

INDIAN INSTITUTE OF SCIENCE EDUCATION & RESEARCH, KOLKATA
DEPARTMENT OF CHEMICAL SCIENCES

ID4206: CHEMISTRY OF MATERIALS MID-SEMESTER EXAMINATION

Time: 60 min

18-02-2019

Marks: 20

- (1) Mention the equivalent planes of $\{100\}$ in a body-centered cubic lattice. (1)
- (2) Draw T_+ trigonal hole and T_- tetrahedral hole. (2)
- (3) Write the atomic coordinates of T_+ and T_- tetrahedral voids in a face-centered cubic lattice. (2)
- (4) What is the coordination number of Ca^{2+} in CaF_2 ? (1)
- (5) Why MgAl_2O_4 is a normal spinel? (1)
- (6) How the octahedral voids are filled in CdI_2 ? (1)
- (7) What do you understand by 6_2 symmetry operation? (1)
- (8) Explain n in the space group $Pnma$? (1)

- (9) Why does CdSe nanoparticles smaller than 3 nm emit at higher energy compared to larger particles. Explain----- (3)
- (10) Explain the reason for the exceptional stability of the gold colloidal prepared by Faraday-- (1)
- (11) How does the UV absorption spectrum of a gold nanorods would look.? Explain----- (2)
- (12) Ag nanocubes were completely converted into Au hollow structures when exposed to gold salt., however, it is only partially replaced when exposed to Pd. Explain----- (2)
- (13) What are the advantages of dendrimers in the synthesis of Pd nanoparticles?----- (1)
- (14) What is the ideal synthetic condition to prepare non-spherical nanoparticles----- (1)

M. Ch. *Shy.*