

Seat No.	
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**T.E. (Civil) (Semester-V)**  
**Examination, May - 2017**

**WATER RESOURCES ENGINEERING-I**

**Sub. Code : 66235**

**Day and Date : Monday, 15-05-2017**

**Total Marks : 100**

**Time : 10.00 a.m. to 1.00 p.m.**

- Instructions :**
- 1) Attempt any three questions from both sections.
  - 2) Assume any suitable data if necessary, wherever needed.
  - 3) Figures to the right indicate full marks.

**SECTION-I**

- Q1) a)** What do you know by cloud seeding? How does it help in artificial rain making? [8]
- b)** Explain with sketches - Symon's rain gauge, Tipping bucket rain gauge. [8]

- Q2) a)** Describe evaporation process. What are the factors affecting evaporation? Explain the methods to reduce evaporation from the reservoir. [8]
- b)** Define unit hydrograph. Explain it with reference to basic theory, assumptions and limitations. [8]

- Q3) a)** Given below are the ordinates of 6 hour storm hydrograph. Compute the ordinates of 6 hour unit hydrograph if the base flow is 10 m<sup>3</sup>/sec. and catchment area is 205 sq.km. [8]

Time (hours)	0	6	12	18	24	30	36	42	48	54	60	66
Ordinates (m <sup>3</sup> /sec)	10	35	85	100	78	60	42	32	20	16	12	10

- b)** What is stream gauging? Describe the methods of stream gauging. [8]
- Q4) Write detailed notes on (Any Three). [18]**
- a) Hydrologic cycle and its importance in water resources planning
  - b) Methods of determination of runoff
  - c) Factors affecting infiltration
  - d) Current meter and its use

**P.T.O.**

**SECTION-II**

- Q5) a) Derive an expression for discharge from a well penetrating unconfined aquifer. [8]  
b) Explain Recuperation test in detail. [4]  
c) Explain Darcy's law with its importance. [4]
- Q6) a) Explain following terms. [6]  
i) GCA  
ii) CCA  
iii) Outlet factor  
b) Explain concept of water logging with its ill effects. [4]  
c) The GCA for an irrigation channel is 5500 Ha and 70% of this area is culturable irrigable. The intensity of irrigation for Rabi crop is 45% and that for Kharif crops is 30%. Compute the required discharge if the duty at the head of the channel be 1800 ha/cumec and 800 ha/cumec for Rabi and Kharif crops respectively. [6]
- Q7) a) Explain lift irrigation scheme in detail. [6]  
b) Explain how you will prepare a previously uncultivated land suitable for irrigation and make it cultivable. [4]  
c) Explain need and importance of water shed management. [6]
- Q8) Write a short note on any three of following. [18]  
a) Furrow irrigation  
b) Tube and Open wells - constructional features  
c) Factors affecting duty and measures taken to improve duty  
d) Soil conservation measures

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