Q1 - 24 January - Shift 1

Decreasing order of the hydrogen bonding in following forms of water is correctly represented by

A. Liquid water

B. Ice

C. Impure water

(1) A = B > C

(2) B > A > C

(3) C > B > A

(4) A > B > C

Space for your notes:

Q2 - 24 January - Shift 2

In which of the following reactions the hydrogen peroxide acts as a reducing agent?

(1) $PbS + 4H_2O_2 \rightarrow PbSO_4 + 4H_2O$

(2) $2Fe^{2+} + H_2O_2 \rightarrow 2Fe^{3+} + 2OH^-$

(3) $HOCl + H_2O_2 \rightarrow H_3O^+ + Cl^- + O_2$

(4) $Mn^{2+} + H_2O_2 \rightarrow Mn^{4+} + 2OH^-$

Space for your notes:

Q3 - 25 January - Shift 1

'25 volume' hydrogen peroxide means

(1) 1 L marketed solution contains 250 g of H_2O_2.

(2) 1 L marketed solution contains 75 g of H_2O_2.

(3) 100 mL marketed solution contains 25 g of H_2O_2.

(4) 1 L marketed solution contains 25 g of H_2O_2.

Space for your notes:

Q4 - 25 January - Shift 2

Match List I with List II

Space for your notes:

	List I		List II
A.	Cobalt catalyst	I.	(H_2 + Cl_2) production
B.	Syngas	II.	Water gas production
C.	Nickel catalyst	III.	Coal gasification
D.	Brine solution	IV.	Methanol production

Choose the correct answer from the options given below :-

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

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

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

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

Q5 - 29 January - Shift 1

Which of the given compounds can enhance the efficiency of hydrogen storage tank?

Space for your notes:

(1) Li/P_4

(2) SiH_4

(3) $NaNi_5$

(4) Di-isobutylaluminium hydride

Q6 - 29 January - Shift 2

Given below are two statements:

Statement I : Nickel is being used as the catalyst for producing syn gas and edible fats.

Statement II : Silicon forms both electron rich and electron deficient hydrides.

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

(1) Both the statements I and II are correct

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

(3) Both the statements I and II are incorrect

(4) Statement I is correct but statement II is incorrect

Space for your notes:

Q7 - 30 January - Shift 2

The strength of 50 volume solution of hydrogen peroxide is _____ g/L (Nearest integer).

Given:

Molar mass of H_2O_2 is 34 g mol^{-1}

Molar volume of gas at STP = 22.7 L.

Space for your notes:

Q8 - 31 January - Shift 1

H_2O_2 acts as a reducing agent in

(1) $2NaOCl + H_2O_2 \rightarrow 2NaCl + H_2O + O_2$

(2) $2Fe^{2+} + 2H^+ + H_2O_2 \rightarrow 2Fe^{3+} + 2H_2O$

(3) $Mn^{2+} + 2H_2O_2 \rightarrow MnO_2 + 2H_2O$

(4) $Na_2S + 4H_2O_2 \rightarrow Na_2SO_4 + 4H_2O$

Space for your notes:

Q9 - 31 January - Shift 2

Given below are two statements :

Statement I : H_2O_2 is used in the synthesis of Cephalosporin

Statement II : H_2O_2 is used for the restoration of aerobic conditions to sewage wastes.

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

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

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

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

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

Space for your notes:

Q10 - 01 February - Shift 1

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

Assertion A: Hydrogen is an environment friendly fuel.

Reason R: Atomic number of hydrogen is 1 and it is a very light element.

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

(1) A is true but R is false

(2) Both A and R are true but R is NOT the correct explanation of A

(3) A is false but R is true

(4) Both A and R are true and R is the correct explanation of A

Space for your notes:

Q11 - 01 February - Shift 2

O–O bond length in H_2O_2 is X than the O–O bond length in F_2O_2. The O – H bond length in H_2O_2 is Y than that of the O–F bond in F_2O_2.

Choose the correct option for X and Y from the given below.

(1) X – shorter, Y – shorter

(2) X – shorter, Y – longer

(3) X – longer, Y – longer

(4) X – longer, Y - shorter

Space for your notes:

Q12 - 01 February - Shift 2

The starting material for convenient preparation of deuterated hydrogen peroxide (D_2O_2) in laboratory is:

(1) $K_2S_2O_8$ (2) 2-ethylanthraquinol

(3) BaO_2 (4) BaO

Space for your notes:

Answer Key

(As per Official NTA Key released on 2 Feb)

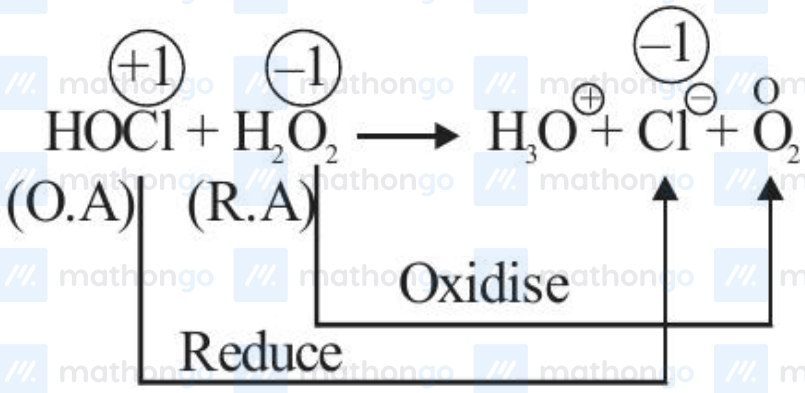
Q1 (2)	**Q2** (3)	**Q3** (2)	**Q4** (4)
Q5 (3)	**Q6** (4)	**Q7** (150)	**Q8** (1)
Q9 (1)	**Q10** (2)	**Q11** (4)	**Q12** (1)

Q1 (2)

Ice > Liquid water > Impure water

Due to impurity extent of H-Bonding decreases.

Q2 (3)



Q3 (2)

$$\text{Volume} = 11.35 \times M$$

Strength

$$M = \frac{25}{11.35} M$$

$$g/L = 25 \times 34/11.35$$

$$= 74.889$$

Q4 (4)

$\text{Cobalt catalyst} \rightarrow \text{Methanol production}$

$\text{Syn gas} \rightarrow \text{Coal gasification}$

$\left(C_{(\text{Red hot coke})} + H_2O(g) \rightarrow CO + H_2\right)$

$\text{Nickel catalyst} \rightarrow \text{Water gas production}$

$\text{Brine solution} \rightarrow \text{Production}$

$(\text{aq. NaCl}) \quad \begin{pmatrix} H_2 \rightarrow \text{Cathode} \\ Cl_2 \rightarrow \text{anode} \end{pmatrix}$

Q5 (3)

Refer NCERT

Q6 (4)

Statement–I is correct.

Ni is used in Hydrogenation of unsaturated fat to make edible fats.

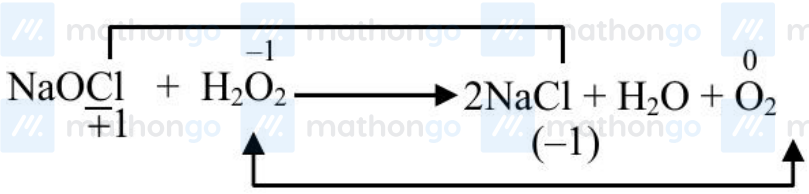
Statements–II is false as hydride of Silicon is electron precise & neither electron deficient nor electron rich.

Q7 (150)

$$\text{Molarity} = \frac{50}{11.35}$$

$$\therefore \text{Strength in gm/L} = \frac{50}{11.35} \times 34$$

Q8 (1)



Q9 (1)

It is used in the synthesis of hydroquinone, tartaric acid and certain food products and pharmaceuticals (cephalosporin) etc. Restoration of aerobic conditions to sewage wastes etc.

Q10 (2)

No pollution occurs by combustion of hydrogen and very low density of hydrogen.

Q11 (4)

According to bent rule more electronegative atom occupy less s-characters so bond length increases. O – H bond will be short than O – F bond due to small size of H than F.

Q12 (1)

$(K_2S_2O_8(s) + 2D_2O(l) \rightarrow 2KDSO_4(aq.) + D_2O_2$ **45.**