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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

WATER RESOURCES ENGINEERING-II

(Civil Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Distinguish between a dam and reservoir. [2]
- b) What is meant by a detention dam? Explain. [3]
- c) Explain the purpose of providing galleries in dam. [2]
- d) What is meant by limiting height of a gravity dam? [3]
- e) Write down causes of failure of earth dam. [2]
- f) Write about Ogee spillway. [3]
- g) Distinguish between weir and barrage. [2]
- h) What is exit gradient? Explain. [3]
- i) When do we provide canal drop? [2]
- j) Explain the purpose of providing notches. [3]

PART-B

(50 Marks)

- 2.a) Define mass inflow curve and demand curve. Explain the procedure for finding storage capacity of a reservoir in order to meet a particular rate of demand.
- b) Discuss the factors which effect the selection of a particular type of dam. [5+5]

OR

- 3.a) What are the different pool levels in a reservoir. Explain with a neat sketch.
- b) How can water be lost from a reservoir? How can the losses are controlled. [5+5]

4. A concrete gravity dam has the following data:

Maximum water level = 300.00

Bed level = 220.00

R.L of top of dam = 304.00

The d/s slope of 0.67:1 starts at RL of 295.00

U/s face is vertical

Central line of the drainage gallery = 8.0 m from u/s face.

Consider only weight, water pressure and uplift.

Calculate the maximum vertical stresses at the toe and heel of the dam, assuming 100% uplift pressure at the heel and 50% at the gallery and zero at the toe. [10]

OR

5.a) Explain how uplift considerations affect the design of a gravity dam. What measures can be adopted to reduce the undesirable effects due to uplift in such cases. [5+5]

b) Explain the step by step method for analyzing the stability of gravity dam.

6.a) What is meant by priming and depriming element of siphon? Discuss the devices used for early priming in a saddle siphon spillway.

b) Define spillway gate. Discuss various methods used for energy dissipation. [5+5]

OR

7.a) Define chute spillway. Discuss the design principles involved in the chute spillway. Why is it preferred to ogee and other types of spillways? [5+5]

b) Describe Indian and USBR types of stilling basins with neat sketches.

8.a) Discuss the principles of Lane theory.

b) Write short notes on Inverted filter and Launching apron. [5+5]

OR

9.a) Discuss the corrections to be applied while determining the uplift pressure by Khosla's theory. [5+5]

b) Bring out the differences between Bligh's and Khosla's theories.

10.a) Discuss the selection of suitable site for different types of CD works. [5+5]

b) Explain Syphon aqueduct and Super passage with neat sketches.

OR

11.a) Explain different types of falls with neat sketches. [5+5]

b) Discuss the design principles of Sarda type fall.

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