

00751

**CERTIFICATE IN WATER HARVESTING  
AND MANAGEMENT (CWHM)**

**Term-End Examination**

**December, 2010**

**ONR-002 : BASICS OF HYDROLOGY**

*Time : 2 hours*

*Maximum Marks : 50*

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*Note : Attempt any five questions. All questions carry equal marks. Use of calculator is permitted.*

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1. (a) Fill in the gaps. 5x1=5
- (i) \_\_\_\_\_ % earth's water is fresh.
  - (ii) The unending process of circulation and redistribution of water by the atmosphere and the earth is called \_\_\_\_\_.
  - (iii) \_\_\_\_\_ infiltration rate denotes nearly steady state infiltration rate.
  - (iv) The downward movement of water in the soil to water table is called \_\_\_\_\_.
  - (v) Sandy soils have higher hydraulic conductivity than \_\_\_\_\_ soils.
- (b) Describe different components of hydrologic cycle using a clear schematic diagram. 5

2. (a) Write Rainfall Intensity - Duration - Frequency relationship and define its different terms. 6
- (b) List important factors affecting amount and distribution of rainfall. 4
3. (a) What do you understand by seepage ? Distinguish between effluent and influent streams ? 2+3
- (b) What is meant by water balance ? Write a simple water balance equation and its components. 2+3
4. (a) Categorize the different types of rainfall. Describe the characteristics of convective rainfall. 2+3
- (b) Differentiate between non - recording and recording type rain gauges ? 5
5. (a) Compute the discharge of a rectangular channel of 40 cm width having depth of flow as 30 cm. Assume average velocity of flow as 70 cm/sec ? 5
- (b) Describe the use of curve number. List the various factors for deciding the curve number. 2+3

6. (a) Compute peak runoff from a watershed of 150 ha of clay and silt loam texture comprising of 70 ha of Pasture land with 6% slope ( $c = 0.30$ ); 80 ha of cultivated land will 8% slope ( $c = 0.60$ ). Rainfall intensity equal to time of concentration is 10 cm/hr. 6
- (b) What are the different sources of natural and artificial pollution? 4
7. (a) List different physical characteristics of water. 5
- (b) Explain conventional water treatment plant with the help of flow diagram. 5
8. (a) Define water loss and explain different terms of water loss equation. 1+4=5
- (b) Define the following : 5x1=5
- (i) Topography
  - (ii) Rainfall intensity
  - (iii) Drainage Density
  - (iv) Land form
  - (v) Soil moisture.