Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (S, FE) / S4 (PT) (S, FE) Examination May 2024 (2015 Scheme)

Course Code: CE302

Course Name: DESIGN OF HYDRAULIC STRUCTURES

Max. Marks: 100 Duration: 4 Hours

- Use of Khosla's Chart, Blench Curves and Montague Curves are permitted in the Examination Hall
- Assume suitable design data whichever necessary

PART A

Answer any two full questions, each carries 15 marks. Marks

1	a)	Explain different types of weirs	(6)
	b)	Enlist the functions of undersluices and divide wall	(6)
	c)	State the limitations of Bligh's theory	(3)
2	a)	Explain different types of Aqueducts	(6)
	b)	Explain the salient features of any six types of canal falls with sketches	(9)
3	a)	Enlist the factors to be considered in the alignment of canals	(4)
	b)	State Khosla's interim conclusions	(5)
	c)	Explain the subsurface flow causes of failure of weirs and remedial measures	(6)

PART B

Answer any one full question, each carries 50 marks.

4 a) Design a suitable cross drainage work for the following hydraulic particulars: (25)

Canal

Full supply discharge = 45 cumecs

Bed width = 30.0m

Bed level = 200.00

Full supply depth = 1.75m

Side slope =1.5 H :1 V

Left bank is 3.0 m wide. Right bank is 5m wide and the cross drainage work carries a roadway of 5m over it.

Drainage

Maximum flood discharge = 450 cumecs

Bed level = 198.00

High flood level = 200.50m

Lacey's silt factor = 1

b) Prepare the following drawings (not to scale)

i. Half sectional plan at foundation level (15)

ii. Section along the centre line of the canal (10)

5 a) Design a 2 m notch fall for the following data: (25)

Full supply discharge = 5 cumecs

Full supply depth =1.5 m

Bed width = 6m

Bed level at upstream 10.00

The canal section and flow conditions are same below the fall. Assume any other data if required.

b) Prepare the following drawings (not to scale)

i. Half plan at top and half at foundation level (15)

ii. Section along the centre line of the canal (10)

PART C

Answer any two full questions, each carries 10 marks.

6 a) Explain the types and functions of galleries and keys in gravity dams (6)

b) What is elementary profile of gravity dam? Derive the expression for base width of elementary profile of gravity dams for no tension criteria (4)

7 a) Explain the types of Arch dams. (5)

b) Derive the most economical central angle of an arch dam. (5)

8 a) Differentiate high dams and low dams (2)

b) Explain the method of computation of uplift pressure under gravity dams with drainage gallery. (2)

c) Explain the causes of failure of earth dams (6)

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