CERTIFICATE IN WATER HARVESTING AND MANAGEMENT

00176

Term-End Examination

June, 2010

ONR-002 : BASICS OF HYDROLOGY

Time : 2 hours   *Maximum Marks : 50*

*Note :   Attempt **any five** questions. All questions carry **equal** marks.*

1.   (a)   Define the following.   1x5=5

   (i)   Hydrology

   (ii)   Rain fall

   (iii) Runoff

   (iv)   Rainfall intensity

   (v)   Infiltration

   (b)   Draw a schematic diagram of hydrologic   5
   cycle and describe different components.

2.   (a)   What do you mean by precipitation ? Name   5
   its main components. Which component is
   the most dominant in plain areas of the
   country ?

(b) What are essential conditions for precipitation formation ?   **3**

(c) Explain the procedure for estimating the return period.   **2**

3. (a) What is rainfall intensity-duration-Frequency (IDF) ? Explain its importance in design of a soil conservation structure.   **4**

(b) Distinguish between infiltration rate and accumulated infiltration.   **2**

(c) What are main climatic factors affecting runoff. How does duration of rainfall influence the runoff ?   **4**

4. (a) What do you understand by interception ? What is the extent of interception losses during plant growing season ?   **4**

(b) How is evaporation measured ?   **2**

(c) Explain the simplest method of infiltration measurement.   **4**

5. (a) Differentiate between cold front and warm front.   **2**

(b) Explain thunderstorms.   **2**

(c) Explain the average annual rainfall variation in different parts of the country. **3**

(d) How point rainfall can be measured ? List the types of rain gauges. **3**

6. (a) Define water balance. Write simplest water budget equation and define its components. **5**

(b) Estimate average rainfall in a given area of 300 km² using monthly rainfall during July at different stations. **5**

Station	1	2	3	4	5	6
Rainfall, mm	350	270	530	220	425	390
Area of Polygon, km²	40	50	70	30	65	45

7. (a) Explain the relationship between rainfall, infiltration and runoff. **4**

(b) Define runoff coefficient. **2**

(c) Complete the runoff coefficient if the depth of runoff and rainfall are 300 mm and 1000 mm, respectively. **2**

(d) What do you understand by time of concentration ? **2**

8. (a) What is the simplest method of runoff 4
measurement ? Explain the procedure of
runoff measurement.

(b) What are the main physical characteristics 2
of water ?

(c) List the main sources of natural and artificial 2
pollution of water.

(d) How and when hand washing should be 2
Practised ?

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