Code No: **R32014** **R10** **Set No. 1**

III B.Tech I1 Semester Supplementary Examinations, Dec - 2015

WATER RESOURCES ENGINEERING-II

(Civil Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1 a) A weir on a permeable foundation has a level floor of negligible thickness and is 20 m long in the direction of flow. At the u/s end of the floor a 4 m deep pile is provided and at its d/s end a 5 m deep pile is provided. Using Khosla's theory calculates the uplift pressures at the key points D and C for the upstream pile and E and D for the downstream pile. Also calculate the exit gradient. The effective head of water may be assumed as 4 m.

b) Sketch and describe the working of a silt ejector. On what basis is it designed?

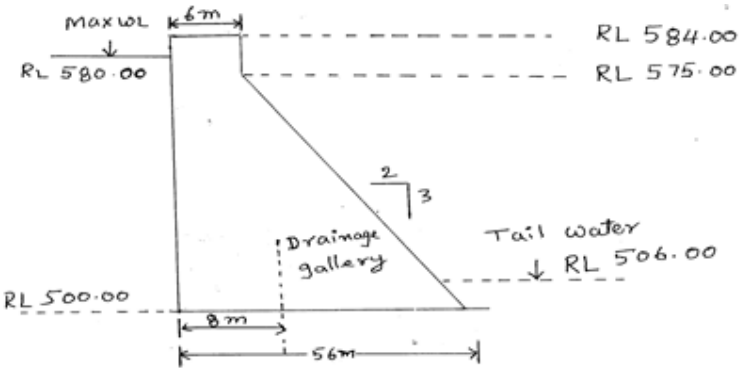
2 a) Differentiate clearly between the following

(i) A flood control reservoir and multipurpose reservoir

(ii) Firm yield and secondary yield of a reservoir.

b) Classify various types of dams.

3 The following figure Show the section of gravity dams built of concrete. Calculate (neglect earthquake effect).



(i) The maximum vertical stress at the heel and toe of the dam.

(ii) The major principal stress at the toe of the dam.

(iii) The intensity of shear stress on a horizontal plane near the toe.

Assume weight of concrete =2.4 tones /cu.m

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4 For the earth dam of homogeneous section with a horizontal filter as shown in fig. 2 below, draw the top flow line. If the coefficient of permeability of the soil material used in the dam is $5X10^{-4}$ cm/sec, find the seepage flow per unit length of dam.

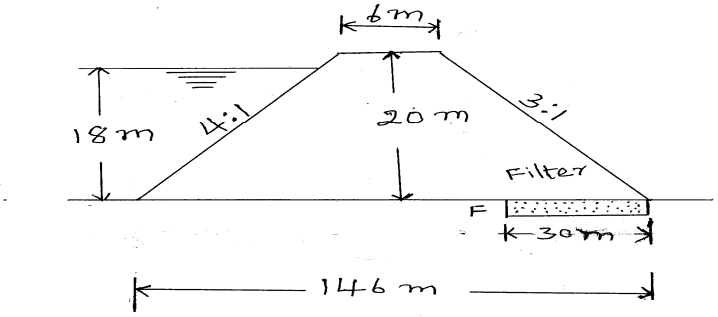

Fig 2

5 a) Explain with neat sketches different types of spillways.

b) Write a short not on U.S.B.R drum gates.

6 a) Discuss the various considerations according to which the location of a fall is decided.

b) What is' Cistern element' in fall.

7 a) Define proportionality of an outlet. Distinguish between a proportional outlet, a hyper-proportional outlet and a sub-proportional outlet.

b) What do you mean by head regulator and cross regulator?

8 a) Describe Mitra's method of hyperbolic transition. Derive the expression which represents this transition.

b) Discuss the various factors affecting the suitability of aqueduct and siphon aqueduct.