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BCV602

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025
Irrigation Engineering and Hydraulic Structures

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Define the term irrigation and what are the types of flow irrigation? Explain any two flow irrigation system.	6	L2	CO1
	b.	Define duty, delta and Base period. Derive an expression to establish relation between them.	6	L2	CO1
	c.	After how many days will you supply water to soil in order to ensure sufficient irrigation of the given crop if i) Field capacity of soil = 28% ii) Permanent wilting point = 13% iii) Effective depth of root zone = 70 cm iv) Dry density of soil = 1.3 gm/cc v) Daily consumptive use of water of given crop = 12 mm	8	L3	CO1
		OR			
Q.2	a.	List the benefits and ill effects of irrigation.	6	L1	CO1
	b.	List and explain Irrigation efficiencies.	6	L2	CO1
	c.	An irrigation canal has gross command area of 80000 hectors out of which 85% is culturable. The intensity of irrigation for Kharif season is 30% and for Rabi season 60%. Find the discharge required at the head of the canal if the duty at its head is 800 ho/cu for Kharif season and 1700 ho/cu for rabi season.	8	L3	CO1
		Module – 2			
Q.3	a.	Explain various considerations for canal alignment.	8	L2	CO1
	b.	Design an irrigation channel to carry a discharge of 45 cumecs. Assume N = 0.0225 and M = 1. The channel has a bed slope of 0.16 meter per kilometer. Use Kennedys theory and trial depth D as 1.8 m.	12	L3	CO1
		OR			
Q.4	a.	Explain with neat sketch the storage zones of a reservoir.	8	L2	CO1
	b.	The monthly yield of water from a catchment is given below. Determine the minimum capacity of the reservoir by mass curve method if the flow is drawn at a uniform rate. Values are given in million cubic meters	12	L3	CO1

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Inflow volume	1.4	2.1	2.8	8.4	11.9	11.9	7.7	2.8	2.25	2.24	1.96	1.68

		Module – 3			
Q.5	**a.**	Discuss briefly forces acting on gravity dam with the help of a neat sketch.	**10**	**L2**	**CO1**
	b.	Design the practical profile of a gravity dam made of stone masonry given the following data: RL of base of dam = 198 m RL of HFL of reservoir = 228 m Specific gravity of masonry = 2.4 Safe compressive stress in = 1200 kN/m^2 masonry	**10**	**L3**	**CO1**
		OR			
Q.6	**a.**	Discuss in brief various modes of failure of gravity dam.	**6**	**L2**	**CO1**
	b.	Explain step by step graphical procedure to be adopted for analyzing the stability of gravity dam.	**8**	**L2**	**CO1**
	c.	Design and draw the practical profile of a gravity dam to a suitable scale, when height of water to be stored = 55 m, specific gravity of concrete = 2.4, free board = 2.75 m	**6**	**L3**	**CO1**
		Module – 4			
Q.7	**a.**	Explain with neat sketches different types of earth dams.	**10**	**L2**	**CO2**
	b.	Explain the causes of failure of earth dam.	**10**	**L2**	**CO2**
		OR			
Q.8	**a.**	Define a spillway. Write neat sketches of different types of spillways.	**10**	**L2**	**CO2**
	b.	Describe the design principles that are involved in the design of ogee spillway.	**10**	**L2**	**CO2**
		Module – 5			
Q.9	**a.**	Draw a neat sketch of diversion head works and indicate various components of the system. Briefly indicate the function of each component.	**10**	**L2**	**CO3**
	b.	Briefly outline Khosla's theory on the design of weirs on permeable foundation. Enumerate the various corrections that are needed in the application of this theory.	**10**	**L2**	**CO3**
		OR			
Q.10	**a.**	Define a Weir and Barrage with the help of a neat sketch.	**6**	**L2**	**CO3**
	b.	Explain Bligh's creep theory for the design of impervious floor weir.	**6**	**L2**	**CO3**
	c.	Briefly explain silt ejectors and silt excluders.	**8**	**L2**	**CO3**

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