Name :
Reg No :

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

07 THRISSUR CLUSTER

FIRST SEMESTER M.TECH. DEGREE EXAMINATION DEC 2017

CIVIL Engineering

Water resources and Hydroinformatics

07CE6403 ADVANCED FREE SURFACE FLOW

Time : 3 hours **Max.Marks: 60**

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

Q.no.	Module 1	Marks
1a	Describe the pressure distribution in open channels if the boundary has a concave curvature to the flow?	**4**
	Answer b or c	
b	Derive steady state momentum equation?	**5**
c	Explain the theoretical concepts related to uniform flow?	**5**

Q.no.	Module 2	Marks
2a	State the assumptions used in the derivation of Gradually Varied Flow?	**4**
	Answer b or c	
b	A rectangular channel 3m wide and laid on a slope of 0.005 carries a flow at a normal depth of 1.2m. A sharp crested rectangular suppressed weir(Cd 0.62) is located with its crest at 2m above the channel bottom at the downstream end of the channel. Compute the length of water surface profile by direct step method?	**5**
c	Explain the practical method of determining Manning's n for natural channel?	**5**

Q.no.	Module 3	Marks
3a	Explain the use of jump as energy dissipator?	**4**
	Answer b or c	
b	Derive the dynamic equation for spatially varied flow with increasing discharge?	**5**
c	Explain one method to compute the water surface profile of spatially varied flow?	**5**

Q.no.	Module 4	Marks
4a	Classify water waves?	**4**
	Answer b or c	
b	Explain diffusion model?	**5**
c	State the problems involving unsteady flow in open channel?	**5**

Q.no.	Module 5	Marks
5a	Explain kinematic wave solutions for simple watershed geometry?	**5**
	Answer b or c	
b	Explain hydraulic flood routing through a stream?	**7**
c	Explain the significance of flow characteristics in Method of Characteristics method (MOC) for the solution of Saint Venant equations?	**7**

Q.no.	Module 6	Marks
6a	Differentiate Explicit method from Implicit method?	**5**
	Answer b or c	
b	Explain McCormack Scheme?	**7**
c	Explain CFC stability criteria?	**7**