C 47613 (Pages 2) Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2008

CE 04 606—HYDROLOGY AND IRRIGATION ENGINEERING

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

Assume any missing data suitably.

1. (a) With a schematic diagram, explain different components of Hydrologic cycle.

   (b) What are the factors affecting the run-off process ?

   (c) Write a note on flow duration curve.

   (d) What are the objectives of River training works ?

   (e) What are the advantages of sprinkler irrigation ?

   (f) Write a note on multipurpose projects.

   (g) Distinguish between ridge canal and contour canal.

   (h) Explain any one type of canal lining in detail.

(8 × 5 = 40 marks)

II. A (a) Explain cyclonic Precipitation. (5 marks)

   (b) Define unit Hydrography. What are the assumptions made ? What are the advantages of unit Hydrography ?

(5 marks)

   (c) The following data gives rainfall for 5 stations. Determine optimum number of rain gagues, if the error is limited to 10%.

Station	...	A	B	C	D	E
Rainfall (mm)	...	88	104	138	78	56

(5 marks)

Or

B (a) Write a note on Depth Area Duration curve. (5 marks)

   (b) Following are the ordinates of 3 HROH. Derive 6 HR OH and plot the same. (10 marks)

Time (HR)	...	0	3	6	9	12	15	18	21	24
Ordinates of 3 HR OH (m^3/sec)	...	0	1.5	4.5	8.6	12.0	9.4	4.6	2.3	0.8

(10 marks)

Turn over

III. A (a) Define standard project flood and Maximum propable flood. (5 marks)

(b) Find the values of C and n in a catchment using flood formula $Q = C A^n$ with the following data :

A (km^2)	...	4	10	50	100	200
Q (Cumec)	...	100	158	354	500	700

(10 marks)

Or

B (a) Explain the steps involved in fixing the reservoir capacity using Mass curve. Draw a neat sketch.

(10 marks)

(b) The mean of maximum flood at a gauging station with 40 years of record is 1300 cumec and variance is 1620 cumec. Estimate the magnitude of 100 year flood.

(5 marks)

IV. A (a) Explain in detail the need for irrigation with special reference to India. (5 marks)

(b) Define Duty and Delta. (5 marks)

(c) Explain Blighs creep theory. (5 marks)

Or

B (a) Explain important crop seasons in India. (5 marks)

(b) Define irrigation efficiency and water conveyance efficiency. (5 marks)

(c) Explain Khoslas theory. (5 marks)

V. A (a) How do you fix longitudinal slope in an irrigation canal ? (5 marks)

(b) Design an irrigation canal to carry a discharge of 1.4 cumes. Assume N = 0.0225, B/D = 5.7.

(10 marks)

Or

B (a) Design an irrigation channel using Laceys theory for the following data :—

Q = 30 cumes ; silt factor 5 = 1.0 ; side slope = 1/2 : 1.

(10 marks)

(b) How do you define water logging ? Explain any *one* method of prevention. (5 marks)

[4 × 15 = 60 marks]