Given below are two statements:

Statement I:

In Lucas test, primary, secondary and tertiary alcohols are distinguished on the basis of their reactivity with conc. HCl + $ZnCl_2$, known as Lucas Reagent.

Statement II:

Primary alcohols are most reactive and immediately produce turbidity at room temperature on reaction with Lucas Reagent.

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

(1) **Statement I** is correct but **Statement II** is incorrect

(2) **Statement I** is incorrect but **Statement II** is correct

(3) Both **Statement I** and **Statement II** are correct

(4) Both **Statement I** and **Statement II** are incorrect

Ans. (1)

Sol. Lucas reagent is conc. HCl + Anhydrous $ZnCl_2$

reactivity order of alcohol towards Lucas reagent is $3^{o} > 2^{\circ} > 1^{\circ}$

89. If radius of second Bohr orbit of the He+ ion is 105.8 pm, what is the radius of third Bohr orbit of Li^{2+} ion?

(1) 1.587 pm (2) 158.7 Å (3) 158.7 pm (4) 15.87 pm

Ans. (3)

Sol. $r = (0.529)\ \frac{n^2}{2}$

$$\left(r_{He^+}\right)_{n=2} = 0.529 \times \frac{(2)^2}{2}$$

$= 0.529 \times 2$

$= 105.8$ pm

$$\left(r_{Li^{2+}}\right)_{n=3} = 0.529 \times \frac{(3)^2}{3}$$

$= 1.587\ A^0 = 158.7$ pm

90. A 10.0 L flask contains 64 g oxygen at 27ºC. (Assume O_2 gas behaving ideally). The pressure inside the flask in bar is

(Given R = 0.0831 L bar K^{-1} mol^{-1})

(1) 49.8 (2) 4.9 (3) 2.5 (4) 498.6

Ans. (2)

Sol. PV = nRT

$$\Rightarrow P \times 10 = \left(\frac{64}{32}\right) \times 0.0831 \times 300$$

= 4.986 bar

91. Find the emf of the cel in which the following reaction takes place at 298 K

$Ni(s) + 2Ag^+ (0.001\ M) \rightarrow Ni^{2+} (0.001\ M) + 2\ Ag(s)$

(Given that E^0_{cell} = 10.5 V, $\frac{2.303\,RT}{F}$ = 0.059 at 298 K)

(1) 0.9615 V (2) 1.05 V (3) 1.0385 V (4) 1.385 V

Ans. (1)

Sol. $Ni(s) + 2Ag^+ (0.001\ M) \rightarrow Ni^{2+} (0.001\ M) + 2\ Ag(s)$

0.001M 0.001M

$$E_{cell} = E^0_{cell} - \frac{0.059}{2} \log \frac{[Ni^{2+}]}{[Ag^+]^2}$$

$$1.05 - \frac{0.059}{2} \log \frac{10^{-3}}{(10^{-3})^2}$$

$$= 1.05 - \frac{0.059}{2} \log 10^3$$

$$= 1.05 - \frac{0.059}{2} \times 3$$

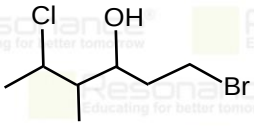
= 1.05 –0.0885

= 0.9615 V

Ans. = 1

Note : In this question E^0_{cell} is given as 10.5 V but actually it is 1.05 V so it is typing error so question shows be Bonous.

92. The correct IUPAC name of the following compound is:



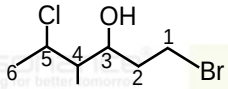
(1) 1-bromo-4-methyl-5-chlorohexan-3-ol

(2) 1-bromo-4-methyl-2-chlorohexan-4-ol

(3) 1-bromo-5-chloro-4-methylhexan-3-ol

(4) 6-bromo-2-methyl-4-chlorohexan-4-ol

Ans. (3)

Sol. 

1-Bromo-5-chloro-4-methylhexan-3-ol

93. In the neutral or faintly alkaline medium, $KMnO_4$ oxidises iodide into iodate. The change in oxidation state of manganese in this reaction is from

(1) +7 to +3 (2) +6 to +5 (3) +7 to +4 (4) +6 to +4

Ans. (3)

Sol. In neutral or faintly at kaline medium

$$\overset{+7}{M}no_4^- + I^- \longrightarrow \overset{+4}{M}no_2 + IO_3^-$$

Change in oxidation state of Mn is from +7 to +4

94. $3O_2(g) \rightleftharpoons 2O_3(g)$

for the above reaction at 298 K, K_C is found to be 3.0×10^{-59}. If the concentration of O_2 at equilibrium is 0.040 M then concentration of O_3 is M is

(1) 2.4×10^{31} (2) 1.2×10^{21} (3) 4.38×10^{-32} (4) 1.9×10^{-63}

Ans. (3)

Sol. $3O_2(g) \rightleftharpoons 2O_3(g)$ $K_C = 3 \times 10^{-59}$

at equilibrium 0.04M

$$K_C = \frac{[O_3]^2}{[O_2]^3} = 3 \times 10^{-59}$$

$$= \frac{[O_3]^2}{(4\times10^{-2})^3} = 3 \times 10^{-59}$$

$[O_3]^2 = 64 \times 3 \times 10^{-6} \times 10^{-59}$

$= 192 \times 10^{-65}$

$= 19.2 \times 10^{-64}$

$= 4.38 \times 10^{-32}$

95. Copper crystallises in fcc unit cell with cell edge length of 3.608×10^{-8} cm. the density of copper is 8.92 g cm^{-3}. Calculate the atomic mass of copper.

(1) 60 u (2) 65 u (3) 63.1 u (4) 31.55 u

Ans. (3)

Sol. fcc unit cell z = 4

$$d = \frac{Z\times M}{N_A \times Volume}$$

$$8.92 = \frac{4\times M}{6.02\times10^{23}\times[3.608\times10^{-8}]^3}$$

$$8.92 = \frac{4\times M}{6.02\times10^{23}\times46.97\times10^{-24}}$$

$M = 63.05$

96. The pollution due to oxides of sulphur gets enhanced due to the presence of:

(a) particulate matter
(b) ozone
(c) hydrocarbons
(d) hydrogen peroxide

Choose the most appropriate answer from the options given below:

(1) (b), (c) (d) only
(2) (a), (c), (d) only
(3) (a), (d) only
(4) (a), (b), (d) only

Ans. (4)

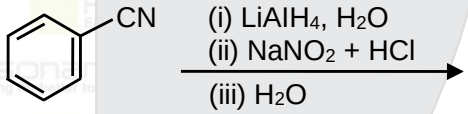
Sol. Particulate matter, O_3, H_2O_2 enhance oxidation process.

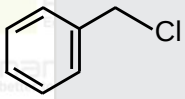
(i) $2SO_2(g) + O_2(g) \rightarrow 2SO_3(g)$

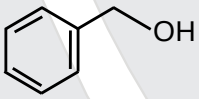
(ii) $SO_2(g) + O_3(g) \rightarrow SO_3(g) + O_2(g)$

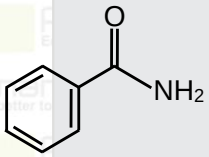
(iii) $SO_2(g) + H_2O_2(l) \rightarrow H_2SO_4(aq)$

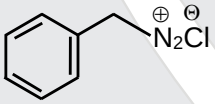
97. The product formed from the following reaction sequence is



(1) 

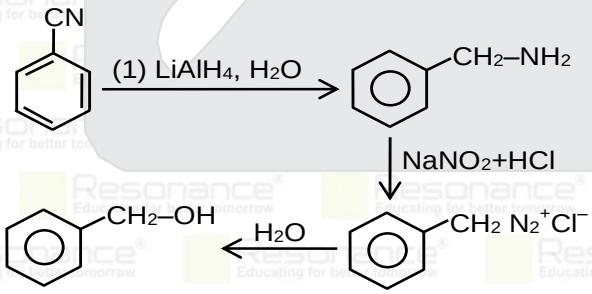
(2) 

(3) 

(4) 

Ans. (2)

Sol.

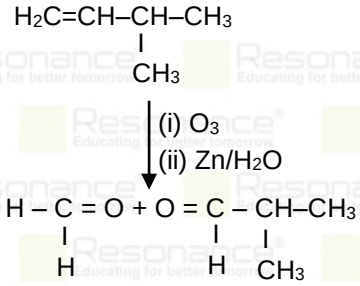


98. Compound X on reaction with O_3 followed by Zn/H_2O gives formaldehyde and 2-methyl propanal as products. The compound X is :

(1) 2-Methylbut-2-ene
(2) Pent-2-ene
(3) 3-Methylbut-1-ene
(4) n-Methylbut-1-ene

Ans. (3)

Sol.



99. For a first order reaction A → Product initial concentration A is 0.1 M, which becomes 0.001 M after 5 minutes. Rate constant for the reaction in min^{-1} is

(1) 0.4606 (2) 0.2303

(3) 1.3818 (4) 0.9212

Ans. (4)

Sol.

First order reaction

$A \longrightarrow$ product

Initial	1.01	—
after 5 min	0.001 M	

$$K = \frac{2.303}{t}\log\left(\frac{9}{a-x}\right)$$

$$= \frac{2.303}{5}\log\left(\frac{0.01}{0.001}\right)$$

$$= \frac{2.303}{5}\log 10^2$$

$$= 0.4606 \times 2$$

$$= 9212$$

100. The order of energy absorbed which is responsible for the colour of complexes

(A) $[Ni(H_2O)_2(en)_2]^{2+}$

(B) $[Ni(H_2O)_4(en)]^{2+}$ and

(C) $[Ni(en)_3]^{2+}$

is

(1) (C) > (A) > (B) (2) (B) > (A) > (C)

(3) (A) > (B) > (C) (4) (C) > (B) > (A)

Ans. (1)

Sol. Order of absorbed energy.

Strong field ligand have more splitting so complex absorb high energy order of spiliting

$\Rightarrow [Ni(en)3]^{2+} > [Ni(H_2O)_4(en)]^{2+} > [Ni(H_2O)_2(en)_2]^{2+}$

So order of absorb energy

$\Rightarrow$ (C) > (A) > (B)

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25th July & 01, 08th Aug. 2022

Category Wise Score in NEET 2022			Scholarship (%)	Fee for OFFLINE Classes (Fee: ₹1,15,000/-)#		
GEN / OBC-NCL/ EWS	SC	ST		ARF	Total Fees after S'ship	Fee Benefit
>= 575	>= 500	>= 450	100%	-	29500	85500
>= 500 to < 574	>= 450 to < 499	>= 400 to < 449	90%	20000	38050	76950
>= 450 to < 499	>= 400 to < 449	>= 350 to < 399	80%	20000	46600	68400
>= 400 to < 449	>= 375 to < 399	>= 325 to < 349	70%	20000	55150	59850
>= 375 to < 399	>= 350 to < 374	>= 300 to < 324	60%	20000	63700	51300
>= 350 to < 374	>= 325 to < 349	>= 275 to < 299	50%	20000	72250	42750
>= 325 to < 349	>= 300 to < 324	>= 250 to < 274	40%	20000	80800	34200
All Qualified Students of NEET-2022 in Any Category			30%	20000	89350	25650

*T & C APPLY # Inclusive GST

Resonance Eduventures Ltd.

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