R22 Regulation *Subject code:4P6AA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Supplementary Examinations, November 2025

WATER RESOURCES ENGINEERING-II

(CE)

Maximum Marks: 60 Date:15.11.2025 Duration: 3 hours

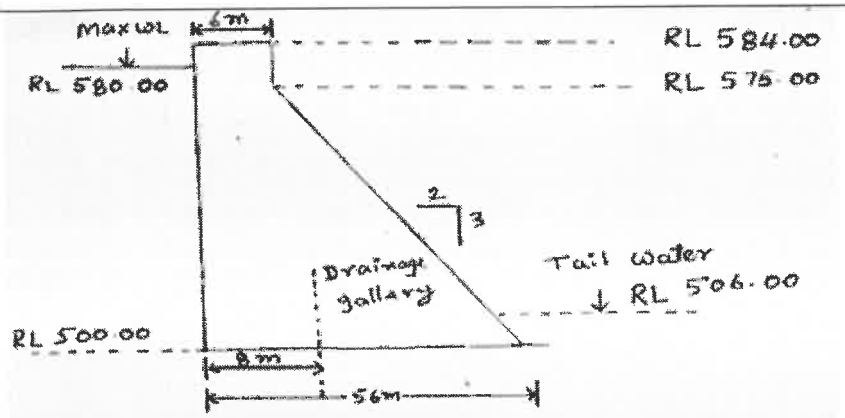
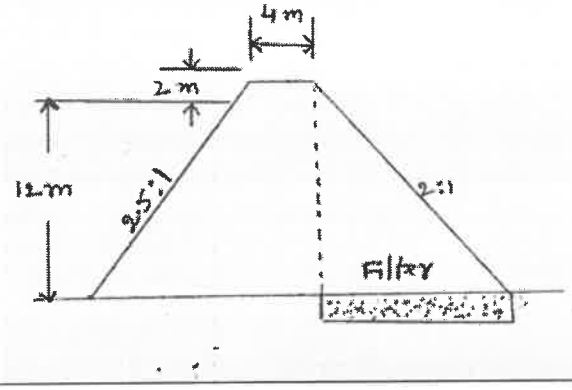
Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	Enlist the important physical characteristics of reservoir.	1M	1	BL1
b)	Write the factors governing the selection of site for a dam.	1M	1	BL2
c)	State the causes of failure of a Gravity Dam.	1M	2	BL1
d)	Mention the key features of a gravity dam.	1M	2	BL1
e)	Give the measures for control of seepage in Earth Dams.	1M	3	BL2
f)	List the significance of spillway jump curve.	1M	3	BL2
g)	Compare weir and barrage.	1M	4	BL2
h)	What is the function of a silt ejector?	1M	4	BL1
i)	Mention the reasons for constructing canal falls.	1M	5	BL2
j)	Write the key features of sarada type fall.	1M	5	BL1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	Explain the various storage zones of reservoir with neat sketch. Also add a note on estimation of the storage capacity reservoir using mass curve.	10M	1	BL3
	OR			
3	a) Classify various types of dams and distinguish clearly between rigid and non-rigid dam. b) Discuss, with illustration the physical factors that govern the selection of type of dam.	5M 5M	1	BL3
4	The figure shows a section of gravity dam built of concrete. Neglect earthquake effect and calculate: (i) The maximum vertical stress at the heel and toe of the dam. (ii) The major principal stress at the toe of the dam. (iii) The intensity of shear stress on a horizontal plane near the toe. Assume weight of concrete =2.5 tones /cu.m	10M	2	BL4

				
	OR			
5	a) Distinguish between a low gravity dam and high gravity dam. Write the expression used for such a distinction. b)What do you understand by the elementary profile of a gravity dam? Derive expressions for determining base width of such a dam based on (i) stress criterion and (ii) sliding criterion.	4M 6M	2	BL4
6	A homogeneous earth dam is shown. Calculate the seepage per meter length, through the body of the dam. Coefficient of permeability of the dam material may be taken as $8x10^{-3}$cm/sec. 	10M	3	BL4
	OR			
7	Describe with neat sketches the different types of spillways.	10M	3	BL3
8	A hydraulic structure constructed on fine sand (C = 15) has a total floor length of 35 m. Two sheet piles of depth 6 m and 8 m are provided at upstream side and downstream side of the floor respectively. If the total head on the floor is 4 m, Determine (i) Whether the hydraulic gradient is safe? (ii) Uplift pressure at points A, B, and C at a distance of 15 m, 25 m and 35 m from the u/s end. (iii) Thickness of floor at these points. Use Bligh's creep theory.	10M	4	BL5
	OR			
9	a) Explain Khosla's method of independent variables. How do you apply corrections for interference of piles and inclination of floor?	5M 5M	4	BL4

	b) Discuss the causes of failures of weirs on permeable foundations and suggest suitable control measures for each type of failure.			
10	a) What do you understand by fall in a canal? How do you select its location? b) Write a note on notch type fall.	4M 6M	5	BL3
	OR			
11	a) What do you understand by a head regulator? State functions of a distributory head regulator and a cross regulator. b) Write a note on selection of suitable type of cross-drainage works.	6M 4M	5	BL3