Seat No.:	Enrolment No
GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VIII • EXAMINATION – SUMMER 2014	
Subject Code: 180606 Subject Name: Irrigation Water Managen	Date: 27-05-2014
Time: 10:30 am TO 01:00 pm	Total Marks: 70

**Instructions:** 

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

Q-1

- (a) What should be the objectives for proper management of irrigation water? What is the scope of management of irrigation water in Gujarat? [7]
- (b) How would be the Remote Sensing (RS) and Geographical Information System (GIS) helpful in canal irrigation system? [7]

Q-2

What are the limitations in the adoptability of check basin method of water application? (a) What are the four basic stages in the hydraulics of check basin irrigation? Draw a typical advance front and recession tail curve for check basin irrigation.

[7]

[7]

(b) An irrigation stream of 0.03 cumes is irrigating a ring basin of radius 5m. The water holding capacity of soil is 17% per meter depth. Prior to water application, the moisture content of the soil is found 7.4%. The depth of the root zone is 1.1 m. The apparent specific gravity of the root zone soil is 1.6. How long irrigation stream should be applied to the basin to replenish the root zone moisture to it's field capacity.

What is a accumulated infiltration in a furrow? What is the principle of cutback stream in (b) furrow irrigation?

Furrows 100m long, 1m apart and having a slope of 0.2 percent are irrigated by an initial stream of size equal to the maximum non corrosive stream The stream then reduce to half and continued for 95 minutes. Determine the average depth of irrigation. [7]

Q-3

- (a) With neat sketches describe the moisture distribution pattern of rotating sprinkler (i) under favorable condition and (ii) under windy condition. If 120 samples are uniformly placed in the area covered by three sprinklers and average
  - penetration of water caught in a given time is 1.25 cm with the average variation from the mean of 0.25 cm, What is the uniformity coefficient? Assuming that infiltration did not exceeded and water did not penetrate below the root zone, What is the application efficiency? [7]

(a) What is system coefficient of manufacturing variation in emitters? Define emitter coefficient of manufacturing variation. How is design of emission uniformity in a drip irrigation system different from uniformity coefficient in sprinkler irrigation?

The following data were obtained for determination emORission uniformity coefficient of a drip irrigation lateral'

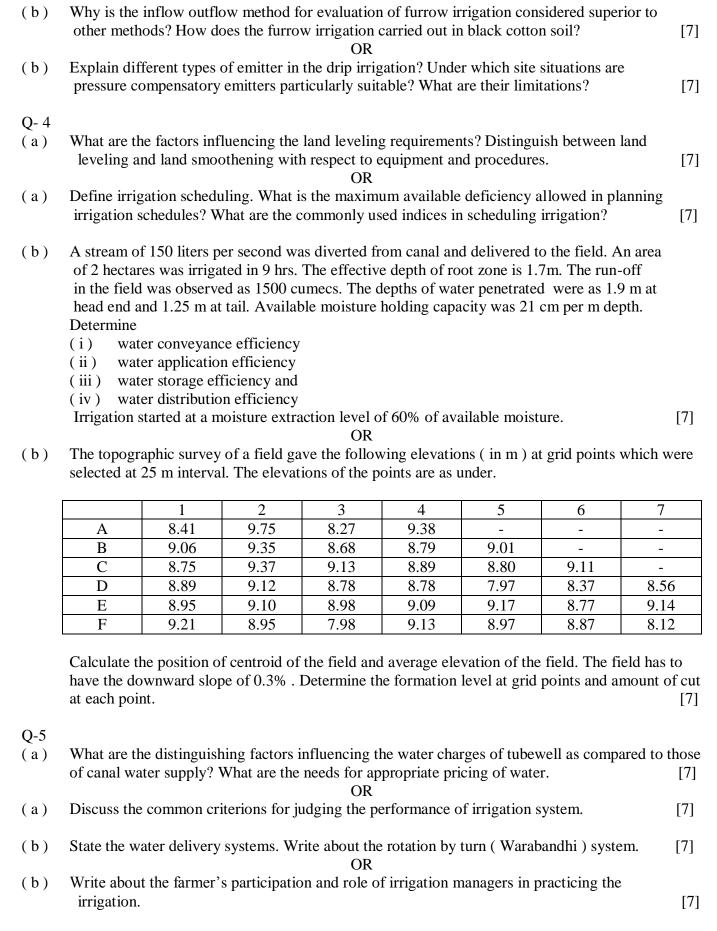
 $Q_{mini} = 37 \text{ lit/minute}$ 

 $Q_{max} = 54 \text{ lit/minute}$ 

 $C_{\rm V} = 0.075$ 

Slope = 1.5%

Determine emission uniformity coefficient.



\*\*\*\*\*\*\*