



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

THIRD YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING
BCECD 316: HYDROLOGY

DATE: 19/12/2017

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

1.
 - a) Define the term hydrology (2 marks)
 - b) With a neat sketch, explain the processes in hydrologic cycle (10 marks)
 - c) Discuss five factor that influence surface run off (10 marks)
 - d) Explain 4 factors that affect evaporation (6 marks)
2.
 - a) Using the table below determine the mean rainfall using;
 - i Arithmetic method
 - ii Thiessen polygon method (10 marks)

Station	Area	Precipitation
A	18	16.5
B	31	37.7
C	282	48.8
D	311	68.3
E	52	39.1
F	238	75.1
G	212	127.0
H	197	114.3

Note station A and E are outside the region

- b) Using the data given in the table below, determine the missing precipitation for station P using normal ratio method (10 marks)

Station	P	Q	R	S	T
Average annual precipitation	2200	2330	2000	2107	2431
Precipitation for year 2016	?	2000	2200	2020	2095

3.
 - a) Define the term run-off (2 marks)
 - b) Discuss 5 damages caused by flood (10 marks)
 - c) Outline the process of run-off (8 marks)
4.
 - a) Define the term flood (2 marks)
 - b) Explain 5 causes of run-off (10 marks)
 - c) Discuss FOUR measures that can be put in place to reduce flood damage (8 marks)
5.
 - a) Explain 5 classes of streams (10 marks)
 - b) The following stage discharge observation were made at particular river gauge station

Stage(m)	0.70	1.2	1.7	2.0	2.5	2.70	3.1	3.3	3.7
Discharge m ³ /s	1.6	2.4	3.4	4.5	5.4	6.2	7.7	9.0	10.3

- i Establish rating curves
- ii Prepare a sample rating table between 2m and 3m at interval of 0.1m (10 marks)