Vivekananda College of Engineering & Technology, Puttur
[A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®]
Affiliated to VTU, Belagavi & Approved by AICTE New Delhi

CRM08	Rev 1.10	\<CV\>	\<30/6/2022 \>

CONTINUOUS INTERNAL EVALUATION – 2

Dept:CV	Sem / Div: 4	Sub:Applied Hydraulics	S Code: 18CV43
Date: 05/07/22	Time:9.30-11.00am	Max Marks: 50	Elective: N

Note: Answer any 2 full questions, choosing one full question from each part.

QN	Questions	Marks	RBT	CO's
	PART A			
1 a	Obtain the conditions for economical trapezoidal section in which side slope is constant.	7	L2	CO2
b	The discharge of water through a rectangular channel of width 8m is 15 m^3/s, when depth of flow of water is 1.2m. Calculate i) Specific energy of flowing water. ii) Ciitical depth and critical-velocity iii) Value of minimum specific energy.	8	L3	CO2
c	A trapezoidal channel has side slopes of 1H:2V and the slope of bed is 1 in 1500. The area of the section is 40m^2. Find the most economical dimensions of channel. Also determine the discharge of the channel. Take C = 50.	10	L3	CO2
	OR			
2 a	Derive conditions for most economical rectangular channel.	10	L2	CO2
b	Explain with a neat sketch of specific energy curve. Also derive an expression for critical depth, critical velocity and minimum specific energy. A rectangular channel which is laid on a bottom slope of 0.0064 is to carry 20 m^3/s of water. Determine the width of the channel when the flow is in critical condition. Take Manning's coefficient =0.015	7	L3	CO2
c	A 8m wide channel conveys 15m^3/s of water with a depth of	8	L3	CO2

1.2m. Obtain the following : i) Specific energy of the flowing water ii)Critical depth and critical velocity and minimum specific energy. iii) Froude number and state when flow is subcritical or supercritical

PART B

3	a	Derive an expression for length of Back water curve	7	L2	CO3
	b	Derive an expression for depth of hydraulic jump in terms of upstream Froude number	8	L3	CO3
	c	In a rectangular channel of width 24m and depth of flow is 6m. The rate of flow is 86.4 m³/S. if the bed slope of the channel is 1 in 4000. Then find the slope of free surface of water. Take C = 60.	10	L2	CO3

OR

4	a	Explain following slope profiles: i) Critical slope ii) Mild slope iii) Steep slope also draw profiles of M1 ,M2 and M3	7	L2	CO3
	b	Find the free surface slope in a rectangular channel of width 20m, having depth of flow 5m. The discharge through the channels is 50m³/s. The longitudinal bed slope is 1 in 4000. Take C = 60.	8	L3	CO3
	c	The depth of flow of water at a certain section of a rectangular channel of 2m wide, is 0.3m. The discharge through the channel is 1.5m3/s. Determine whether a hydraulic pump will occur, and if so find its height and loss of energy per Newton of water.	10	L2	CO3

Prepared by:

Dr.Sowmya N J

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