

ASSIGNMENT BOOKLET

Certificate in Water Harvesting and Management (CWHM)

**(Assignment for the January
and July Session 2014)**

Note: First of all read the assignment/questions and instructions carefully and identify the components of an assignment. You should read the relevant sections and sub-sections of a unit while preparing your responses and write answers in your own words. Your responses should not be a verbatim reproduction of the textual materials/blocks provided for self-learning purposes. We also suggest that, you may read additional materials available in your study centre or in any other library before preparing your responses. But extra reading is not a must to answer these assignments.



**School of Agriculture
Indira Gandhi National Open University
New Delhi -110068
2014**

Dear Learner,

Welcome to the Certificate in Water Harvesting and Management (CWHM) programme.

We hope that you have gone through the Programme Guide for CWHM carefully. It is extremely important to complete the assignments within the stipulated time to be eligible to appear for the term-end examination. All the assignments of CWHM are Tutor Marked Assignments (TMAs) and are part of the continuous evaluation process.

Before you write the assignments, read the instructions provided in the Programme Guide carefully and go through the course materials. If you have any doubts or problems pertaining to the courses and assignments, contact the concerned academic counsellor at your Study Centre. If you still have problems, do feel free to contact us at the School of Agriculture.

You are requested to go through the course material first and then complete the assignments. Your answers should not be a verbatim reproduction of the textual materials/blocks provided for self-learning purposes. On top of the first page of your answer sheet, please write the details exactly in the following format.

Enrollment no:.....
Name:.....
Address:.....
.....
.....
.....
Course Code:.....
Course Title:.....
Study Centre:.....
(Name and Code)
Date:.....

Please submit your assignments at the Study Centre allotted to you before the due date as mentioned below:

Course Code	Last Date for January 2014 Session	For July 2014 Session
ONR-001	31 st January 2014	31 st July 2014
ONR-002	28 th February 2014	30 th August 2014
ONR-003	25 th March 2014	25 th September 2014

We suggest that you should retain a copy of your assignment responses.

Wish you all good luck for successful completion of the programme.

Note: Minimum 35% marks in Continuous Assessment i.e., each assignment in each course is required for completion of a course for CWHM programme.

*School of Agriculture
Indira Gandhi National Open University,
Maidan Garhi, New Delhi-110068, India.*

Assignment -1
Course Code: ONR-001

Maximum marks: 50

Answer the following questions. All questions carry equal marks.

1.	(a) What do you mean by rainwater harvesting and how it is important in present contest in urban as well as rural areas?	5
	(b) Discuss about gross and utilizable water resource potentials of India.	5
2.	(a) Define efficiency and irrigation intensity. How it can be improved in Indian conditions?	5
	(b) What do you understand by irrigation potential and enumerate the efforts for enhancing irrigation potential since independence?	5
3.	(a) What is water pollution? How surface water pollution is different with groundwater pollution?	5
	(b) What is tank and groundwater irrigation and justify it play an important role in India?	5
4.	(a) What are the advantages of roof top rainwater harvesting and explain its role in improving groundwater conditions?	5
	(b) What is the main step different state governments have taken for enforcing rainwater harvesting?	5
5.	(a) What is watershed? Explain the concept of watershed management and list different advantages of watershed management.	5
	(b) How integrated watershed management can help to improve the socio-economic conditions of the rural people?	5

Assignment - 2
Course Code: ONR-002

Maximum marks: 50

Answer the following questions. All questions carry equal marks

1.	(a) What do you understand by surface runoff? Enumerate different factors affecting runoff.	5
	(b) What do you understand by infiltration? How would you measure them explain in detail?	5
2.	(a) What do you mean by rainfall? Distinguish between convective and cyclonic rainfall with the help of diagram.	5
	(b) Explain different types of recording and non recording rain gauge.	5
3.	(a) What is evaporation and how temperature and atmospheric pressure affect the evaporation?	5
	(b) Define water balancing. Explain water budget with neat schematic diagram and write its different components.	5

4.	(a) Calculate the average rainfall from 250 km ² area using the data given below:						5
	Station	1	2	3	4	5	5
	Rainfall, mm	125	320	615	475	570	
	Area of Polygon, km ²	25	70	35	64	56	
	(b) Discuss in detail the rational method for runoff rate estimation.						
5.	(a) A stream of 20 m ³ /sec discharge has pollutant concentration of 500 ppm (mg/l). The effluent from an industry is discharged into the stream at the rate of 2.5 m ³ /sec with a concentration of 25000 ppm. Compute the resultant concentration.						5
	(b) What is disinfection? Explain with the help of flow diagram of conventional water treatment plant.						5

Assignment – 3

Course Code: ONR-003

Maximum marks: 50

Answer the following questions. All questions carry equal marks

1.	(a) How water harvesting is essential for human and crop production sustainability, discuss in detail?	5
	(b) What do you mean by surface water harvesting technique? Describe two surface water harvesting techniques in detail.	5
2.	(a) What ITK stands for? List any four ITK along with the region where it was used in our country?	5
	(b) Enumerate the factors impacting choice of water harvesting systems? Discuss in detail roof top rain -water harvesting.	5
3.	(a) Calculate the volume of water harvested from roof top area of a building is 425 m ² located in Jalna, Maharashtra receiving average rainfall 225 mm per annum. Assume roof is made of concrete (runoff coefficient 0.8).	5
	(b) How drip irrigation is different from surface irrigation and why drip irrigation is more popular in the area of water scarcity?	5
4.	(a) A farmer applying 5 cm irrigation to 10 ha area and meeting water requirement of 10 cows and of 20 buffalos. Assume requirement of cow and buffalos are 70 and 60 litres/ day. Compute the gross storage capacity of a water storage pond to meet the water need for 30 days.	5
	(b) What are the different types of catchments surfaces from where the rainwater can be harvested, explain.	5
5.	(a) Describe the ideal conditions for artificial ground water recharge. List advantages and disadvantages of groundwater recharge?	5
	(b) What are the different lining materials for controlling seepage losses, explain in detail?	5