The Open University of Sri Lanka

Faculty of Engineering Technology

Technology (Agricultural Engineering) Program

Final Examination- 2013/2014

AEX6233 Hydrology

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

1. (a) Briefly discuss the importance of forecasting with statistical concepts in hydrology.

   (b) Use the following data and calculate the Pearson's correlation coefficient and discuss the results.

x	y
1.3	151.6
0.9	105.6
1.8	200.0
2.1	221.3
1.5	170.0
7.5	742.2

2. (a) Write a brief note on Unit Hydrograph.

   (b) Briefly discuss the factors affecting the shape of a hydrograph of river discharge at a gauging station Vs time.

3. (a) Write a brief note on "Evapotranspiration".

   (b) Briefly explain the factors affecting the evapotranspiration and the role of evaporation on water resources planning.

4. (a) Write a brief note on the operation and maintenance of Sprinkler Irrigation systems

   (b) Determine the uniformity coefficient from the following data obtained from a field test on a square plot bounded by four sprinklers:
   Sprinkler- 4.365x2.381 mm nozzles at 2.8 kg/cm2
   Spacing- 24 m x 24 m
   Wind- 3.5 km/hr from south-west
   Humidity- 42 per cent
   Time of test- 1.0 hour

The computations are shown in the following tabular form:

Observation	Frequency	Application rate*frequency	Numerical deviations	Frequency*deviations
10.2	1	10.2	1.6	1.6
9.9	1	9.9	1.3	1.3
9.4	2	18.8	0.8	1.6
9.1	4	36.4	0.5	2.0
8.9	3	25.7	0.3	0.9
8.6	1	8.6	0.0	0
8.3	1	8.3	0.3	0.3
8.1	1	8.1	0.5	0.5
7.9	2	15.8	0.7	1.4
7.6	2	15.2	1.0	2.0
6.8	1	6.8	1.8	1.8
6.6	2	13.2	2.0	4.0

5.   Briefly describe five major water resources projects recently planned in Sri Lanka and their positive and negative aspects.

6.   Write brief notes on any three (03) of the following
       (a) Infiltration
       (b) Groundwater pollution
       (c) Nitrogen Cycle
       (d) Natural Protection of groundwater

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