

5E1345	Roll No. _____	Total No. of Pages : 2
	5E1345	
B.Tech. V- Semester (Main) Examination, Nov. - 2019 PCC/PEC Civil Engineering SCE4-05 Water Resource Engineering		

Time : 2 Hours

Maximum Marks : 80
Min. Passing Marks : 28

Instructions to Candidates:

Attempt all five questions from Part A, four questions out of six questions from Part B and two questions out of three from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory

(5×2=10)

1. Define irrigation. What is the necessity of irrigation?
2. Give relations for :
 - a. Water application efficiency
 - b. Water storage efficiency
 - c. Water distribution efficiency
3. Draw a neat labelled diagram indicating all major forces on a gravity dam.
4. The following data is available at the proposed site of a canal crossing :

Item	Drain	Canal
B.L.(m)	252.2	248.0
FSL/HFL (m)	253.2	253.0
Discharge (cumecs)	2	400

The most appropriate and economical C-D work at the above sites can be?

5. Name different forms of precipitation.

Part - B

(Analytical/Problem solving questions)

Attempt any four questions

(4×10=40)

1. A water course has a culturable command area of 1200 hectares. The intensity of irrigation for crop A is 40% and for B is 35%, both the crops being Rabi crops. Crop A has a Kor period of 20 days and Crop B has Kor period of 15 days. Calculate

5E1345 /2019

(1)

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the discharge of the water course if the Kor depth for crop A is 10 cm and for B it is 16 cm.

2. Write the expression for Exit Gradient. Using Khosla's theory, estimate the value of exit gradient for a weir with a horizontal floor on a permeable foundation having width $b = 10$ m and depth of D/S sheet pile = 1.5 m, given the difference between U/S and D/S water level is 4 m.
3. With the help of neat diagram, discuss stability of downstream slope during steady seepage for a earthen dam.
4. Show with the help of sketches, various types of wells.
5. What are the methods of computing run - off from a catchment area? Give various formulae stating clearly the area for which each is applicable.
6. What is the difference between hietograph and hydrograph.

PART - C

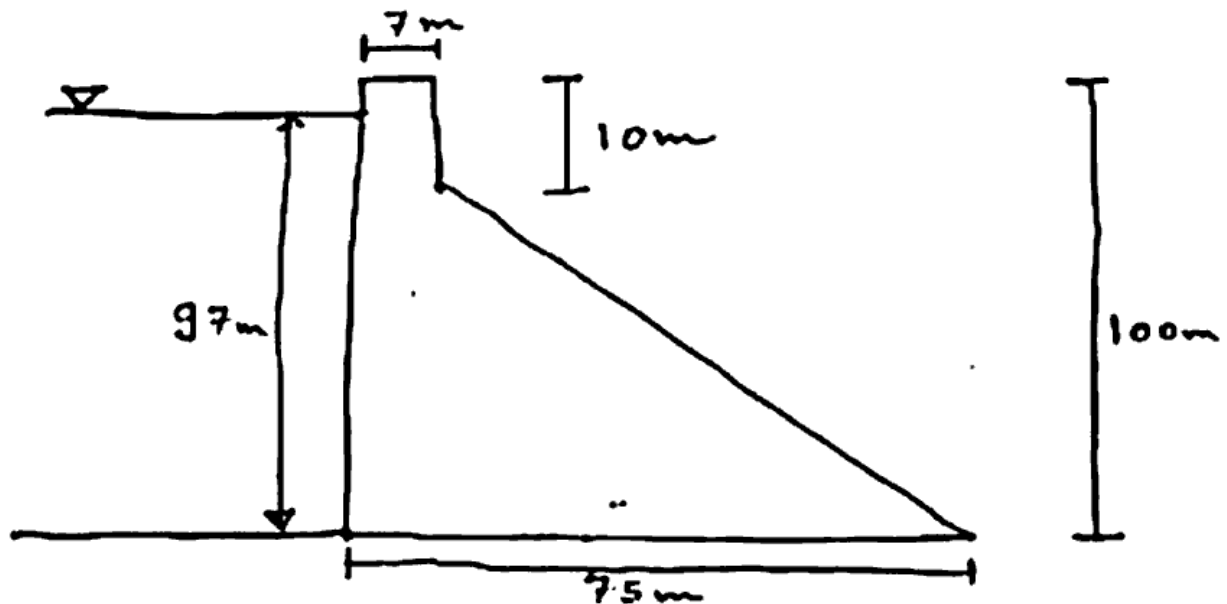
(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any two questions

(2×15=30)

1. The slope of channel in aluminum is $S = 1/5000$, Lacey's silt factor = 0.9 and channel side slope = $1/2:1$ Find the channel section and maximum discharge which can be allowed to flow in it.

2.



The above fig. gives profile of a gravity dam with reservoir levels as shown. If the coefficient of friction is 0.75, is the dam safe against sliding? Take weight density of concrete as 2.4 tonnes/m^3 .

3. What is a unit hydrograph? List the assumptions involved in the unit hydrograph theory.