

## **ASSIGNMENT BOOKLET**

### **Certificate in Water Harvesting and Management (CWHM)**

**(Assignment for the January and July Session 2015)**

**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  
2015**

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:

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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 2015 Session	For July 2015 Session
ONR-001	31 <sup>st</sup> January 2015	31 <sup>st</sup> July 2015
ONR-002	28 <sup>th</sup> February 2015	30 <sup>th</sup> August 2015
ONR-003	25 <sup>th</sup> March 2015	25 <sup>th</sup> September 2015

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 rainwater harvesting. Discuss its importance in present scenario for urban areas.	5
	(b) Explain the role of groundwater in irrigation in India.	5
2.	(a) What do you mean by ITK? Describe any four water harvesting structures based on ITK.	5
	(b) Discuss the main steps, different state governments have taken for enforcing rainwater harvesting.	5
3.	(a) Differentiate between surface and groundwater pollution.	5
	(b) Define watershed management. Explain its concept and approach.	5
4.	Explain with the help of a flow diagram institutional arrangement for effective implementation of watershed programmes in India.	10
5.	(a) Discuss the importance of integrated watershed management for improving the socio-economic conditions of the rural people.	5
	(b) What is Participatory Rural Appraisal? Explain in detail.	5

**Assignment 2**  
**Course Code: ONR-002**

**Maximum marks: 50**

**Answer the following questions. All questions carry equal marks**

1.	What do you mean by hydrology? Explain hydrologic cycle and its various components with the help of a neat diagram.	10
2.	(a) Discuss in detail the forms of precipitation.	5
	(b) Differentiate between infiltration rate and cumulative infiltration. Discuss the factors influencing infiltration.	5
3.	A rainfall of 80 mm falls in 4 hours over a catchment of 100 ha. There was no discharge before the storm. The outlet discharge of 1.5 m <sup>3</sup> /s continued	10

	for 8 hours. Calculate (i) amount of runoff (ii) amount of water not contributing to runoff and (iii) runoff coefficient.	
4.	(a) Explain normal ratio method for estimation of missing rainfall data.	5
	(b) Define transpiration. Discuss the factors influencing transpiration.	5
5.	(a) What do you understand by groundwater pollution? Describe the impact of groundwater pollution.	5
	(b) What are the main physical and chemical characteristics of water?	5

### Assignment 3

Course Code: ONR-003

Maximum marks: 50

Answer the following questions. All questions carry equal marks

1.	(a) Differentiate between <i>in-situ</i> and surface water harvesting. Discuss any two <i>in-situ</i> water harvesting techniques.	5
	(b) Discuss in detail surface irrigation method.	5
2.	What is rainwater harvesting for crop production? Enumerate its advantages.	10
3.	Discuss in detail the water efficiencies.	10
4.	(a) What do you understand by irrigation scheduling? Explain its importance in crop production.	5
	(b) Distinguish between Delta and Duty. Give the average value of delta for wheat and sugarcane.	5
5.	(a) What do you understand by uniformity coefficient and how will you estimate it?	5
	(b) What is artificial groundwater recharge? Explain any two methods used for artificial groundwater recharge for urban areas.	5