

Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
300 level 1st Semester Examination – June/July 2017
MRT 315-3 Technical Mineralogy



Instructions to candidates

Duration: 01 hour and 30 minutes

Number of questions: 5 Essays

Answer three (03) questions only

Select two (02) questions from Part A and one (01) question from Part B

Mark allocation: 90 Marks

Part A

1. a). What are the major types of iron ores? (03 mark)
- b). Explain each steps in iron smelting process? (15 mark)
- c). Summarize all the chemical reactions inside the blast furnace (06 mark)
- d). Explain the role of limestone in iron smelting (06 mark)

2. a). Compare hydraulic and non-hydraulic cement types? (06 mark)
- b). What are main raw materials and collective constituents in Portland cement? (05 mark)
- c). What are major synthetic mineral phases in clinker? (04 mark)
- d). Discuss each synthetic mineral phases in clinker in terms of *chemical formula, hydration characteristics and specific role in the clinker?* (15 mark)

3. a). Define what is glass and state its two prime assets? (05 mark)
- b). List out the common raw materials utilized in glass manufacturing? (05 mark)
- c). Classify above listed raw materials in to three (03) common groups? (06 mark)
- d). Briefly discuss the glass manufacturing process? (14 mark)



Part B

4. a). "Bio extraction is cost effective and environmental friendly". Explain the statement. (10 mark)
- b). Explain the characters of bacteria that involve in bio extraction. (10 mark)
- c). Explain four environmental factors that influence the bio extraction. (10 mark)
5. a). Explain the screening process of microbes for acid production under laboratory condition. (10 mark)
- b). Explain the ureolytic induced carbonate precipitation in bacteria. (10 mark)
- c). Why bioremediation of heavy metals is necessary in biomining environment? Explain. (10 mark)