

ASSIGNMENT BOOKLET

Certificate in Water Harvesting and Management (CWHM)

**(Assignment for the January
and July Session 2019)**

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
2019**

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:..... Date:.....
(Name and Code)

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

Course Code	Last Date for January 2019 Session	For July 2019 Session
ONR-001	31 st January 2019	31 st July 2019
ONR-002	28 th February 2019	30 th August 2019
ONR-003	25 th March 2019	25 th September 2019

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) Define the following: i) Water stress ii) Water pollution. iii) ITK iv) PRI v) Rainwater Harvesting	5
	(b) Write short notes on: i) Irrigation efficiency ii) Watershed Management	5
2.	(a) Define rooftop rainwater harvesting. Discuss its importance in urban areas.	5
	(b) Visit a nearby river and observe the colour of water at different places in the river and compare it with the water available at your home.	5
3.	(a) What is the main step different state governments have taken for enforcing rainwater harvesting?	5
	(b) What is groundwater pollution? Write various sources of groundwater pollution?	5
4.	(a) Describe the importance of integrated watershed management in sustaining the livelihood in rural areas.	5
	(b) What is bottom up approach? Explain its importance in effective implementation of watershed development projects in India.	5
5.	(a) What is Participatory Rural Appraisal? List important points for conducting a PRA exercise.	5
	(b) Explain institutional arrangement of watershed projects in the India with the help of a flow diagram.	5

Assignment - 2
Course Code: ONR-002

Maximum marks: 50

Answer the following questions. All questions carry equal marks.

1.	(a) Define the following: i) Rainfall intensity ii) Evaporation	5
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	iii) Seepage iv) Aquifer v) Biochemical Oxygen Demand (b) Write short notes on: i) Disinfection ii) Thunderstorms	5
2.	(a) Define precipitation. Discuss important conditions required for precipitation formation. (b) Explain different factors affecting surface runoff.	5 5
3.	a) Define infiltration. Explain the process of its measurement. (b) Describe water budget. Explain the different components of water budget equation.	5 5
4.	(a) Describe the process of discharge measurement of an open channel. Compute the discharge of an open channel if it takes 2 minute to fill a cylindrical tank of 0.8 m diameter and 1.2 m depth of water. (b) Discuss in detail the Curve Number Method for runoff estimation.	5 5
5.	(a) Describe the main pollutants emanating from industry and agriculture? (b) Explain in detail what is water treatment system at household?	5 5

Assignment – 3
Course Code: ONR-003

Maximum marks: 50

Answer the following questions. All questions carry equal marks

1.	(a) Explain the importance of water conservation for agriculture. How can you save water by following simple habits in day to day life? (b) Describe importance of ITK in water harvesting. Explain any two ITK used in Rajasthan.	5 5
2.	(a) Define <i>in-situ</i> water harvesting. Explain any two <i>in-situ</i> water harvesting techniques used in India. b) Distinguish between domestic and community rainwater harvesting systems. Describe the main components of rooftop water harvesting system.	5 5
3.	(a) Define artificial groundwater recharge. Explain with figure how will you recharge groundwater in the abandoned open wells? (b) A farmer applying 8 cm irrigation to 20 ha area and having 15 cows and of 25 buffalos. Assume water requirement of cow and buffalos are 70 and 60 litres/day, respectively. Compute the gross storage capacity of a water storage pond	5 5

	to meet the water need for 60 days.	
4.	(a) Explain drip irrigation method. Discuss its importance in the area of water scarcity. (b) Define seepage. Discuss the role of lining materials for controlling seepage losses?	5
5.	a) Define the following: i) Catchment ii) Contour iii) Delta iv) Water Demand v) Irrigation scheduling (b) Write short notes on: i) Contour bund ii) Agricultural Water Conservation	5 5