C. U. SHAH UNIVERSITY Winter Examination-2021

Subject Name : Design of Hydraulic Structures

Subject Code : 4TE	06DHS1	Branch: B.Tech (Civil)	
Semester: 6	Date: 25/10/2021	Time: 02:30 To 05:30	Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

construction?

Q-1		Attempt the following questions:	(14)
-	a)	What is meant by 'useful storage' in a dam reservoir?	(1)
	b)	Enlist various checks carried out for the stability of an earth dam.	(1)
	c)	Define Retarding basin.	(1)
	d) e)	State various assumptions made in the seepage analysis. What is phreatic line for an earth dam?	(1) (1)
	f)	Enlist various factors which are considered for the selection of preliminary section of the dam.	(1)
	g)	What is meant by canal fall?	(1)
	h) i) j) k)	Define Axis of the dam, What is meant by "concrete gravity dams"? Draw a neat typical cross-section of concrete gravity dam. What are contraction joints in gravity dam?	(1) (1) (1) (1)
	l) m) n)	What is meant by a 'Dam sluice'? Define spillway. What is apex of the crest?	(1) (1) (1)
Attem	pt any	four questions from Q-2 to Q-8	
0-2		Attempt all questions	(14)

Q-2		Attempt all questions	(14)
	(a)	What are the different kinds of spillways and how are they selected for	(7)
		individual conditions?	
	(b)	Discuss the location of the 'main spillway' and 'subsidiary spillway' in gravity dams as well as in earthen dams	(7)
		gravity durits us were us in earthen durits	

Q-3Attempt all questions(14)(a)What useful purpose is served by a dam? What are the ill effects of dam(7)

	(b)	"Spillway is a safety valve in the dam" Dis components of the spillway?	scuss. What are different	(7)
Q-4	(a) (b)	Attempt all questions Discuss various classifications of soils. Explain the important characteristics embankment dam.	of soil used to design the	(14) (7) (7)
Q-5	(a) (b)	Attempt all questions What are the functions and types of galleries in dams? What are the different ways by which a concrete gravity dam may fail, and how will you ensure its safety against each type of failure?		(14) (7) (7)
Q-6	 Attempt all questions (a) Draw the elementary profile of a gravity dam and explain various f acting on it. 		am and explain various forces	(14) (7)
	(b)	Distinguish clearly between a low gravity dam and high gravity dam. Derive An expression used for such a distinction.		(7)
Q-7	(a)	Attempt all questions Explain design criteria for the (i) Cut-off trench and (ii) D/S drainage system of the earth dam.		(14) (7)
	(b)	Determine the computation of seepage rate using flow net.		(7)
		Discuss the method of flow net construction for: (a) Zoned earth dam, (b) Earth dam of an isotropic soil.		
Q-8		Design an Ogee spillway for the following data:Height of the spillway crest above river bed = 100 mDesigned discharge= 12000 cumecsNumber of spans= 6Clear distance between piers= 15 mThickness of pier= 3 mSlope of d/s face of the overflow section= 0.8 : 1Assume any other data if required.		(14)

