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Sub Code: ECE 062

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**B. TECH
(SEM-VIII) THEORY EXAMINATION 2017-18
RIVER ENGINEERING**

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections.

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

- a) Classify the rivers.
- b) Write about sediment transport.
- c) What do you mean by cross over?
- d) Write in short about stability and instability of river.
- e) What do you mean by ethics of stream restoration?
- f) What do you mean by alluvial river?
- g) Give the channel geometric data of river.
- h) What do you mean by time series?
- i) How are the rivers protected for erosion?
- j) What do you understand with groynes?

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

- a) What do you understand by river Morphology? Explain Rosgan classification of river in detail.
- b) What are the cut-offs? How are the used as a river training method?
- c) Differentiate between the following.
 - I. Biologs and rootwads.
 - II. Reach and corridor.
- d) Write about the following:
 - I. Total sediment load determination
 - II. Discharge measurement techniques in river.
- e) The following data given for the guide banks for a bridge on a river having the following data:

Design discharge = 80000comecs
High flood level = 110.0 m
Low flood level = 100.0 m
Khadir width = 4000.0 m
Lacey's net factor = 1.10
What would be the upstream guide bank?

SECTION C

3. **Attempt any *one* part of the following:** **10 x 1 = 10**
- a) Differentiate between the following:
 - I. Flashy and Virgin rivers
 - II. Aggrading and degrading rivers
 - b) . Distinguish between bed load,suspended load and wash load. Explain with neat sketch,the saltation method of bed load tranportation
4. **Attempt any *one* part of the following:** **10 x 1 = 10**
- a) Write a note on the following:
 - I. Formation and growth of a delta
 - II. Favorable conditions for development of a cutoff a meandering river
 - b) Compute the meander length, meander width, river width for a river in flood plain, when discharge passing through is $81 \text{ m}^3/\text{sec}$.
5. **Attempt any *one* part of the following:** **10 x 1 = 10**
- a) What do you understand by 'river restoration? Explain the various types of restoration works.
 - b) Explain the machinism of alluvial river.
6. **Attempt any *one* part of the following:** **10 x 1 = 10**
- a) Enlist various types of bio-Engineering technique. Explain any two of them in detail.
 - b) Describe the various bed forms that occur in alluvial channel.
7. **Attempt any *one* part of the following:** **10 x 1 = 10**
- a) Explain the use of Levees for protecting cited from floods.
 - b) Write a note on the following:
 - (i) Bandalling
 - (ii) Pitched Island and its limitations.