Interactive Practice & Step-by-Step Solutions: Practice chapter-wise PYQs with timer & full explanation on The Crucible.

Open on The Crucible ↗

Solid State — Stoichiometric defects · BITSAT 2023 Memory-Based

Practice on Crucible ↗

1. Frenkel and Schottky defects are :

(A) nucleus defects

(B) non-crystal defects

(C) crystal defects

(D) nuclear defects

Structure of Atom — Bohr's model · BITSAT 2023 Memory-Based

Practice on Crucible ↗

2. The Bohr orbit radius for the hydrogen atom $(n = 1)$ is approximately $0.530\mathring{A}$. The radius for the first excited state $(n = 2)$ orbit is (in $\mathring{A}$)

(A) 0.13

(B) 1.06

(C) 4.77

(D) 2.12

Classification of Elements and Periodicity in Properties — Modern periodic table · BITSAT 2023 Memory-Based

Practice on Crucible ↗

3. Element with electronic configuration $1s^2 2s^2 2p^6\ 3s^2 3p^6 3d^{10} 4s^2 4p^6 4d^{10} 5s^2 5p^3$ belongs to the following group of the periodic table

(A) 5th

(B) 15th

(C) 3rd

(D) 17th

Chemical Bonding and Molecular Structure — Ionic bond · BITSAT 2023 Memory-Based

Practice on Crucible ↗

4. Which of the following pairs will form the most stable ionic bond?

(A) Na and Cl

(B) Mg and F

(C) Li and F

(D) Na and F

Solutions · BITSAT 2023 Memory-Based

Practice on Crucible ↗

5. How much ethyl alcohol must be added to 1 litre of water so that the solution will freeze at 14°C ? (K_f for water $= 1.86^\circ\text{C/mol}$)

(A) $7.5\ \text{mol}$

(B) $8.5\ \text{mol}$

(C) $9.5\ \text{mol}$

(D) $10.5\ \text{mol}$

States of Matter — Kinetic theory of gases · BITSAT 2023 Memory-Based

Practice on Crucible ↗

6. Kinetic theory of gases proves

(A) only Boyle's law

(B) only Charles' law

(C) only Avogadro's law

(D) all of these

Environmental Chemistry — Air Pollution · BITSAT 2023 Memory-Based

Practice on Crucible ↗

7. The photochemical smog does not generally contain:

(A) NO

(B) NO_2

(C) SO_2

(D) $HCHO$

General Organic Chemistry · BITSAT 2023 Memory-Based

Practice on Crucible ↗

8. For the separation of two immiscible liquids which method is used?

(A) Chromatography

(B) Fractionating column

(C) Fractional distillation

(D) Separating funnel

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s Block Elements — Alkaline Earth Metals · BITSAT 2023 Memory-Based

Practice on Crucible ↗

9. Which of the following will precipitate first when aqueous solution containing sulphate ions are added?

(A) Mg^{2+}

(B) Ca^{2+}

(C) Sr^{2+}

(D) Ba^{2+}

Hydrogen — Hydrides · BITSAT 2023 Memory-Based

Practice on Crucible ↗

10. Ionic hydrides reacts with water to give

(A) acidic solutions

(B) hydride ions

(C) basic solutions

(D) electrons

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Chemistry in Everyday Life — Drugs and It's Classification · BITSAT 2023 Memory-Based

Practice on Crucible ↗

11. The drug used as an antidepressant is

(A) Luminol

(B) Tofranil

(C) Mescaline

(D) Sulphadiazine

Polymers — Classification of Polymers · BITSAT 2023 Memory-Based

Practice on Crucible ↗

12. Melamine plastic crockery is a copolymer of

(A) HCHO and melamine

(B) HCHO and ethylene

(C) melamine and ethylene

(D) None of these

Biomolecules — Proteins · BITSAT 2023 Memory-Based

Practice on Crucible ↗

13. The helical structure of protein is stabilized by

(A) dipeptide bonds

(B) hydrogen bonds

(C) ether bonds

(D) peptide bonds

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d and f Block Elements — Compounds of Transition Metals · BITSAT 2023 Memory-Based

Practice on Crucible ↗

14. In the laboratory, manganese (II) salt is oxidise to permanganate ion in aqueous solution by

(A) hydrogen peroxide

(B) conc. nitric acid

(C) peroxy disulphate

(D) dichromate

Ionic Equilibrium — Theories of Acids and Bases · BITSAT 2023 Memory-Based

Practice on Crucible ↗

15. Which one of the following molecular hydrides acts as a Lewis acid?

(A) $\mathrm{NH_3}$

(B) $\mathrm{H_2O}$

(C) $\mathrm{B_2H_6}$

(D) $\mathrm{CH_4}$

Electrochemistry — Conductance and Conductivity · BITSAT 2023 Memory-Based

Practice on Crucible ↗

16. Which of the following solutions of KCl will have the highest value of specific conductance?

(A) $1.0\ \mathrm{N}$

(B) $0.1\ \mathrm{N}$

(C) $1.0 \times 10^{-2}\ \mathrm{N}$

(D) $1.0 \times 10^{-3}\ \mathrm{N}$

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p Block Elements (Group 13 & 14) — Boron and Its Compounds · BITSAT 2023 Memory-Based

Practice on Crucible ↗

17. In reaction $\mathrm{BF_3} + 3\mathrm{LiBH_4} \rightarrow 3\mathrm{LiF} + X; X$ is

(A) $\mathrm{B_4H_{10}}$

(B) $\mathrm{B_2H_6}$

(C) $\mathrm{BH_3}$

(D) $\mathrm{B_3H_8}$

Amines · BITSAT 2023 Memory-Based

Practice on Crucible ↗

18. Primary amines can be distinguished from secondary and tertiary amines by reacting with

(A) Chloroform and alcoholic KOH

(B) Methyl iodide

(C) Chloroform alone

(D) Zinc Dust

General Principles and Processes of Isolation of Metals — Minerals and ores · BITSAT 2023 Memory-Based

Practice on Crucible ↗

19. The starting material for the manufacture of $\mathrm{KMnO_4}$ is

(A) pyrolusite

(B) manganite

(C) magnatite

(D) haematite

Coordination Compounds · BITSAT 2023 Memory-Based

Practice on Crucible ↗

20. The compounds $[\mathrm{PtCl_2\,(NH_3)_4}]\,\mathrm{Br_2}$ and $[\mathrm{PtBr_2\,(NH_3)_4}]\,\mathrm{Cl_2}$ constitutes a pair of

(A) coordination isomers

(B) linkage isomers

(C) ionization isomers

(D) optical isomers

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Some Basic Concepts of Chemistry — Laws of chemical combination · BITSAT 2022 PYQ
Practice on Crucible ↗

21. A certain metal sulphide, MS_2, is used extensively as a high temperature lubricant. If $\mathrm{MS_2}$ is 40.06% by mass sulphur, metal M has atomic mass.

(A) $160\mathrm{u}$
(B) $64\mathrm{u}$
(C) $40\mathrm{u}$
(D) $96\mathrm{u}$

Chemical Equilibrium · BITSAT 2022 PYQ
Practice on Crucible ↗

22. For an isomerisation reaction $A \rightleftharpoons B$, the temperature dependence of equilibrium constant is given by $\log_e K = 4.0 - \frac{2000}{T}$ The value of ΔS° at $300\mathrm{k}$ is, therefore

(A) $4R$
(B) $5R$
(C) $400R$
(D) $2000R$

Thermodynamics (C) — System and surrounding · BITSAT 2022 PYQ
Practice on Crucible ↗

23. In an adiabatic process, no transfer of heat takes place between system and surrounding. Choose the correct option for free expansion of an ideal gas under adiabatic condition from the following.

(A) $q = 0, \Delta T \neq 0, W = 0$
(B) $q \neq 0, \Delta T = 0, W = 0$
(C) $q = 0, \Delta T = 0, W = 0$
(D) $q = 0, \Delta T < 0, W \neq 0$

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p Block Elements (Group 15, 16, 17 & 18) — Nitrogen and Its Compounds · BITSAT 2021 PYQ
Practice on Crucible ↗

24. Hydrolysis of $\mathrm{NCl_3}$ gives $\mathrm{NH_3}$ and X. Which of the following is X ?

(A) $\mathrm{HClO_4}$
(B) $\mathrm{HClO_3}$
(C) HOCl
(D) $\mathrm{HClO_2}$

Chemical Kinetics — Integrated rate laws · BITSAT 2020 PYQ
Practice on Crucible ↗

25. A radioactive isotope having a half - life period of 3 days was received after 12 days. If $3\ \mathrm{g}$ of the isotope is left in the container, what would be the initial mass of the isotope?

(A) $12\ \mathrm{g}$
(B) $36\ \mathrm{g}$
(C) $48\ \mathrm{g}$
(D) $24\ \mathrm{g}$

Solid State — Stoichiometric defects · BITSAT 2023 Memory-Based

Practice on Crucible ↗

26. In a solid lattice, the cation has left a lattice site and is located at an interstitial position, the lattice defect is :

(A) Interstitial defect

(B) Valency defect

(C) Frenkel defect

(D) Schottky defect

Structure of Atom — Bohr's model · BITSAT 2023 Memory-Based

Practice on Crucible ↗

27. If the radius of the $3\mathrm{rd}$ Bohr's orbit of hydrogen atom is r_3 and the radius of 4^{th} Bohr's orbit is r_4. Then:

(A) $r_4 = \frac{9}{16} r_3$

(B) $r_4 = \frac{16}{9} r_3$

(C) $r_4 = \frac{3}{4} r_3$

(D) $r_4 = \frac{4}{3} r_3$

Classification of Elements and Periodicity in Properties — Modern periodic table · BITSAT 2023 Memory-Based

Practice on Crucible ↗

28. How many elements are there in 6^{th} period of periodic table?

(A) 18

(B) 8

(C) 30

(D) 32

Chemical Bonding and Molecular Structure — Ionic bond · BITSAT 2023 Memory-Based

Practice on Crucible ↗

29. Energy required to completely separate one mole of a solid ionic compound into gaseous. constituent ions is called

(A) Interstitial defect

(B) Valency defect

(C) Frenkel defect

(D) Schottky defect

Solutions · BITSAT 2023 Memory-Based

Practice on Crucible ↗

30. A 0.5 molal solution of ethylene glycol in water is used as coolant in a car. If the freezing point constant of water be $1.86^{\circ}\mathrm{C}$ per mole, the mixture shall freeze at

(A) $0.93^{\circ}\mathrm{C}$

(B) $-0.93^{\circ}\mathrm{C}$

(C) $1.86^{\circ}\mathrm{C}$

(D) $-1.86^{\circ}\mathrm{C}$

Answer Key (Q1 to Q30)

Click any question number below to practice chapter-wise PYQs on The Crucible ↗

1: (C)	2: (D)	3: (B)	4: (B)	5: (A)	6: (D)	7: (C)	8: (D)	9: (D)	10: (C)
11: (B)	12: (A)	13: (B)	14: (C)	15: (C)	16: (A)	17: (B)	18: (A)	19: (A)	20: (C)
21: (D)	22: (A)	23: (C)	24: (C)	25: (C)	26: (C)	27: (B)	28: (D)	29: (C)	30: (B)

Sample Solution — Question 1 (BITSAT 2023 Memory-Based · Correct Option: C)

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Q1. Frenkel and Schottky defects are :

Frenkel and Schottky defects are crystal defects. It arises due to dislodgement of cation or anion from their places in the crystal lattice.

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