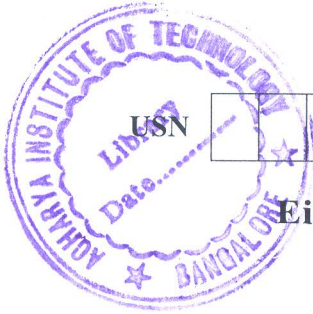


CBCS SCHEME

15CV832



USN

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Eighth Semester B.E. Degree Examination, Aug./Sept.2020 Hydraulic Structures

Time: 3 hrs.

Max. Marks: 80

- Note: i) For Regular Students: Answer any FIVE full questions irrespective of modules.
ii) For Arrear Students : Answer any FIVE full questions, choosing ONE full question from each module.
iii) Missing data may be suitably assumed.*

Module-1

- 1 a. Explain with a neat sketch, different forces acting on a gravity dam. (08 Marks)
b. Show that $B = \frac{H}{\sqrt{S_c - C}}$ with usual notations considering the elementary profile of a gravity dam. (08 Marks)
- 2 a. What are the modes of failure of gravity dam? Explain. (08 Marks)
b. Explain with neat sketches, the functions of drainage gallery. (08 Marks)

Module-2

- 3 a. Explain different causes of failures of earthdams. (08 Marks)
b. How Seepage discharge is computed in (i) Isotropic soils (ii) Anisotropic soils. (08 Marks)
- 4 a. An earthdam made of a homogenous material has the following data:
Coefficient of permeability of dam material = 5×10^{-4} cm/sec
Level of top of dam = 200.0 m
Level of deepest river bed = 178.0 m
HFL of reservoir = 197.5 m
Width of top of dam = 4.5 m
Upstream slope = 3:1
Downstream slope = 2:1
Draw the seepage line and determine quantity of seepage passing through the dam if a horizontal filter of length equal to 25 m is provided inward from the downstream toe of the dam. (08 Marks)
b. Explain with neat sketches types of Earthdams. (08 Marks)

Module-3

- 5 a. How do you design the apron using Khosla's theory? Explain with sketches. (08 Marks)
b. What is spillway? Mention different types of spillway. Explain Ogee spillway. (08 Marks)
- 6 a. How do you design the apron using Bligh's theory? Explain. (08 Marks)
b. How Energy dissipation is carried out below spillways? (08 Marks)

Module-4

- 7 a. What are different types of cross drainage works? Explain with neat sketches. (08 Marks)
b. How do you select a suitable type of cross drainage work? (08 Marks)

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.

- 8 Design:
- Drainage waterway
 - Canal waterway
 - Transitions
 - Trough for the following data at the crossing of a canal and a drainage :
Canal: Full supply discharge = 32 cumecs
Full supply level = RL 213.5
Canal bed level = RL 212.0 m
Canal bed width = 20
Trapezoidal canal section with $1\frac{1}{2}$ H : 1V slopes
Drainage: High flood discharge = 300 cumecs
High flood level = 210 m
High flood depth = 2.5 m
General ground level = 212.5 m
- (16 Marks)

Module-5

- 9 a. What are canal outlets? Explain any two canal outlets with figure. (08 Marks)
b. What is the necessity of canal falls? Explain any two types of canal falls with neat sketches. (08 Marks)
- 10 a. What are the functions of head regulator and cross regulators? Explain with sketches. (08 Marks)
b. Explain with sketches:
(i) Trapezoidal notch fall
(ii) Alignment of the off-taking channel (08 Marks)

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