Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME Semester –III Examination Dec. - 2011

Subject code: 731201 **Date: 05/12/2011**

Subject Name: Water Supply & Drainage

Time: 10.30 am – 01.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** How will you arrive at the treatment plant capacity for a proposed water treatment plant of a town? **07**

(b) Draw the layout plan and section of a typical surface water treatment plant. **07**

Q.2 **(a)** Write short note on elevated service reservoir. **07**

(b) How will you decide the capacity of the pump for lifting water? **07**

OR

(b) Describe "fire hydrants". **07**

Q.3 **(a)** Describe Hardy cross method for analysis of pipe networks. **07**

(b) Write short note on centrifugal pumps. **07**

OR

Q.3 **(a)** Discuss briefly the rational method to determine the flow of storm water. **07**

(b) The following data is available regarding the various types of area and the corresponding impermeability factors (C). If the maximum intensity of rainfall is 40mm/hour, calculate the discharge of storm water which will reach the sewer line. Use rational formula. **07**

Types of Surface	% area	Run off co-efficient
Roofs	35	0.9
Pavement & Yards	20	0.85
Lawn & Gardens	30	0.15
Vacant Plots	15	0.10

Q.4 **(a)** Are storm sewer designed for full flow conditions? Why? Discuss in details. **07**

(b) Calculate the velocity of flow and discharge in storm sewer of circular section having diameter of 1.5 m laid at a gradient of 1 in 450. Assume sewer is running half full. **07**

OR

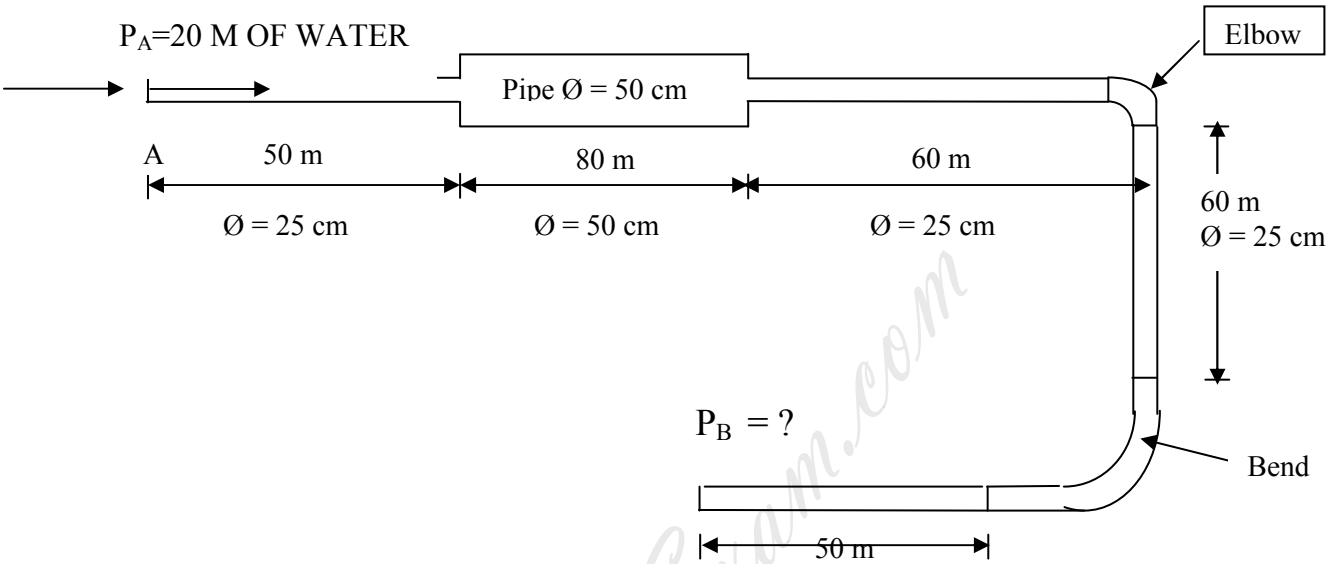
Q.4 **(a)** Explain the following: **07**
(i) Non silting velocity
(ii) Non scouring velocity

(b) Determine the diameter of a storm sewer to carry storm discharge of 0.75 m^3/sec. The sewer is to be designed to run half full. **07**

Q.5 **(a)** State the head losses in the following fixtures: **07**
(i) Bend
(ii) Gate valve
(iii) Elbow
(iv) Reducers
(v) Sudden expansion
(vi) Sudden contraction

(b) Explain how you will find out pressure at point B in following diagram. **07**

Plan of the Pipe Line



OR

Q.5 **(a)** Explain the following terms **07**
(i) Hydraulic jump
(ii) Specific energy & specific energy curves
(iii) Foude's number and its usefulness.

(b) A trapezoidal channel having side slopes of 2 vertical to 1 horizontal has base width of 1.8 m carries water at a depth of 1.2 m. If the slope of channel is 1 in 300. Find out discharge carried by the channel. **07**

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