

M. Tech.-II (Civil-Hydraulic Engineering) (CBCS – 2015 Course) :

SUMMER - 2019

SUBJECT: SEDIMENT TRANSPORT AND RIVER ENGINEERING

Day: Monday
Date: 03/06/2019

S-2019-3397

Time: 11.00 AM TO 02.00 PM
Max. Marks: 60

N.B:

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

SECTION-I

- Q.1 a)** Explain the sediment problem with respect to aggradation and degradation in rivers. **(05)**
- b)** Define the following terms: **(05)**
- i) Shape factor
 - ii) Fall diameter
 - iii) Sedimentation diameter
 - iv) Sphericity
 - v) Coefficient of roundness

OR

- Q.1** Derive the expression for fall velocity in Stoke's range. State the assumptions in the derivation. Describe the effect of sediment concentration on fall velocity. **(10)**
- Q.2 a)** What is the effect of Sediment non uniformity on critical tractive stress? Explain. **(05)**
- b)** How sediment transport rate is affected by regimes of flow? Explain. **(05)**

OR

- Q.2** Explain the characteristics of bed forms in lower regime. **(10)**
- Q.3** Explain Mayer Peter-Muller's equation approach for estimation of bed load. **(10)**

OR

- Q.3** Explain the Mechanism of Sediment Suspension as explained by different researchers. **(10)**

SECTION-II

- Q.4** Explain the method followed by Kennedy for the design of channels. Compare the method with Lacey's method for the estimation of canal dimensions. **(10)**

OR

- Q.4** Data: Discharge 25 cum/s; Bed material size 0.13mm; Longitudinal slope 1:10,000; Width: Depth ratio 6:1; Estimate the dimensions of a canal assuming side slope of 1:2. **(10)**

P.T.O.

- Q.5** Discuss the difference between **(10)**
i) Degradation-Local Scour
ii) Method of gradation analysis of coarse and clayey material

OR

- Q.5** Write a short note on “Reservoir sedimentation” discussing the main causes of the problem, and the normal methods for resisting the same. **(10)**

- Q.6** What are “Permeable Structures”? Draw a typical sketch of permeable spur made up of bally or MS pipes and show their important structural features. Shortly discuss how they contribute to the river training works. **(10)**

OR

- Q.6** Discuss the role of filters in river bank protection works. Compare the merits and demerits of geofabric filter and granular filter. **(10)**

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