Total number of printed pages: 01 **PG/2nd Semester/PCEW202**

2024

HYDRAULICS OF SEDIMENT TRANSPORT

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **ALL** questions.*

1. Write in details in the following (*draw the necessary figure*): 5*4 = 20

a) Characteristics of saltation

b) Turbulent intensity

c) Exner equation

d) Mechanism for braid formation in rivers

2. a) Write in details about hydraulically smooth and rough flow. 6

b) Derive the governing equation for threshold condition for sediment motion for a given flow regime (Yang's model). Assume the necessary. 14

3. a) Write a short notes on total load transport. 8

b) Discuss du Boys' approach in details for bed load transport. 12

4. a) Derive the governing mathematical expression for turbulent logarithmic layer. Assume the necessary. 12

b) Discuss various types of bed forms (draw the necessary figures). 8

5. a) Write in details about scour at bridge piers. Draw the figure if necessary. 8

b) Derive the 3D governing mathematical expression for Reynolds Averaged Navier-Stokes (RANS) equation. Assume the necessary. 12

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