Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
100 Level 2nd Semester Examination – Jan./Feb. 2016

Uva Wellassa University

MRT 111-1 Crystallography

Total number of questions: Two (02)
Answer all questions
Time Allocated: One (01) hour
Mark Allocation: 100

01. (a) Illustrate (i) rectangular (ii) hexagonal planar lattices (2-D nets) formed by point translation in 2-D space. Indicate the primitive unit cell in each lattice.

(15 mark)

(b) (i) Derive a relationship between the atomic radius (R) and unit cell edge length, *a*, of a body centred cubic unit cell.

(15 mark)

(ii) Explain how cubic closest packing structure of a mono-atomic crystalline material is formed.

(20 mark)

02. (a) Using sketch diagrams explain how you would derive the Miller Index of crystal faces. Show an example.

(10 mark)

(b) Distinguish between open and closed crystal forms.

(10 mark)

(c) Describe the six crystal systems.

(10 mark)

(d) Describe symmetry elements and symmetry operations.

(10 mark)

(e) Describe five (05) out of the ten (10) possible planar point groups (motif symmetries).

(10 mark)

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