Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

M.Tech., Summer 2017-18 Examination

Semester: 2 **Date: 18-05-2018**

Subject Code: 03214151 **Time: 02:00PM to 04:30PM**

Subject Name: Irrigation Network Planning **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: - (Define the following terms: (i.) Gross Command Area, (ii.) Cultivable Command Area, (iii.) Kor Period, (iv.) Delta, (v.) Base period. **(05)**

B) What are the objectives of network planning? **(05)**

C) Define Duty. Determine the relationship between duty and delta **(05)**

Q.2 **Answer the following questions**. (Attempt any three) (Each five mark) **(15)**

A) Classify the canals. Explain any two-classification in detail.

B) Explain the needs, objectives and benefits of Participatory Irrigation Management.

C) Classify drains. Discuss various types of surface drains with sketches.

D) Define NIR, GIR and FIR.

Q.3 **A)** For the soil in a farm, the properties are **(07)**

(i) Field Capacity = 27%

(ii) Temporary Wilting Point = 19%

(iii) Dry Density = 1.6 gm/cc

(iv) Root Zone Depth = 1.0 m

(v) Daily Consumptive Use = 11mm /day

Determine the frequency of irrigation. If application efficiency = 80% and canal losses = 20%, determine the water needed at outlet.

B) (i) Distinguish Etc and Consumptive Use. **(08)**

(ii) Wheat is grown at a place 30°N latitude. The mean monthly temperature is given in the following table. Determine the water needed at head of canal. Consider application efficiency = 75% and Canal losses = 20%. Use Blanney Criddle method.

Month	January	February	March	April
Mean Temp °C	26	26.5	27.0	28.0

OR

B) Explain the procedure to find the design discharge of main canal. **(08)**

Q.4 **A)** Subsurface drain is provided using the following data. Determine the spacing of tiled drains. The data consists of: **(07)**

(i) G.W.T. is to be maintained at 2.0m below GL

(ii) The impervious strata is at 8.0m below GL

(iii) The tiles are to be laid at 30 cm below the desired G.W.T.

(iv) The average annual rainfall over the area = 900mm. Consider 15 % of the annual rainfall to be drained in 24 hours.

(v) Co-efficient of permeability = 1.0×10^{-5}

Draw a neat sketch also.

OR

A) Design a lined canal for the following data: **(07)**

(i) Limiting Velocity = 2.0 m/s (ii) Design Discharge = 20.0 m3/s

(iii) Rugosity Co-efficient = 0.02 (iv) Canal Bed Slope = 1 /2500

(v) Side Slope = 1:1 (vi) B/D ratio = 3

B) Define ETO. State various methods to determine ETO. Explain Radiation Method in detail. **(08)**