

**B. TECH**  
**(SEM IV) THEORY EXAMINATION 2017-18**  
**WATERSHED HYDROLOGY, SOIL & WATER CONSERVATION ENGINEERING**  
*Time: 3 Hours* *Total Marks: 70*

**Note:** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

- 1. Attempt *all* questions in brief. 2 x 7 = 14**
- a. Define the term hydrology.
  - b. What are the practical use of Hydrology?
  - c. Define the term Drought.
  - d. What are the causes of Soil erosion?
  - e. What do you understand by contour farming?
  - f. Define contour stone wall.
  - g. Define rate of sedimentation.

**SECTION B**

- 2. Attempt any *three* of the following: 7 x 3 = 21**
- a. Why in hydrologic analysis, watershed approach is practiced rather than the administrative approach?
  - b. Sketch a typical hydrograph an isolated storm and identify the features of the same.
  - c. Write the basic equation and its assumptions, which govern the movement of water in porous media?
  - d. Define the following terms with neat sketches (i) Bunds (ii) Terrace
  - e. Write the Land capability classification and Silt monitoring in tanks.

**SECTION C**

- 3. Attempt any *one* part of the following: 7 x 1 = 7**
- (a) A lake has an area of 15 km<sup>2</sup>. The annual rainfall of 700 mm, inflow to the lake 1.4 m<sup>3</sup> /s, outflow from the lake 1.6 m<sup>3</sup> /s are observed in a year. Assume no change in storage and no water exchange between lake and groundwater. Determine the evaporation during this year.
  - (b) Explain the methods used to reduce the evaporation from a reservoir.
- 4. Attempt any *one* part of the following: 7 x 1 = 7**
- (a) Explain the mass curve method to estimate the storage capacity of reservoir.
  - (b) What are the causes of Drought? and also explain the drought management strategy.
- 5. Attempt any *one* part of the following: 7 x 1 = 7**
- (a) What are the causes of water erosion? and also explain the stream bank erosion.
  - (b) Define the following (i) Universal soil loss equation (ii) Modified Universal soil loss equation.
- 6. Attempt any *one* part of the following: 7 x 1 = 7**
- (a) Explain in detail about the physical and vegetative measures for water

conservation for a watershed.

- (b) Define broad base bunds and their purposes. Also discuss design procedure of graded bunds.

7. **Attempt any *one* part of the following:**

**7 x 1 = 7**

- (a) Write short notes on the following (i) Sand dune stabilization. (ii) Modified soil loss equation. (iii) Ravine reclamation.
- (b) List the characteristics of wind that influence the amount of soil that is eroded and describe how each characteristic affects the erosion process

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