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ET-535(A)

B.Tech. Civil (Construction Management)

Term-End Examination

00641

June, 2015

ET-535(A) : ELEMENTARY HYDROLOGY

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any* ***five*** *questions. All questions carry equal marks. Draw neat sketches wherever required. Assume missing data suitably.*

1. (a) What are the forces causing atmospheric circulation and the generation of monsoons responsible for precipitation in India ? Describe the mechanism and the types and forms of meteorological process leading to precipitation. 7

(b) Explain the temperature and pressure variations in different layers of atmosphere. What are the different forms of clouds and their relation to instability of air in troposphere ? 7

2. (a) What do you understand by "water equivalent" of a given depth of snow ? Explain the utility of modern systems like radar and satellite in the precipitation. 7

(b) How will you estimate missing precipitation data at a given rain-gauge station ? Explain Hypsometric method of estimation of average depth of precipitation over a mountainous catchment region. 7

3. (a) Describe the evaporation and transpiration processes. What are the factors affecting the process of evaporation ? 7

(b) Name the various analytical methods for the determination of lake evaporation and explain any one of them in brief. 7

4. (a) Why is interception loss generally neglected in the studies of major storm events and floods ? What are the factors that affect interception loss from vegetation ? 7

(b) Distinguish between depression storage and surface detention and obtain a relationship between rates of depression storage, rainfall and infiltration. 7

5. (a) Explain the difference between the direct run-off and base-flow. Point out the usefulness of the base-flow. 7

(b) Distinguish between storm run-off, seasonal run-off and annual run-off. What do you mean by direct run-off ? 7

6. (a) What is the difference between the discharge measurement using current meter in a stationary ordinary boat and that in a moving boat ? How will you compute the discharge ? 7

(b) What are the main drawbacks of employing the measuring structures for discharge measurement in a natural channel ? Describe the slope-area method of discharge measurement with its limitations. 7

7. (a) What do you mean by unit hydrograph ? List the assumptions made in the theory of unit hydrograph. How will you obtain a unit hydrograph from the ordinary observed hydrograph ? Explain with suitable sketches. 7

(b) Explain the concept of synthetic unit hydrograph. List the various basic approaches adopted to obtain a synthetic unit hydrograph. 7