

THE HONG KONG POLYTECHNIC UNIVERSITY  
HONG KONG COMMUNITY COLLEGE

**Subject Title** : Engineering Materials

**Subject Code** : CCN2249

**Session** : Semester One, 2017/18

**Numerical Answers**

**Question B1**

- (a) 0.4069, .5931
- (b) 2.5557 g/cm<sup>3</sup>
- (c) 195 GPa
- (d) 103GPa
- (e) **15805.6667N**

**Question B2**

- (c) 1.93848 Å
- (d) **6.1310Å**
- (e) 3.7623 × 10<sup>14</sup> atoms/cm<sup>2</sup>
- (f) 1.8597x10<sup>7</sup> Vacancies/cm<sup>3</sup>

**Question B3**

- (b)(iii) **40.8242MPa**
- (c) 8.94 <sup>E</sup>/cm<sup>3</sup>

**Question B4**

- (b)(i) 3.2251x10<sup>-7</sup>cm
- (b)(ii) 8241 atoms
- (c) 34.2969%

**Question B5**

- (a)(i) **321.0910MPa, 0.7156**
- (a)(ii) 0.5398, 550.8799MPa
- (a)(iii) **3.0539mm**
- (b)(i) **287.6726MPa**
- (b)(ii) **950.9837MPa, 1.1957**

**Question B6**

(b)(i) 67.6768%, 32.3232%

(b)(ii) 56.0606%, 43.9394%

(c)(i) 12.3798g, 19.9434g, 32.6202g, 35.0566g

(c)(ii) 16.5212g, 27.4128g, 28.4788g, 28.4788g