Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
3rd Year 1st Semester Examination – July/August 2016
MRT 361-2 Mineral Processing Methods

logInstructions to candidates
Duration: 02 hours
Number of questions: 4 Essays
Answer all questions
Mark allocation: 400 Marks

(1)

(a)

(i) Briefly discuss the types of industrial screens with examples.

[25 marks]

(ii) Define screen efficiency and derive a formula for it.

[25 marks]

(b) In the first shift 220.0 t of copper fed in to a flotation plant assays 54 % copper. The concentrate produced assays 92% copper, and the tailings 8% .

Calculate the recovery of copper to the concentrate, the ratio of concentration, and the enrichment ratio [30 marks]

(c) A sieve analysis was carried out on a sand and results are as follows:

Size (microns)	Weight(g)
+850	55
-850,+710	45
-710,+600	30
-600,+525	55
-525,+425	25
-425,+315	34
+315,-212	46
+212, -180	35

Amount of loss= 15g

Using the log graph paper provided, plot the cumulative weight percent passing verses the particle size in microns.

[20 marks]

50 24

(2)

(a) (i) Briefly explain dewatering and methods of dewatering with aid of diagram/s.

[60marks]

(ii) Briefly explain how to obtain filter efficiency in a laboratory

[20 marks]

(b) Design settling tanks for given parameters.

Area of rectangular land 900 m^2 and capacity of slurry 7200m^3. Please indicate other reasonable assumptions.

[20 marks]

(3)

(a) (i) List out comminunition theories and briefly discuss them.

[10 marks]

(ii) Explain secondary crushers with aid of diagram/s. [10 marks]

(b) (i) Propose a flow sheet to separate garnet from the garnet bearing rock

[30 marks]

(ii) Draw a flow sheet for crusher plant to produce 0-5mm,5-10mm,10-20mm size sand particles.

[50 marks]

(4) Briefly explain any **four** using diagrams where applicable,

(a) Gravity separation criteria and gravity separation methods.
(b) Magnetic separators used in mineral processing industry.
(c) Hydro cyclone efficiency and uses.
(d) Value addition of minerals in Sri Lanka.
(e) Setting time of particles.

[25x 4 marks]