

Roll No.

Total No. of Questions : 09]

[Total No. of Pages : 02

Paper ID [CE402]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 7th/8th)

HYDROLOGY AND DAM (CE - 402)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A

Q1)

(10 × 2 = 20)

- a) Enumerate the different methods of recording rainfall data.
- b) A canal is 80 km long and has an average surface width of 15m. If the evaporation measured in a class A pan is 0.5 cm/day. Then calculate the volume of water evaporated in a month of 30 days.
- c) The total rainfall in a catchment area of 1200 km² during a 6-h storm is 16 cm while the surface runoff due to storm is 1.2×10^8 m³. Calculate ϕ -Index.
- d) A 90 km² catchment has a 4-h unit hydrograph which can be approximated as a triangle. If the peak ordinate of this unit hydrograph is 10 m³/s then what will be the time base.
- e) What is Hyetograph? Define it.
- f) Differentiate between Low and High gravity dams.
- g) Name the different types of earthen Dam.
- h) Enumerate the name of various types of spillways.
- i) Name the major forces acting on a gravity dam.
- j) What is 'Middle third rule'?

Section - B

(4 × 5 = 20)

- Q2) Explain briefly Intensity-Duration -Frequency relationship relating to precipitation over a basin.
- Q3) What is W-index. Explain it.
- Q4) List the factors affecting the seasonal and annual runoff of a catchment. Describe briefly the interactions of the factors listed.
- Q5) What are the causes of failure in an earthen dam? Explain briefly.
- Q6) Draw a sketch of Ogee spillway profile and mark in it different zones.

Section - C

(2 × 10 = 20)

- Q7) Define 'Pheratic line'. How would you determine the pheratic line through homogenous earthen dam provided with a horizontal filter.
- Q8) Given the ordinate of a 4-h unit hydrograph as below, derieve the ordinate of a 12-h unit hydrograph for the same catchment in tabular form.

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

- Q9) Write down short notes on the followings :-

- (a) Buttress dam.
- (b) Hydrologic cycle.