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CBCS SCHEME

USN

15CV832

Eighth Semester B.E. Degree Examination, June/July 2019
Hydraulic Structures

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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Module-1

1 a. Explain different types of forces acting on a gravity dam with neat sketch. (10 Marks)
b. Explain various types of failure modes in gravity dam. (06 Marks)

OR

2 a. Explain step by step the analytical procedure to be adopted for analyzing the stability of gravity dam. (08 Marks)
b. Write a note on drainage galleries. (08 Marks)

Module-2

3 a. Write neat sketch of the preliminary section of Earthen dams and explain components. (08 Marks)
b. What are the causes of failure of Earthen Dams? Explain them with relevant sketches. (08 Marks)

OR

4 a. Explain types of Earthen Dams. (08 Marks)
b. Explain how to determine phreatic line with filter using Casagrande's method. (08 Marks)

Module-3

5 a. What is spillway? Explain spillway components. (07 Marks)
b. Explain:
i) Free overfall spillway
ii) Ogee spillway
iii) Energy dissipation devices (09 Marks)

OR

6 a. Design a suitable section for the overflow portion of a concrete gravity dam having the down stream face sloping at a slope of 0.7H:1V the design. Discharge for the spillway is 8000 cumecs the height of the spillway crest is kept at RL 204.0m. The average river bed level at the site is 100 pm. The spillway length consist of 6 spans having clear width of 10m each. Thickness of each pier may be taken to be 2.5m. (10 Marks)
b. Explain Khosla's theory and concepts of flownet. (06 Marks)

Module-4

7 a. Describe the necessity of cross drainage works. (06 Marks)
b. Explain types of cross drainage works. (10 Marks)

OR

8 Design a suitable cross drainage work for following data at the crossing of a canal and a drainage.

Canal

Full supply discharge = 32 cumecs
Full supply level = RL 213.5 m
Canal bed level = RL 212.0m
Canal bed width = 20m
Trapezoidal canal section with 1.5H : 1V
Canal water depth = 1.5m

Drainage

High flood discharge = 300 cumecs
High flood level = 210.0m
High flood depth = 2.5m
Ground level = 212.5m **(16 Marks)**

Module-5

9 a. Explain the main functions of head and cross regulators. **(08 Marks)**
b. Explain the necessity of canal falls. **(08 Marks)**

OR

10 a. Explain the types of canal fall. **(08 Marks)**
b. Explain the types of canal outlets. **(08 Marks)**

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