Printed Pages : 2 **Roll No.** | | | | | | | | | | | **ECE052**

B.TECH.

THEORY EXAMINATION (SEM–VIII) 2016-17

ANALYSIS AND DESIGN OF HYDRAULIC STRUCTURES

Time : 3 Hours ***Max. Marks : 100***

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. Atempt the following: **10 x 2 = 20**

(a) Write the component parts of a diversion head works.

(b) State the principles of cross regulator.

(c) When the level crossing is provided?

(d) Under what circumstance type of cross drainage work are selected?

(e) Write any two conditions for stability of earth dam.

(f) Enumerate the zone of storage

(g) Find the width of the elementary gravity dam, whose height is 80m.c It is given: Specific gravity of dam material(G)=2.22,uplift or seepage coefficient (c)=0.82

(h) What are the forces acting on gravity dam?

(i) List the types of spillway.

(j) Write the merits and demerits of power plant

SECTION – B

2. Attempt any five of the following questions: **5 x 10 = 50**

(a) Write design principles of

(i) Sarda type fall.

(ii) Glacis type fall

(b) Explain with neat sketch the difference between weir and barrage.

(c) Briefly discuss types and the factors affecting the selection of site for a dam.

(d) An earth dam made of homogenous material has the following level of top of dam =300.0m level of deepest river bed = 278.0m H.F.L of reservoir = 297.5m, width of the top of dam = 4.5m v/v slope = 3:1, D/S slope = 2:1, K=5x10-4 cm/s. Determine the discharge passing through the body of the dam.

(e) Describe various modes of failure of a concrete gravity demand explain the elementary profile of gravity dam.

(f) Describe and detailing the power house layout.

(g) What is meant by an energy dissipator? Discuss the various methods used for energy dissipation below spillways.

(h) (i) What is stilling basin? Why they are provided? Enlist the components of it.

(ii) Discuss the function of the canal head works.

SECTION – C

Attempt any two of the following questions: **2 x 15 = 30**

3 (i) Describe various design principles of cross regulator and distributory head regulator

(ii) Explain the method of determining uplift pressure on the roof of a siphon aqueduct

4 (i) List the assessment of potential specially in reference to India.

(ii) Write short note on ‘cracking of concrete during the construction of gravity dam & its remedial measures’.

5 A ogee type spillway has 20 crest gates each having 10m clear span.Find the maximum flood that can be safety passed by lifting all the gates when the maximum reservoir level is 105m and the crest level is 101m. Take coefficient C =2.16.Coefficient of end contractions for piers =0.05.Coefficient of contractions for abutments=0.1.Neglect velocity of approach.

Also design d/s profile of this spillway of gravity dam having d/s face slope 0.7H:1V.