Total No. of Printed Pages: [2]

PRN No.		PAPER CODE	U314-221-(ESE)

(AY: 2024-25) December 2024 (ENDSEM) EXAM

T.Y.B.TECH (SEMESTER-I)

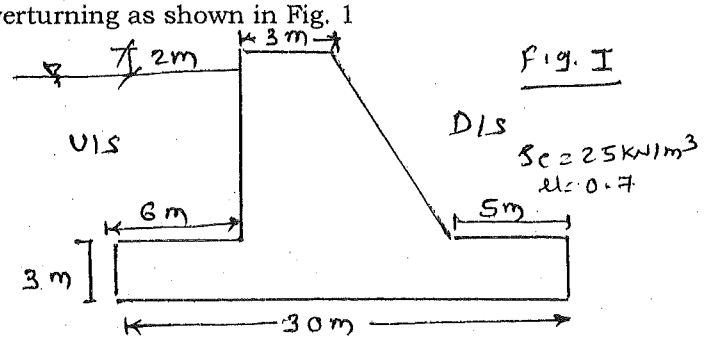
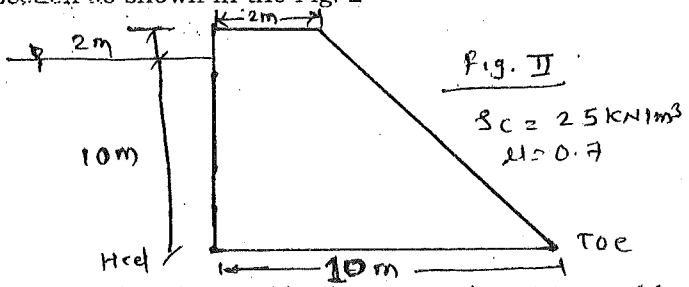
COURSE NAME: Irrigation Engineering -II **Branch: Civil Engineering** **COURSE CODE:CVUA31201**

T.Y B Tech (Civil) PATTERN 2020

Time: [1Hr 30 Min] **[Max. Marks: 40]**

(*) Instructions to candidates:

1) **Figures to the right indicate full marks. Use of scientific calculator is allowed**
2) **Use suitable data wherever required**
3) **All questions are compulsory. Solve any two sub question each from Questions 1 and 2**
4) **Solve any one sub question (2 marks) from Questions 3 ,4 ,5 and 6 and sub question of 4 marks is compulsory from questions 3,4,5,and 6**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Enlist types of forces acting on the dam	[4]	1	Understand
	b) A gravity dam is constructed with following dimension and material properties. Check the stability of dam against overturning as shown in Fig. 1 	[4]	1	Apply
	c) Check the stability of the dam against sliding shown in Fig. 1	[4]	1	Apply
Q.2	a) Calculate the uplift pressure acting on base of the dam section as shown in the Fig. 2 	[4]	2	Apply
	b) Determine the combined stress acting at toe and heel of cross section of dam shown in Fig. 2 for full and empty condition	[4]	2	Apply
	c) Draw a schematic sketch of a reservoir showing the various storage zone	[4]	2	Understand

Q.3	a) Enlist the type of spillway used in dam	[2]	3	Understand
	OR			
	b)Estimate diameter of pipe used in Simphon type spillway system for the following parameter Discharge =50 m^3/s, Operating head =10m, Cd=0.65	[2]	3	Understand
	c) An Ogee spillway is constructed for the following data D/S slope 0.5H:1V, No. of piers =5, Clear span between the piers= 18m, Height of spillway =40m, Kp=0.01, Ka=0.1, Thickness of each pier =1.0m, width of dam section =70m Estimate discharge over the spillway	[4]	3	Apply
Q.4	a)Enlist seepage control technics used in earthen dam	[2]	4	Understand
	OR			
	b) Calculate discharge per meter run length of dam with height of 22m, Free board =2m, No. of potential drop=10, No. of flow channels=5, $K=5x10^{-6}$ cm/s	[2]	4	Apply
	c) An earthen dam is made of homogeneous material has following data Area of C/S of dam=1000m^2, Area above seepage=480m2, dry density= 18KN/m^3, sub. Density= 12KN/m^3, C=22 KN/m^2, Base width of dam =120m, height of dam=21.5 m, angle of internal frication=10. Determine FOS of the dam against overturning	[4]	4	Apply
Q.5	a)Draw a neat sketch of diversion head work	[2]	5	Understand
	OR			
	b)Draw a neat sketch of canal head regulator	[2]	5	Understand
	c) An irrigation canal of rectangular shape is constructed by Using Lecy's theory for the following parameter Discharge= 50 m^3/s, CVR=1.2, depth of water=1.5m, N=0.001, Bed slope= 1:1000, width of bed=1.5m and dia. Of silt=2mm. Determine suitable critical velocity for alluvial condition	[4]	5	Apply
Q.6	a)Classify the river training	[2]	6	Understand
	OR			
	b)Enlist site selection parameters for cross drainage work	[2]	6	Understand
	c)Elaborate the significance of Pitched Island and Closing dykes in river training structure	[4]	6	Understand