

**GIET UNIVERSITY, GUNUPUR - 765022**

B. Tech (Sixth Semester Regular) Examinations, May - 2024

**21BCVPE36002 - Hydraulic Structures**

(Civil)

Time: 3 hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks)

**PART - A****(2 x 5 = 10 Marks)**Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. Define critical velocity.	CO1	K2
b. Write about the advantages of earth dam.	CO1	K1
c. Write about the purposes of diversion headwork.	CO3	K1
d. Write about the functions of scouring sluices.	CO1	K1
e. Explain about sarada fall.	CO1	K1

**PART - B****(15 x 4 = 60 Marks)**Answer **ALL** questions

	Marks	CO #	Blooms Level
2. a. Define the following G.C.A., C.C.A., kor depth, kor period, outlet factor, capacity factor	7	CO2	K2
b. How is irrigation efficiency measured, and what are the main factors that influence it? Discuss the significance of improving irrigation efficiency in agriculture, including its impact on water conservation, crop yield, and environmental sustainability.	8	CO3	K3
(OR)			
c. Explain the component of diversion head work with neat diagram.	7	CO1	K3
d. Design a lined canal from the following data: Design discharge of canal 100cumec Bed slope=25cm/km Side slope =1.5:1 N=0.016 V=1.5m/sec	8	CO2	K4
3.a. Indicate all the forces acting on a dam with proper diagram and explanation.	8	CO3	K2
b. What are the different types of cross drainage work? Explain.	7	CO1	K3
(OR)			
c. Calculate the design discharge of canal if GCA is 500 hecter ,where 80% area is culturable,the intensity of irrigation of rice is 30%,and delta is 20 cm for base period 2 and half week,intensity of wheat is 60% and delta is 10 cm for a base period of 1 week.	9	CO2	K3
d. What are the design parameter for lined canal?	6	CO1	K2

4.a.	Design an irrigation canal with the following data F.S.D=20 cumec Mean diameter of silt particle=0.45 mm S:S=1.5:1 Find also the bed slope of the canal	7	CO2	K3
b.	Explain cross drainage work with neat diagram. (OR)	8	CO1	K2
c.	Find the field capacity of soil for the following data Depth of root zone=2m Optimum moisture content =5% Soil density=1.59gm/cc Water applied to the soil=500 cubic meter Evaporation loss =10% Area of plot 1000sq meter	8	CO2	K3
d.	How does water move through soil, and what factors influence its movement, retention, and distribution within the soil profile?	7	CO3	K2
5.a.	What are the different types of soil water?	7	CO1	K2
b.	What are the primary differences between a weir and a barrage in water resource engineering, and how do their designs and functionalities differ in terms of controlling river flow, regulating water levels, and facilitating navigation and irrigation? (OR)	8	CO3	K3
c.	What are the key components of a dam structure, and how do engineers determine the optimal location, type, and design of a dam for various purposes such as flood control, irrigation, hydropower generation, and water supply?	7	CO1	K3
d.	Differentiate between kennedys and laceys theory.	8	CO1	K2

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