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**University Examinations 2015/2016**

SECOND YEAR SECOND SEMESTER EXAMINATION

FOR DIPLOMA IN

CIVIL ENGINEERING

**ECV 2255: ENGINEERING HYDROLOGY**

**DATE: APRIL 2016 TIME: 1 ½ HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Define precipitation, what is cyclonic precipitation? Distinguish between cold front and warm front. (6 marks)
2. Differentiate between recording and non recording rain gauges. (4 marks)
3. Define the term runoff and list three factors that affect runoff of a given area. (4 marks)
4. What is a unit hydrograph; discuss its use and limitations. (6 marks)
5. State four major causes of flooding in urban areas. (4 marks)
6. State three factors affecting infiltration capacity (3 marks)
7. State three sources of hydrological data. (3 marks)

**QUESTION TWO (15 MARKS)**

1. An area is composed of a square 10km and an equilateral triangle placed on the left side, the annual precipitation recorded at four corners and the centre of the square considered clockwise from top left corner is 460mm, 650mm, 760mm, 800mm and 700mm respectively. The apex of the triangle has recorded 600mm of annual precipitation. Find the mean precipitation over the area by Thiessen polygon method and find the percentage difference with that of anthemetic mean method.
2. marks)
3. Discuss the importance of stream gauging (5 marks)

**QUESTION THREE (15 MARKS)**

1. Explain the hydrological cycle with a neat sketch. (10 marks)
2. Explain briefly the various flood control measures. (5 marks)

**QUESTION FOUR (15 MARKS)**

1. Define the following hydrological process and briefly explain the importance of each component to the hydrologic cycle
2. Surface runoff (3 marks)
3. Ground water flow (3 marks)
4. Evape transpiration (3 marks)
5. Briefly explain infiltration capacity.  index and index (6 marks)