Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (CE) (2011 Onwards E-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 have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Q1. Answer briefly :

a) What is an Isohyets?

b) What are the various methods adopted to convert the point rainfall values into an average value over a catchment?

c) What is Transpiration?

d) What do you understand by AET and PET.?

e) What are infiltration indices?

f) What is a synthetic unit hydrograph and what is its use?

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

Q2. Describe the salient characteristics of precipitation on India.

Q3. Ordinates of DRH are given below :

Time (h)	0	6	12	18	24	30	36	42	48	54	60
DRH (m^3/s)	0	48	130	195	162	108	65	39	27	12	0
Avg. cumulative rainfall (cm)	0	3.7	10.4	18.3	18.3						

Compute the rate of infiltration for the basin. Take the catchment area of the basin as 200 km^2.

Q4. Given the ordinates of 4-h unit hydrograph below derive the ordinates of 12-h unit hydrograph for the same catchment

Time (h)	0	4	8	12	16	20	24	28	32	36	40	44
Ordinate of 4-h UH	0	20	80	130	150	130	90	52	27	15	5	0

Q5. What are the various modes of failure of gravity dams?

Q6. What is meant by '*the best central angle of an arch dam*' and how will you determine its value?

SECTION-C

Q7. A one day rainfall of 15cm at a place X was found to have a return period of 100 years. Calculate the probability that a one day rainfall of this or larger magnitude :

a) Will not occur at X during the next 50 years

b) Will occur in the next year?

Q8. What is meant by elementary profile of a gravity dam and how is it deduced? What should be the maximum depth of the elementary profile of a dam if the safe limit of stress on the masonry should not exceed 150 tonnes per m^2?

Q9. Enumerate different types of buttress dams along with neat sketches.