

UNIVERSITY OF RUHUNA
BACHELOR OF SCIENCE IN FISHERIES AND MARINE SCIENCES DEGREE

Level IV Semester I Examination

July 2015

LIM 4132 Water Resource Management

Time: 01 ½ hours

Answer all questions.

1. A plot between rainfall intensity versus time is called:

- i. Mass curve
- ii. Isohyte
- iii. Hyetograph
- iv. Rainfall duration curve
- v. Hydrograph

2. Hydrologic flood routing methods use

- i. Continuity equation
- ii. Energy equation only
- iii. Continuity equation and storage
- iv. Continuity equation and momentum equation
- v. Momentum equation and storage

3. The storage constant K in the Muskingum equation is the ratio of

- i. Storage to discharge
- ii. Discharge to storage
- iii. Storage to time
- iv. Inflow to outflow
- v. Outflow to inflow

4. A hydraulic structure is designated for T year frequency flood and has an estimated life of N years. The probability that the structure will not fail during its life period is given by:

- i. $\left(1 - \frac{1}{T}\right)^N$
- ii. $\left(1 - \frac{1}{T}\right)$
- iii. $\left(1 - \frac{1}{N}\right)^T$
- iv. $\left(T - \frac{1}{N}\right)$
- v. $1 - \left(1 - \frac{1}{T}\right)^N$

5. The probability that a T year frequency flood occurs in any given year is:

- i. $\frac{1}{T}$ ii. $\frac{100}{T}$ iii. $\frac{1}{\log T}$ iv. $\log_e T$ v. e^{-T}

Part II (35 marks)

Write your answer only within the provided space

1. What is meant by *frequency* of an event ? Write steps of drawing maximum depth duration frequency curve?

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2. What is meant by 'River Flood Routing'?

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3. What are the two main types of flood routing techniques?

- i.
ii.

4. Write three negative impacts of dams that are being built across rivers.

- i.
ii.
iii.

5. Define following terms in relation to natural disasters

i. Hazard :.....
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ii. Vulnerability.....
.....
.....

iii. Resilience: :.....
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6. Define the term 'risk' and indicate its relation to hazard and vulnerability.

i. Definition of Risk
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ii. Relationship between risk, hazard and vulnerability:
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7. Name two International Agreements or Conventions ratified by the United Nations on freshwater

i.

ii.

8. Define the term 'Drought' and write four types of droughts

i. Definition of Drought
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ii. Types of Droughts

- (a)
- (b)
- (c)
- (d)

9. Write three different indices used to measure the severity of drought.

- i.
- ii.
- iii.

10. Define yield-reliability curve and its importance in storing water.

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