**AKGEC/IAP/FM/02**

**AJAY KUMAR GARG ENGINEERING COLLEGE, GHAZIABAD**

**DEPARTMENT OF CIVIL ENGINEERING**

**Sessional Test–2**

Course: B.Tech. Semester: VII

Session: 2017-18 Section: CE-1& CE2 Subject: Water Resources Engineering Sub. Code: NCE-702

Max Marks: 50 Time: 2 hours

*Note:* Answer all the sections. Any data if missing may be assumed suitably.

**SECTION– A**

1. Attempt **all** the parts.  **(5 x2 = 10)**

1. What is duty and delta? Write the relationship between duty and delta in brief.
2. Describe alluvial and non alluvial canal
3. Write the different loss in a canal
4. What are different irrigation efficiencies.
5. What is the mechanism of sediment transport describe in brief.

**SECTION B**

2. Attempt **all** the parts.  **(5 x5 =25)**

1. Compare Lacey’s theory with Keneddy Theory.
2. Using Lacey’s theory design the irrigation channel for the following data. Design an

Irrigation channel with the following data:

Full supply discharge = 10 cumecs

Mean diameter of silt particles = 0.33 mm

Side slope = ½:1

Find also the bed slope of the channel.

1. Root zone of an irrigation soil has dry weight of 15 KN/m 3 and a Field capacity of 30%. The

Root zone depth of a certain crop, having permanent wilting point of 8% is 0.8m. Find

(i) Depth of moisture in root zone at F.C.

(ii) Depth of moisture in root zone at permanent wilting point and depth of water available.

1. What is the problem of Water logging? What are the poor effects of water logging? Describe

some suitable remedial measures against water logging in brief.

1. What is canal lining? What are the advantages of canal lining?

**SECTION C**

3. Attempt **all** the parts.  **(2 x 7.5 =15)**

* 1. The following data pertains to healthy growth of a crop:

1. Filed capacity of soil =30%
2. Permanent wilting percentage = 11%
3. Density of soil= 1300 kg/m3
4. Effective depth of root zone= 700 mm
5. Daily consumptive use of water for the given crop= 12 mm

For healthy growth, moisture content must not fall below 25 % of the water holding capacity between the field capacity and permanent wilting point. Determine the watering interval in days.

b). A sandy loam soil holds water at 140mm/m. depth between field capacity and permanent wilting point. The root depth of crop is 30 cm. and allowable depletion of water is 35 %. The daily water use by the crop is 5 mm/day. The area to be irrigated is 60 hectare and water can be diverted at 28 lps. The surface irrigation application efficiency is 40 %

Determine:

1. Allowable depletion depth between irrigations
2. Frequency of irrigation
3. Net application depth of water
4. Volume of water required
5. Time to irrigate 4 hectare plot