

<b>7E4032</b>	Roll No. _____	[Total No. of Pages : 2
	<b>7E4032</b>	
<b>B.Tech. VII Semester (Main/Back) Examination - 2013</b>		
<b>Civil Engg.</b>		
<b>7CE2 Water Resources Engineering-I</b>		

**Time : 3 Hours**

**Maximum Marks : 80**

**Min. Passing Marks : 24**

**Instructions to Candidates:**

*Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (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.)*

**Unit - I**

1. a) Describe the various types of soil water and explain the soil moisture tension. **(8)**
- b) A soil has a field capacity of 26% and the permanent wilting point of 7%. Determine the water storage capacity of the soil if the depth of root zone is 0.7m, assume dry unit weight of soil as 15KN/m<sup>3</sup>. Also determine the water depth required to be applied, if irrigation water is applied when moisture content of the soil decreases to 12%, taking a water application efficiency as 80%. **(8)**

**OR**

1. a) Describe the consumptive use of water and the various factors affecting it. **(8)**
- b) Describe duty of water and the factors affecting duty. **(8)**

**Unit - II**

2. a) Describe factors affecting canal alignment. **(8)**
- b) Define the terms capacity factor, outlet discharge factor, nominal duty, crop area ratio, Kor period, Kor depth, capacity of canal, frequency of irrigation. **(8)**

**OR**

2. a) Compare the Kennedy's and Lacey's theories for the design of alluvial channels. What are the drawback of both theories. **(8)**

- b) Design an irrigation channel using Lacey's theory for a discharge of 22 cumecs and silt factor=1.0 (8)

**Unit - III**

3. a) Describe the functions of a distributory head regulator and cross regulator. (8)  
b) Define flexibility, setting, proportionality, sensitivity, efficiency, drowning ratio, modular limits and adjustability of a canal outlet. (8)

**OR**

3. a) Describe various stages of a river and behaviour of a river in alluvial stage. (8)  
b) Describe the objectives of river training and also describe various types of river training works. (8)

**Unit - IV**

4. a) Describe the various measures for prevention of water logging. (8)  
b) Describe the method of design of a lined channel. Write down the common values of Manning's coefficient, N, for different types of surfaces. (8)

**OR**

4. a) Describe various types of lining of canals with their comparative advantages. (8)  
b) Describe various types of tube wells. (8)

**Unit - V**

5. a) Describe various types of rain gauges for the measurement of rainfall with simple sketches. (8)  
b) Describe the Rational method for estimation of run off. (8)

**OR**

5. Write short notes on the following:-  
a) Hydrologic cycle.  
b) Infiltration.  
c) Unit hydrograph.  
d) Estimation of run off. (4×4=16)