

Total No. of Questions : 8]

[Total No. of Printed Pages : 2

Roll No

CE-6001-CBGS

B.E. VI Semester

Examination, December 2020

Choice Based Grading System (CBGS)

Design of Hydraulic Structures

Time : Three Hours

Maximum Marks : 70

- Note:** i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) What is a gravity dam and what are forces acting on a gravity dam?
b) What are the modes of failures of a gravity dam?
2. Design the practical profile of a gravity dam of stone masonry given the following data:
RL of base of dam = 198m; RL of HFL of reservoir = 228m;
specific gravity of masonry = 2.4; safe compressive stress in masonry = 1200 kN/m^2 ; Assume weight of masonry to be 20 kN/m^3 . Neglect earthquake pressures, wave pressure and silt pressure. Consider full uplift as per USBR recommendations. Determine the stability of the dam.
3. Design an ogee spillway for concrete gravity dam for the following data:
D/S face slope of gravity dam = 0.7 H : 1V
Design discharge of spillway = 8000 cumecs
RL of spillway crest = 100 m
Length of spillway = 6 span with a clear width of 10 m each
Thickness of each pier = 2m

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[2]

4. Enumerate the various types of energy dissipation that are used for energy dissipation below overflow spillway under different relative position of TWC and JHC.
5.
 - a) Discuss various type of energy dissipaters used in the downstream of spillways bringing out the circumstances and location where they are used.
 - b) Why falls are provided on irrigation channels?
6.
 - a) Draw a typical low head hydropower development scheme and mark its various elements therein, explain the function of each.
 - b) Discuss the guiding factors for selection of turbines at a particular hydropower installation.
7.
 - a) Draw a neat sketch of a syphon well drop and discuss its design features.
 - b) What are Canal Transitions? How are they Designed?
8. Write short notes on any four of the following:
 - a) Tidal plants
 - b) Syphon aqueduct
 - c) Emergency spillway
 - d) Pore pressure
 - e) Galleries in gravity dam
