



**Padmabhushan Vasantdada Patil Pratishthan's College of Engineering**

**Sion, Chunabhatti – 400022**

**Mid Term Examination (SH of 2015)**

**Department of General Engineering**

Sub: Applied Physics

SEM: I

Branch / Div: A, B, C, D

Time: 1:40 -2:40

Date: 07-09-2015

Maximum marks: 15

**N B:** Question No ONE is compulsory

Attempt any TWO from the remaining

All Questions carry equal marks.

Assume suitable data if required and justify the same

Q.1 Attempt any five

[5]

- a) "Crystal acts as 3D Diffraction Grating", explain
- b) Draw the miller plane (123) and direction [10 -1].
- c) Define Unit cell and space lattice.
- d) Define Ligancy. What is significance of Critical radius ratio?
- e) Give the importance of planes and directions in crystallography.
- f) State application of X-ray.
- g) Give significance of crystal defect.

Q2) a) Find the Critical radius ratio for octahedral configuration .Give one example.

[5]

or

a) Calculate the smallest glancing angle at which X rays of  $1.549 \text{ \AA}$  will be reflected from the crystal having spacing of  $4.255 \text{ \AA}$  .What is the highest order of reflection that can be observed?

[5]

Q3) a) Derive Braggs law. Explain Bragg's spectrometer for the investigation of Crystal structure. [5]

or

a) Explain various phases of liquid phase crystal

[5]

Q4) write short note on (any one)

[5]

- a). Hexagonally closed packed structure
- b). NaCl crystal lattice

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