

Q1)

Date :

Page No.

| $h^2 + k^2 + l^2$ | hkl | SC | BCC | FCC | DC |
|-------------------|------------------------|--------------|--------------|-------|------------------------|
| 1 | (100) | (100) | | | |
| 2 | (110) | (110) | (110) | | |
| 3 | (111) | (111) | | (111) | (111) |
| 4 | (200) | (200) | (200) | (200) | |
| 5 | (210) | (210) | | | |
| 6 | (211) | (211) | (211) | | |
| 7 | — | | | | |
| 8 | (220) | (220) | (220) | (220) | (220) |
| 9 | (300), (221) | (300), (221) | | | |
| 10 | (310) | (310) | (310) | | |
| 11 | (311) | (311) | | (311) | (311) (311) |
| 12 | (222) | (222) | (222) | (222) | (222) |
| 13 | (320) | (320) | | | |
| 14 | (321) | (321) | (321) | | |
| 15 | — | | | | |
| 16 | (400) | (400) | (400) | (400) | (400) |
| 17 | (410), (322) | (410), (322) | | | |
| 18 | (411), (330) | (411), (330) | (411), (330) | | |
| 19 | (331) | (331) | | (331) | (331) (331) |
| 20 | (420) | (420) | (420) | (420) | |
| 21 | (421) | (421) | | | |
| 22 | (332) (332) | (332) | (332) | | |
| 23 | (422) — | | | | |
| 24 | (422) | (422) | (422) | (422) | (422) |
| 25 | (500), (430) | (500), (430) | | | |
| 26 | (431), (510) | (431), (510) | (431), (510) | | |
| 27 | (333) | (333) | | (333) | (333) (333) |

b) Ratios of values of first few values of $h^2 + k^2 + l^2$

a) SC :

Reflections at $h^2 + k^2 + l^2 = 1, 4, 3, 4, 5, 6, \dots$
 Ratios $= 1 : 2 : 3 : 4 : 5 : 6$

b) BCC

Reflections at $h^2 + k^2 + l^2 = 2, 4, 6, 8, 10, 12, \dots$
 Ratios $= 1 : 2 : 3 : 4 : 5 : 6$

c) FCC

Reflections at $h^2 + k^2 + l^2 = 3, 4, 8, 11, 16, 19, \dots$
 Ratios $= 3 : 4 : 8 : 11 : 16 : 19$

d) DC

Reflections at $3, 8, 11, 16, 19, 24, \dots$
 Ratios $= 3 : 8 : 11 : 16 : 19 : 24$