

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)

CLASS: MSc/IMSC  
BRANCH: CHEMISTRY

SEMESTER : III/IX  
SESSION : MO/2024

SUBJECT: CH502 CH502R1 SOLID STATE AND NUCLEAR CHEMISTRY

TIME: 3 Hours

FULL MARKS: 50

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Derive the expression for half life period.	[5] 1	3
Q.1(b)	Discuss the working of Electroscope.	[5] 1	1
Q.2(a)	Explain the Auger effect.	[5] 2	2
Q.2(b)	Discuss the Geiger-Nuttal `s Law.	[5] 2	3
Q.3(a)	What do you mean by Fermi potential and nuclear potential?	[5] 3	3
Q.3(b)	Discuss the basic postulate of liquid drop model.	[5] 3	1
Q.4(a)	Differentiate between n -type and p -type semiconductor with mechanism. Discuss the types of close packing in solid.	[5] 4	1
Q.4(b)	What are the limitations of radius ratio rule? Discuss various types of imperfections in crystal. Differentiate between F centre and V centre.	[5] 4	2
Q.5(a)	Explain Type-I solid state reaction.	[5] 5	2
Q.5(b)	What is van Arkel method? Discuss vapour phase transport methods.	[5] 5	3

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