Printed Pages:2 **Sub Code: KCE- 062**

Paper Id: 236891 **Roll No.** | | | | | | | | | | |

B. TECH
(SEM VI) THEORY EXAMINATION 2022-23
RIVER ENGINEERING

Time: 3 Hours ***Total Marks: 100***

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

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. What is the cause of meandering?
b. Define a cross-over.
c. What are aggrading and degrading type of rivers?
d. What is an alluvial river? Define suspended load.
e. Why is time series analysis done?
f. What is sinuosity of a meandering river?
g. What is an artificial cutoff?
h. What is a spur?
i. What do you understand by pitched bank and pitched island?
j. What are the functions of a groyne?

SECTION B

2. Attempt any *three* of the following: 10x3=30

a. List various classifications of river morphology. Explain Rosgan's classification in detail.
b. What are the basic factors controlling process of meandering? Explain general features of meandering.
c. Describe various sediment and catchment characteristics responsible for sediment movement and transport in alluvial channels?
d. What are the objectives of natural channel design approach? Describe various phases in fundamental design framework of natural channels.
e. Elaborate on various measures taken for bank protection.

SECTION C

3. Attempt any *one* part of the following: 10x1=10

a. Give a detailed account on various types of rivers.
b. Explain the mechanism of alluvial rivers and delta formation and control?

4. Attempt any *one* part of the following: 10x1=10

a. Explain about various forms of bed forms in steady flow rivers with the help of figures.

b. Which factors are responsible for moulding the behaviour of rivers? Discuss the behaviour of rivers in straight reaches as well as special situations, in detail.

5. Attempt any *one* part of the following: 10x1=10

a. What is river restoration? Explain the methods of form-based restoration techniques.

b. Explain the social, cultural and economic benefits of stream restoration.

6. Attempt any *one* part of the following: 10x1=10

a. What is bio-engineering techniques used for? What are their limitations? Explain Brush Mattress technique in detail with its advantages & disadvantages.

b. Describe the flow duration and sediment rating curve procedure of estimating the sediment yield of a watershed.

7. Attempt any *one* part of the following: 10x1=10

a. What are the effects of levees on flood flows? What are the points to consider the planning of levee?

b. What are the objectives of river training? How river training works are classified?