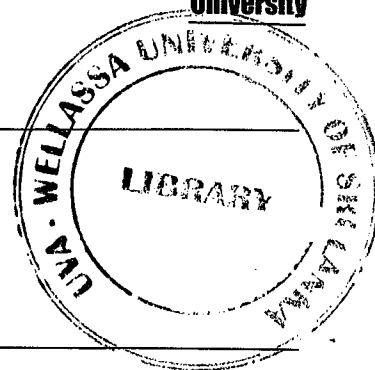


MRT 111-1 Crystallography



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)