

NEET SOLID STATE — IMPERFECTIONS IN SOLIDS — PYQS

Max. Marks: 32

Questions: 8

Section A (MCQ) — 8 questions

- Q.1** 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 :

[NEET (UG) 2022]

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A)
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
- (3) (A) is correct but (R) is not correct
- (4) (A) is not correct but (R) is correct

 Scan or tap for the
full solution


- Q.2** Match **List-I** with **List-II** :

List-I (Defects)		List-II (Shown by)	
a.	Frenkel defect	i.	Non-ionic solids and density of the solid decreases
b.	Schottky defect	ii.	Non-ionic solids and density of the solid increases
c.	Vacancy defect	iii.	Ionic solids and density of the solid decreases
d.	Interstitial defect	iv.	Ionic solids and density of the solid remains constant

Choose the correct answer from the options given below :

[NEET (UG) 2022 (Phase 2)]

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

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full solution


- Q.3** What fraction of Fe exists as Fe(III) in $\text{Fe}_{0.96}\text{O}$?
(Consider $\text{Fe}_{0.96}\text{O}$ to be made up of Fe(II) and Fe(III) only) [NEET (UG) 2022 (Phase 2)]

- (1) $\frac{1}{20}$
- (2) $\frac{1}{12}$
- (3) 0.08
- (4) $\frac{1}{16}$

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full solution


- Q.4** Which is the incorrect statement? [NEET 2017]

- (1) Density decreases in case of crystals with Schottky defect.
- (2) $\text{NaCl}_{(s)}$ is insulator, silicon is semi conductor, silver is conductor, quartz is piezoelectric crystal.
- (3) Frenkel defect is favoured in those ionic compounds in which sizes of cation and anions are almost equal
- (4) $\text{FeO}_{0.98}$ has non-stoichiometric metal deficiency defect.

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- Q.5** The correct statement regarding defects in crystalline solids is [AIPMT 2015]

- (1) Frenkel defects decrease the density of crystalline solids
- (2) Frenkel defect is a dislocation defect
- (3) Frenkel defect is found in halides of alkali metals
- (4) Schottky defects have no effect on the density of crystalline solids

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full solution


- Q.6** The appearance of colour in solid alkali metal halides is generally due to [AIPMT 2006]

- (1) interstitial positions
- (2) F-centres
- (3) Schottky defect
- (4) Frenkel defect

 Scan or tap for the
full solution


Q.7 If NaCl is doped with 10^{-4} mol% of SrCl_2 , the concentration of cation vacancies will be ($N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$) [AIPMT 2007]

- (1) $6.02 \times 10^{16} \text{ mol}^{-1}$ (2) $6.02 \times 10^{17} \text{ mol}^{-1}$
(3) $6.02 \times 10^{14} \text{ mol}^{-1}$ (4) $6.02 \times 10^{15} \text{ mol}^{-1}$

Scan or tap for the full solution



Q.8 The pycnometric density of sodium chloride crystal is $2.165 \times 10^3 \text{ kg m}^{-3}$ while its X-ray density is $2.178 \times 10^3 \text{ kg m}^{-3}$. The fraction of unoccupied sites in sodium chloride crystal is [AIPMT 2003]

- (1) 5.96 (2) 5.96×10^{-2}
(3) 5.96×10^{-1} (4) 5.96×10^{-3}

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7
Ans.	2	1	2	3, 4	2	2	2
Ques.	8						
Ans.	4						