The Open University of Sri Lanka
Faculty of Engineering Technology
Industrial Studies Programme (Agriculture)
Final Examination- 2012/2013

AEI6235 Hydrology and water resources

Date : 01-08-2013
Time : 0930-1230 hours

SECTION 2: Answer any four (04) questions. All questions carry equal marks.

1. (a) Briefly explain the types of rain gauges and sitting of a rain gauge.

   (b)(i) Write brief account on errors in rain gauge measurement and estimating true rain catch.

   (ii) Precipitation station X was inoperative for part of a month during which a storm occurred. The respective storm totals at three surrounding stations A, B, and C was 110, 98 and 120mm. The normal annual precipitation amounts at stations X, A, B and C are respectively 950, 1100, 905 and 1250. Estimate the storm precipitation for station X.

2. (a) Briefly explain the Freshwater –Saltwater interface in coastal aquifer in relation to salt water intrusion and measures to prevent salt water intrusion.

   (b) Write a brief note on role of agriculture on groundwater contamination.

3. Briefly explain **one (01)** new water resources project implemented in the dry zone of Sri Lanka recently by the Irrigation Department for irrigation purposes and the advantages and disadvantages of that project.

4. (a) Briefly explain and compare the aquifer yields in unconsolidated materials, sedimentary rocks and crystalline rocks
   (b) Briefly describe the factors that you consider while designing the tube well.

5. (a) Briefly explain the terms relating to well performance using suitable diagram.

(b) A well in a confined aquifer thickness of 23m is pumped at a rate of 2850 m3/day. Diameter of the well is 1 m, water level in the well is 20 m and the height of the rest water level is 41 m above the datum. The height of the water table at the distance of 5m in the aquifer from the centre of the well is 39 m. Neglect the well losses. Assume steady state condition. Calculate the transmissvity of the aquifer.

6. Write brief note on any **three (03)** of the following

i. Infiltration indices
ii. Aquifer particle size analysis
iii. Pumping test of wells
iv. runoff cycle