

IIT JAM 2026 Chemistry Question Paper with Solutions

Time Allowed :3 Hour	Maximum Marks :100	Total Questions :60
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General Instructions

Read the following instructions very carefully and strictly follow them:

1. The examination is of 3 hours duration. There are a total of 60 questions carrying 100 marks. The entire paper is divided into three sections, A, B and C. All sections are compulsory. Questions in each section are of different types.
2. Section A contains a total of 30 Multiple Choice Questions (MCQ). Each MCQ type question has four choices out of which only one choice is the correct answer. Questions Q.1 – Q.30 belong to this section and carry a total of 50 marks. Q.1 – Q.10 carry 1 mark each and Questions Q.11 – Q.30 carry 2 marks each.
3. Section B contains a total of 10 Multiple Select Questions (MSQ). Each MSQ type question is similar to MCQ but with a difference that there will be more than one choices that are correct out of the four given choices. The candidate gets full credit if he/she selects all the correct answers only and no wrong answers. Questions Q.31 – Q.40 belong to this section and carry 2 marks each with a total of 20 marks.
4. Section C contains a total of 20 Numerical Answer Type (NAT) questions. For these NAT type questions, the answer is a real number which needs to be entered using the virtual keyboard on the monitor. No choices will be shown for these type of questions. Questions Q.41 – Q.60 belong to this section and carry a total of 30 marks. Q.41 – Q.50 carry 1 mark each and Questions Q.51 – Q.60 carry 2 marks each.
5. In all sections, questions not attempted will result in zero mark. In Section A (MCQ), wrong answer will result in NEGATIVE marks. For all 1-mark questions, 1/3 marks will be deducted for each wrong answer. For all 2-mark questions, 2/3 marks will be deducted for each wrong answer. In Section B (MSQ), there is NO NEGATIVE and NO PARTIAL marking provisions. There is NO NEGATIVE marking in Section C (NAT) as well.
6. Only Virtual Scientific Calculator is allowed. Charts, graph sheets, tables, cellular phone or other electronic gadgets are NOT allowed in the examination hall.
7. A Scribble Pad will be provided for rough work.

1. Find the number of P–O–P (pyrophosphate) bonds present in P_4O_8 .

2. Determine the shape of ClF_3 using VSEPR theory.

3. List the compounds of Xenon having one lone pair on the central atom.

4. Write the van der Waals equation and explain the van der Waals isotherm (P–V curve).

5. Langmuir isotherm

- (A) Multilayer adsorption
 - (B) Very high temperature θ vs P curve with intercept
 - (C) Very low temperature θ vs P curve with slope
 - (D) Reciprocal form gives $\theta = \frac{KP}{1 + KP}$
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6. Find the interplanar spacing d_{hkl} (in Å) using Bragg's law.

Given: $n = 1$, $\lambda = 1.54 \text{ Å}$

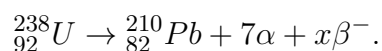
Use Bragg's law: $n\lambda = 2d \sin \theta$.

7. For the reaction:



If the degree of dissociation is $\alpha = 0.2$, find Δn_g and total number of moles at equilibrium (starting with 1 mole).

8. The radioactive decay is given as:



Find the value of x .

9. Among the following compounds of Xenon, identify those having exactly one lone pair on Xenon:

XeF_2 , XeO_2F_2 , XeO_3 , XeO_3F_2 , $XeOF_2$.

10. Isothermal compressibility of an ideal gas

$$-\frac{1}{V} \left(\frac{dV}{dP} \right)_T$$

is equal to

- (A) $\frac{nR}{P}$
- (B) nR
- (C) R
- (D) $\frac{1}{P}$

11. Which of the following has the highest melting point?

- (A) LiBr
- (B) NaBr
- (C) MgBr₂
- (D) AlBr₃

12. Compare the M–C bond length in the following complexes:

$Na_2[Mn(CO)_4]$, $Na[Mn(CO)_5]$, $Na[Mn(CO)_6]$.

13. Given $C_p = a + bT$

$a = 19.5$, $b = 0.042$, $n = 1$ mole

Temperature changes from $27^\circ C$ to $327^\circ C$.

Find ΔH .

14. T-shape geometry is shown by

- (A) XeF₂
- (B) SO₂
- (C) IO₄[−]
- (D) BrF₃

15. Which of the following has tetrahedral coordination?

- (A) CdI_2
 - (B) CsCl
 - (C) ZnS (sphalerite)
 - (D) ZnS (wurtzite)
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