

(Following Paper ID and Roll No. to be filled in your  
Answer Books)

Paper ID : 180420

Roll No. 

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**B. TECH.**

**Theory Examination (Semester-IV) 2015-16**

**HYDROLOGY**

*Time : 3 Hours*

*Max. Marks : 100*

**Section-A**

**1. Attempt each short answer type questions. (5×4=20)**

- (a) What do you mean by interception?
- (b) List the evaporation process.
- (c) What is unit hydrograph? Name any two limitations.
- (d) What do you mean by stream number and stream slope?
- (e) Briefly write about point rainfall.

## Section-B

2. Attempt any five parts of the following. (10×5=50)

- (a) Define precipitation. What are the forms of precipitation? Explain them.
- (b) How will you estimate the peak runoff rate and volume? Explain the SCS method.
- (c) The peak of a flood hydrograph due to a 6-h storm is  $470\text{ m}^3/\text{s}$ . The mean depth of rainfall is 8.0 cm. Assume an average infiltration loss of 0.25 cm/h and a constant base flow of  $15\text{ m}^3/\text{s}$ . Estimate the peak discharge of 6-h unit hydrograph for this catchment.
- (d) What are the methods to estimate the magnitude of a flood peak? Describe any one of them.
- (e) Write short note on "Flood routing".
- (f) Explain briefly the basic principles involved in the development of IUH by "Clark's method".
- (g) Discuss the hydrological cycle with a neat sketch.
- (h) Discuss the unit hydrograph of different durations.

## Section-C

**Note: Attempt all two parts of the following. (15×2=30)**

3. (a) What are the recommended design floods for :
  - (i) Spillways of dams.
  - (ii) Permanent barrages.
- (b) Describe the problems of floods and their control with special reference to the Indian scene.
4. (a) Explain the instantaneous unit hydrograph (IUH). What are its characteristics?
- (b) What is flow duration curve? What information can be gathered from the study of the flow duration curve of a stream at a site?
- (c) Define the drought. Classify them as per National Commission on Agriculture (1976) How a drought management be achieved?
5. (a) What is evapo-transpiration? Discuss any one method to find evapo-transpiration of sugarcane crop.
- (b) Discuss the "Thiessen- method" for mean precipitation over an area of a basin.

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