

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (CE) (Sem.-7th,8th)
HYDROLOGY & DAMS
 Subject Code : CE-402
 Paper ID : [A0624]

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. Answer briefly :**

- i. Enlist the methods of determining average depth of precipitation over the basin.
- ii. Explain purpose of depth area-duration curves.
- iii. What are the various types of rain gauges used to measure rainfall?
- iv. What are the methods of determining evapo-transpiration?
- v. What are the various factors affecting infiltration?
- vi. List the forces to be considered in design of gravity dam.
- vii. What are the various components of earth dams?
- viii. What is the use of unit hydrograph?
- ix. What are the advantages of gated spillways?
- x. What are the arch and buttress dams?

SECTION-B

2. Explain mass-rainfall curves and its utility.
3. Explain the methodology of determining mean annual flood by Gumbel's method.

4. Convert the following 2-hr UH to a 3-hr UH.

Time (hr)	0	1	2	3
Q (cumecs)	0	75	250	300

5. Discharge ordinates of the 2-hr unit hydrograph for a basin are given in the table below. Draw the direct run-off hydrograph for a rainfall of 2.5 cm.

Time (hr)	0	1	2
Discharge Q (cumecs)	0	100	250

Time (hr)	0	1	2
Rainfall Excess (cm)	0	2.5	2.5

6. What is synthetic unit hydrograph? Explain the method of developing Snyder's synthetic unit hydrograph.

SECTION-C

7. Show that the most economical centerline of a gravity dam by the thin cylindrical theory is $133^\circ 30'$. Describe zoning method for design of gravity dam.
8. Draw the top flow line for the earth dam with a horizontal filter for the given data as under. The seepage coefficient in the dam is 5×10^{-4} cm/sec. Find the discharge. Height of dam = 20m including free board. U/S slope = 4:1 & D/S slope = 3:1. Top width = 6m. Length of horizontal filter = 10m.
9. Discuss the suitability of providing buttress dams. Draw the plan and section of buttress dams.