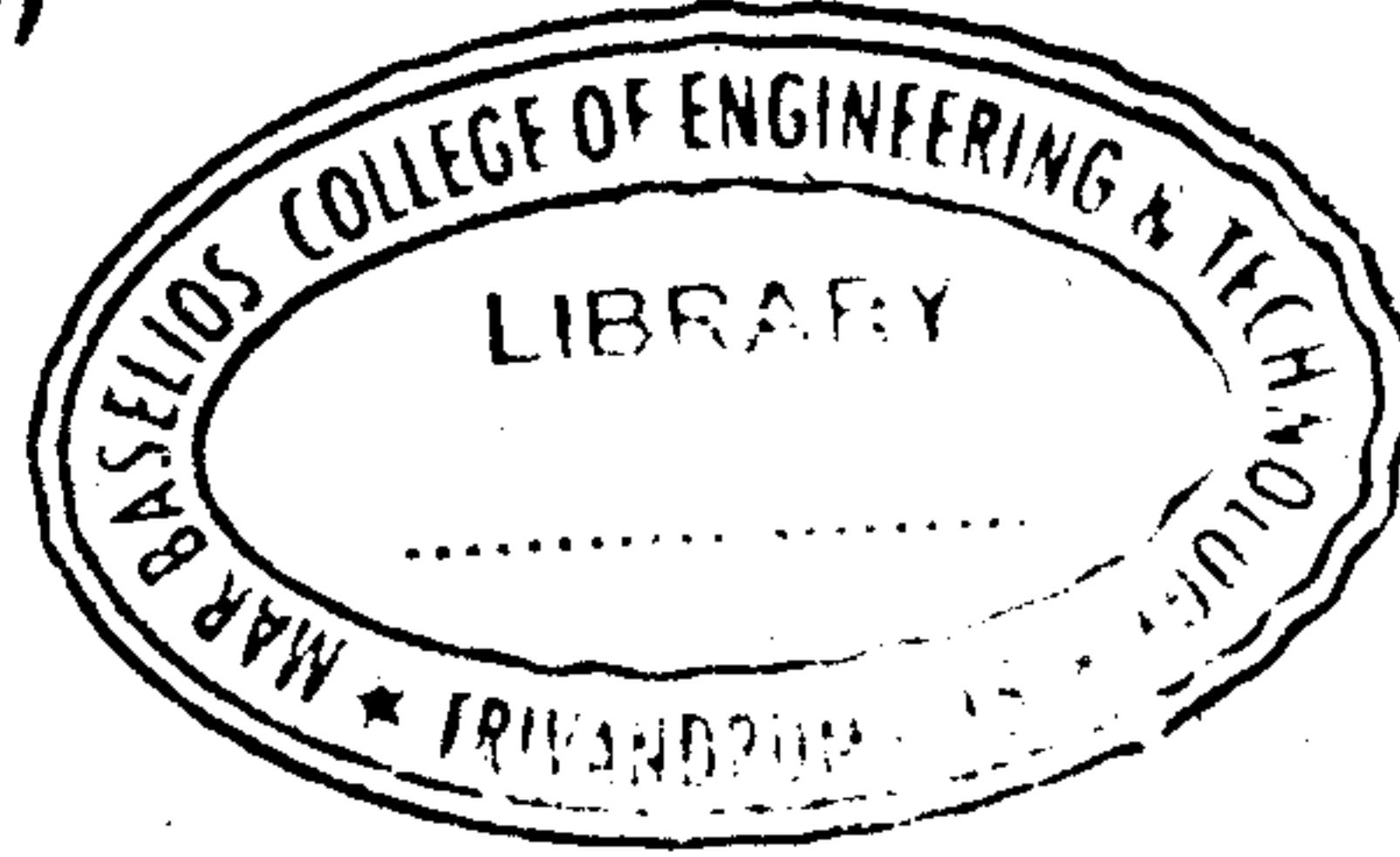


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G – 3327

Reg. No. : .....

Name : .....



**Fourth Semester B.Tech Degree Examination, June 2019**  
**(2008 Scheme)**

**08.404 – FLUID MECHANICS II (C)**

Time : 3 Hours

Max. Marks : 100

**PART – A**

Answer **all** questions. Each question carries **5** marks.

1. What are the different types of flow in open channels?
2. With the help of sketches, explain velocity distribution in open channels.
3. Explain specific energy curve with the help of sketches.
4. Sketch and explain the possible gradually varied flow profiles in mild sloped channel.
5. Explain Froude model law with some practical applications.
6. Explain the applications of momentum equation.
7. Explain the classification of turbines.
8. What are air vessels? What are its functions?

**(8 × 5 = 40 Marks)**

P.T.O.

## PART – B

Answer **any one** full question from each module. Each full question carries **20** marks.

### Module – I

9. (a) Derive Chezy's equation for uniform flow. 6
- (b) Determine the dimensions of the most economic section of a trapezoidal channel to carry a discharge of  $15 \text{ m}^3/\text{s}$  at a slope of 1 in 4000 having side slopes 1 vertical to 2 horizontal. Assume Manning's  $n=0.015$ . 14
10. (a) Explain different types of jumps in a horizontal rectangular channel with neat sketches. 10
- (b) Calculate the critical depth and corresponding specific energy in a rectangular channel, 4m wide carrying a discharge of  $20 \text{ m}^3/\text{s}$ . Assume Manning's  $n=0.014$  and bed slope 1 in 3000. 10

### Module – II

11. (a) Derive dynamic equation for gradually varied flow mentioning the assumptions. 10
- (b) A 5 m wide rectangular channel carries a discharge of  $15 \text{ m}^3/\text{s}$  of water. The bed slope of the channel is 1 in 200 and Manning's  $n$  is 0.014. Determine critical depth and normal depth. Also determine whether the channel slope is mild, steep or critical. 10
12. (a) Explain Buckingham's  $\Pi$  method of dimensional analysis. 10
- (b) Write short notes on
- (i) Distorted model
  - (ii) Undistorted model
  - (iii) Scale effect in models 10

### Module – III

13. (a) Draw the velocity triangles of Pelton wheel bucket and obtain expressions for work done and efficiency. 10
- (b) A jet of water 40mm in diameter having a velocity of 15 m/s strikes normally a flat smooth plate. Determine the thrust and work done per second on the plate if the plate is moving at a velocity of 8m/s in the same direction as the jet. 10
14. Write short notes on
- (a) cavitation in turbines
  - (b) multi-stage pumps
  - (c) working of reciprocating pumps
  - (d) indicator diagram.

