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Question Paper Code : 21174

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Sixth Semester

Civil Engineering

CE 2021/CE 601/10111 CEE 11 — HYDROLOGY

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Sketch the hydrological cycle.
2. Enlist the types of recording and non recording rain gauges.
3. Define infiltration indices.
4. How do you find the effective rainfall?
5. Define synthetic unit hydrograph.
6. What is base flow separation?
7. Define recurrence interval.
8. Write a note on reservoir flood routing.
9. What is transmissibility?
10. Enlist the assumptions made by Dupuit.

PART B — (5 × 16 = 80 marks)

11. (a) Discuss on Types of precipitation and forms of precipitation. (16)

Or

- (b) A catchment has 8 rain gauges of which one is self recording type and remaining are standard type. The error in the mean rainfall estimation (E) is 5%. The annual rainfall at the 8 stations is given below :

Station No. :	1	2	3	4	5	6	7	8
Rain fall (cm) :	75	85	95	87	102	116	58	93

Determine the number of additional rain gauges required to be installed. (16)

12. (a) Describe about the Factors affecting infiltration and losses of precipitation. (16)

Or

- (b) Determine the E.T and irrigation requirement for a wheat, if the water application efficiency is 65% and the coefficient for the growing season (Cu) is 0.8 from the following data : (16)

Month	Mean monthly temp °C	Monthly % of sunshine hours	Effective rainfall, Cm
Nov.	20	7.20	2.5
Dec.	17	7.15	2.7
Jan.	15	7.25	3.4
Feb.	16	7.15	2.1

13. (a) Explain the construction procedure of S curve hydrograph. (16)

Or

- (b) The ordinates of 4h unit hydrograph of a basin area of 630 km² measured at 2 hour interval are given below. Obtain the ordinates of 6h unit hydrograph. (16)

Time in hours :	0	2	4	6	8	10	12	14	16	18	20	22	24
4h UH (cumec) :	0	25	100	160	190	170	110	70	30	20	6	1.5	0

14. (a) Discuss on Flood control measures and Gumbel's methods of determination of flood magnitude. (16)

Or

- (b) Briefly explain the Muskingum method of channel routing and discuss on extreme value series. (16)
15. (a) A sandy layer 10 m thick overlies an impervious stratum. The water table is in the sandy layer at a depth of 1.5 m below the ground surface. Water is pumped out from a well at the rate of 100 lps and drawdown of the water table at radial distances of 3.0 m and 25 m is 3.0 m and 0.5 m respectively. Determine the coefficient of permeability of an aquifer. (16)

Or

- (b) Derive an equation to determine the steady state discharge of a confined aquifer. (16)
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