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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (CE) (2011 Onwards Elective-I & II) (Sem.-7,8)

HYDROLOGY AND DAMS

Subject Code : BTCE-817

Paper ID : [A2971]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A**1. Write briefly :**

- a) What are the necessary conditions for the formation of precipitation?
- b) What is an isohyet?
- c) What are the disadvantages of flooding type infiltrometers?
- d) Describe flooding type infiltrometer.
- e) Describe rainfall simulator.
- f) Differentiate between influent and effluent streams.
- g) What are the various forces acting on arch dams?
- h) Give the advantages of massive head buttress dams.
- i) What are the various forces acting on gravity dams?
- j) What are the cases for which design of gravity dam is to be checked?

SECTION-B

2. Describe various forms of precipitation.
3. A watershed of 48 km^2 produces a runoff of 2M m^3 from the rainfall pattern of the storm given below. Calculate ϕ index.

Time (h)	0	2	4	6	8	10	12	14
Rainfall (mm)	0	1.15	2.3	5.9	5.1	3.05	0.9	0

4. How does basin characteristics effect runoff?
5. Explain zoning method for checking design of gravity dam.
6. Explain the thin Cylinder theory along with its limitations .

SECTION-C

7. On the basis of isopluvial maps the 50 year 24 h maximum rainfall at a city is found to be 16 cm. Determine the probability of 24 h rainfall of magnitude equal to or greater than 16 cm occurring at the city :
 - a. once in 10 successive years
 - b. two times in 10 successive years
 - c. at least once in 10 successive years
8. The ordinates of an IUH are as below :

Time (h)	0	1	2	3	4	5	6	8	10	12	14	16	18	20
IUH Ord. (m^3/s)	0	11	37	60	71	75	72	60	45	33	21	12	06	0

- a) What is the areal extent of the catchment?
 - b) Derive a 3-hour unit hydrograph for this catchment.
9. Enumerate different types of buttress dams along with neat sketches.