C 58369 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2009

CE 04 606—HYDROLOGY AND IRRIGATION ENGINEERING

(2004 Admissions)

Time : Three Hours Maximum : 100 Marks

Assume any missing data suitably.

Part A

I 1) Distinguish between DAD curves and IDF curves.

2) Write a note on water shed.

3) What is meant by design flood? Is this same as Maximum Probable Flood? Why?

4) What is meant by reservoir sedimentation? What are the different methods of controlling reservoir sedimentation?

5) Define Irrigation. How do you classify Irrigation? What are the advantages and ill effects of Irrigation?

6) Write a note on Marginal bunds and guide banks.

7) List the various causes of water logging and write a note on methods of prevention of water logging.

8) Write a detailed note on Canal Classification

(8 × 5 = 40 marks)

Part B

II a) i) Explain the procedure for checking a rainfall data for consistency. (8)

ii) A catchment has seven rain gauge stations. In a year the annual rainfall recorded by the gauges are as follows: (7)

Station	P	Q	R	S	T	U	V
Rainfall (cm)	130.0	142.1	118.2	108.5	165.2	102.1	186.9

For a 5% error in the estimation of the mean rainfall, calculate the minimum number of additional stations required to be established in the catchment.

(or)

b) The ordinates of a hydrograph of surface runoff resulting from 4.5cm of rainfall excess of duration 8 h in a catchment are as follows. (15)

Time(h)	0	5	13	21	28	32	35	41	45
Discharge(m^3/s)	0	40	210	400	600	820	1150	1440	151

Time(h)	55	61	91	98	115	138
Discharge (m^3/s)	1420	1190	650	520	290	0

Determine the ordinates of an 3 hr unit hydrograph for this catchment.

Turn over

III a) (i) Define mass inflow curve and demand curve. Explain the procedure for finding storage capacity of a reservoir in order to meet a particular rate of demand. (8)
List the various formulae to obtain the flood peak discharge and discuss their limitations. (7)

(or)

b) (ii) What is the necessity of river training works? Describe in brief the different types of river training works . (15)

IV a) A weir with a vertical drop has the following particulars : (15)

Bligh's co efficient : 9

Flood discharge = 350 cumecs

Length of weir = 50m

Height of weir above low water = 2.5m

Height of falling shutter = 0.6m

Top width of weir = 2.0m

Bottom width of weir = 3.5m

Design the length and thickness of aprons and draw the cross section of the weir.

(or)

b) (i) What is meant by surface and subsurface irrigation? What are their types? Discuss briefly the various techniques used for distributing water in the farms . (10)

(ii) Distinguish between weir and barrage. Explain in detail the various types of weirs. (5)

V a) i) Compare and contrast the various aspects of Kennedy's theory and Lacey's Silt theory. (10)
Design an irrigation channel section for discharge = 40 cumecs, and silt factor = 1.0 with a side slope of 1:1.

ii) Enumerate the various considerations which govern the selection of the optimum alignment of a canal. (5)

(or)

b) i) What is a proper drainage of irrigated land necessary? If an area of irrigated land is already waterlogged, what remedies would you suggest for reclaiming the land? Briefly discuss the method of subsurface drainage of irrigated land. (7)

ii) Write short notes on : (8)
Spoil banks,
Burrow pits,
Back berm and
Off take alignment .

(4 × 15 = 60 marks)