

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M.Tech. Winter 2018-19 Examination

Semester: 2

Subject Code: 03214151

Subject Name: Irrigation Network Planning

Date: 10-12-2018

Time: 02:00 pm to 04:30 pm

Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.
5. Irrigation standard tables are permitted.

- Q.1** A) Define the following: (i) NIR, (ii) GIR, (iii) Etc, (iv) Frequency of irrigation (v) CCA (05)
 B) State various irrigation systems. Explain any one (05)
 C) Explain the benefits and constraints of water users association (05)

- Q.2 Answer the following questions.** (Attempt any three) (Each five mark) (15)
 A) Discuss the advantages and limitations of underground pipeline irrigation system.
 B) Define delta. Derive the equation to correlate duty and delta.
 C) Wheat is grown in a farm with the following data: (i) Field Capacity = 25%, (ii) T.W.P moisture content = 18%. Determine the water depth in the field considering the following data: (i) Root Zone Depth = 1.2m, (ii) dry density of soil = 1.6 gm/cc. Determine G.I.R. using following data (a) Application efficiency = 75%, (b) Conveyance losses = 20%.
 D) Prepare Crop Co-Efficient Curve using following data: (i) Name of the crop = Wheat, (ii) Date of Sowing = 15th Nov, (iii) Initial Eto = 9 mm/day, (iv) irrigation frequency = 10 days (v) Rhmin > 70%, (vi) Wind Velocity = 5 to 8 m/ sec

- Q.3** A) Classify canals. Explain canals as per alignment with a neat sketch. (07)
 B) A project has following data. Determine the design discharge of canal:
 (i) G.C.A = 30000 Ha,
 (ii) UCA = 10000 Ha,
 (iii) Application Efficiency = 80%,
 (iv) Canal losses = 15% (08)
 (v) time factor = 0.8

Crop	Rice	Wheat	Sugarcane	Bajri
Intensity of irrigation (%)	20%	50%	15%	20%
Duty(ha/cumec)	800	750	850	600

OR

- B) Classify Drains. Explain with neat sketches the various types of drains. (08)

- Q.4** A) Draw a complete irrigation network for a command area and explain its structures. (07)

OR

- A) Explain the necessity of Rotational Water System (R.W.S). Also describe the procedure to prepare (R.W.S). (07)

- B) Determine water needed by the crop using the following data:
 (i) Colorado Sunken Pan is placed in short green cropped area of a dist of 100.0m
 (ii) $R_{min} = 50\%$ (iii) Application efficiency = 75%

Month	May	June	July	Aug
Evaporation(mm/day)	7.3	8.6	7.2	7.6
Wind speed (km/day)	190	140	75	70
Kc	0.4	0.8	0.9	0.6

(08)