M. Tech.-II (Civil-Hydraulic Engineering) (CBCS – 2015 Course) :
WINTER - 2018
SUBJECT: SEDIMENT TRANSPORT AND RIVER ENINEERING

Day: Monday **Time:** 11.00 AM TO 02.00 PM
Date: 19/11/2018 **W-2018-3132** **Max. Marks: 60**

N.B:

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SEPARATE** answer book.
4) Use of electronic non- programmable **CALCULATOR** is allowed.
5) Assume suitable data if necessary.

SECTION-I

Q.1 **a)** List out and explain bulk properties of sediments. **(05)**

b) Explain the sediment problem with reference to Land erosion and soil conservation. **(05)**

OR

Q.1 **a)** Discus the fundamental forces acting on a particle under fall velocity. **(05)**

b) Define following terms: **(05)**
i) Nominal diameter ii) Fall diameter iii) Sedimentation diameter
iv) Sphericity v) Triaxial size

Q.2 **a)** Explain the characteristics of bed forms in Upper regime with sketches. **(05)**

b) Describe the characteristics of dunes. **(05)**

OR

Q.2 What is bed roughness of a stream? What are the effects of bed roughness on flow in a stream? What are the limitations of the prediction of bed roughness? **(10)**

Q.3 What is meant by total load? Explain macroscopic and microscopic method of measurement of total load. Explain any one instrument of measurement of suspended load with sketch. **(10)**

OR

Q.3 Explain the Du Boy's bed transport model. **(10)**

SECTION-II

Q.4 Explain the concept of tractive force method for the estimation of dimensions of a canal. Compare the same with "Regime method" for its merits and demerits. **(10)**

OR

Q.4 Data: Bed material size 5 mm; design depth 2 m; Ratio of side to bed tractive force (τ_b/τ_c) = 0.67; Shield's safe value 0.03. Calculate **(10)**
i) Maximum permissible longitudinal slope and
ii) Channel discharge

P.T.O.

Q.5 Explain the phenomena of "Grain sorting" and River bed armoring" in rivers, with the help of suitable sketches. **(10)**

OR

Q.5 Explain the methods followed for the measurement of bed load in the field and methods to calculate the same from the data collected. **(10)**

Q.6 Discuss the effects of embankments laid over long length on hydrology, hydraulics and river morphology. **(10)**

OR

Q.6 What are guide bunds? What is their role in river training works? Draw typical plan and section of a guide bund and name its components. **(10)**

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