

Final Assignment
Date: 04/07/2020

Course Details

Course Title: Water Conservation and Rain Water Harvesting **Module:** 3
Instructor: _____ **Total Marks:** 50

Student Details

Name: _____ **Student ID:** _____

Question 1. (15)

Consider following two Catchment areas of an educational institution with open areas and buildings,

- i. Catchment 1: with rooftop area =5000 m², open area =10251 m²
- ii. Catchment 2: Open area = 8000 m²

Also consider a storm of 2 hours and Average rainfall intensity of 4 cm per 2 hr for both catchment areas

- a) calculate the total runoff volume from the rainfall for the following catchment areas.
- b) Design the recharge pit for the calculated volume if water in part (a)
- c) calculate percentage of rain that can be obstructed for both catchment areas given above

Question 2. (10)

- a) Pakistan is among the worst hit countries with respect to environmental changes. Water scarcity is one of them. Explain why water recharge is important and how it can benefit Pakistan aquifers.
- b) Highlight the major water recharge techniques that can be used in Pakistan for water harvesting.

Question 3. (10)

Pakistan is facing major planning problems of unplanned urbanization as well as expanding unplanned rural areas. Give detailed account of the threats that Pakistan aquifer is facing in this context.

Question 4. (15)

What are the tangible recommendations and policy measures that you think can help to conserve the ground water in Pakistan? Please provide your account considering geographical versatility of and availability of recharge options in different areas of Pakistan