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BTECH
(SEM VI) THEORY EXAMINATION 2023-24
RIVER ENGINEERING

TIME: 3 HRS**M.MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A**1. Attempt all questions in brief.**

a.	How are Rivers Formed?	2
b.	What are the features made by a river in a flood plain?	2
c.	What Do You Mean by the Meander River System?	2
d.	Draw the figure of braided river.	2
e.	What is good ecological restoration?	2
f.	List out the purpose of a groyne.	2
g.	How do you calculate bank height ratio?	2
h.	What are the limitations of bio-engineering techniques?	2
i.	Write the categories of river training works.	2
j.	Draw the figure of launching apron.	2

SECTION B**2. Attempt any three of the following:**

a.	How aggrading type of river and degrading type of river differ with each other?	10
b.	How are the components of a meander river system formed?	10
c.	Explain the various methods of form-based restoration technique.	10
d.	Draw the flow chart for natural channel design phases.	10
e.	Find out the number of spurs to control one side of the stream bank of 150 m length. The average flood flow is 5000 m ³ /sec. It is given that the length of spur is 10 m and angle of projection is 30° from the vertical.	10

SECTION C**3. Attempt any one part of the following:**

a.	Describe controlling factors of river morphology.	10
b.	Explain with neat sketch structure of river.	10

4. Attempt any one part of the following:

a.	Describe with figure movement of water in a river bends.	10
b.	Compute the meander length, meander width and river width for a river in flood plain, when discharge passing through is 64 m ³ /s.	10

5. Attempt any one part of the following:

a.	Explain about the mechanics of alluvial rivers. Also discuss on the socio-cultural influence on stream restoration.	10
b.	“Stream restoration work influence the social and cultural environment” of the society. Discuss the merits and demerits of this statement.	10

6. Attempt any one part of the following:

a.	“Channel geometry at any particular location reflects the influence of upstream controls, notably climate, geology, basin physiography and land use, which determine the hydrologic regime, quantity and type of sediment yield”. Discuss the above statement.	10
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b.	Explain various properties of sediments and discuss about sediment movement in river.	10
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7. Attempt any *one* part of the following:

a.	How we plan levee and give salient features of design considerations of levees?	10
b.	The following hydraulic data pertains to a bridge site of a river. Maximum discharge = 6,000 cumecs. Highest flood level = 104.00 m. River bed level = 100.00 m. Average diameter of river bed material = 0.10 mm. Design and sketch Bell's Bunds including the launching apron to train the river. Assume plentiful availability of boulders near the site.	10

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