

mu exam in / exam - form /
9th Sept



(SET-B)

BHARATI VIDYAPEETH COLLEGE OF ENGINEERING,

NAVI MUMBAI - 400614.

INTERNAL THEORY EXAMINATION - I (2015-2016)

FE Semester-I

Date - 02/09/2015

Time duration: 45 minutes.

MARKS: 15

(02:00 PM to 02:45 PM)

APPLIED PHYSICS-I

- Assume suitable data if necessary.
- Figures to the right indicate full marks.

Q.1 Attempt any TWO from (a), (b) and (c) (06)

a) Define the following terms i) Crystallography ii) Isotropic crystals.

b) Draw the following in cubic unit cell:

$(1\bar{2}1)$, $(1\bar{2}0)$, $(0\bar{2}\bar{1})$, $[1\bar{2}1]$

c) Nickel has FCC structure. Its lattice constant is 3.52 \AA , calculate its atomic radius.

Attempt any ONE from (d) and (e)

d) Why X-rays are used to determine crystal structure?

e) Second order Bragg reflection occurs at glancing angle of 17.17° . Calculate the wavelength of X-rays reflected from the face of FCC crystal with lattice constant 2.82 nm .

Q.2 Explain various types of point defects. (04)

OR

State and explain terms in Bragg's law of X-ray diffraction.

Q.3 Describe NaCl structure and determine the effective no of molecules per unit cell and coordination number. (05)

OR

Density of Molybdenum is 10.2 gm/cc and its atomic weight is 95.94 . Molybdenum crystallizes in BCC structure. Determine the atomic radius of Molybdenum atom.

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$\sqrt{2}a = 4r$
 $r = \frac{\sqrt{2}a}{4}$