

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M.Tech., Summer 2018 Examination

Semester: 2**Subject Code: 03214154****Subject Name: Water Resources System****Date: 25/05/2018****Time: 02:00 pm to 04:30 pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A) Define the following: - (i) Consumptive Use, (ii) Conveyance Losses (iii) Return Flow (iv) Optimization (v) Waterlogging. (05)

B) For the design of a storm water drainage system, the rational formula $Q_p = 0.278 C_i A$ in which Q_p is the peak discharge (m^3/s), C_i is the runoff co-efficient representing ratio of rainfall to runoff (dimensionless), i is the rainfall intensity (mm/hr), and A is the catchment area (km^2) is used. All parameters involved are independent of each other with their mean values: $A = 0.5 km^2$, $C = 0.8$, $i = 30 mm/hr$. The co-efficient of variation of C , i and A are 20, 30 and 5 percent respectively. Applying first order analysis, find the reliability of runoff computation. (05)

C) Give a detailed explanation of "Cloud Seeding". (05)

Q.2 Answer the following questions. (Attempt any three) (Each five mark) (15)

A) Describe the various types of systems. Explain any two

B) Explain the concept of optimization of function of single variable.

C) Explain the stages in water resource planning

D) It is proposed to construct an infiltration gallery in a river bed to supply water at the rate of 140 lpcd to a community of 5000 persons. The river bed has an average coefficient of permeability, $K = 50 mm/day$, influence of drawdown of the gallery is 300m, height of zero influence from a common datum is 10m and drawdown at the gallery is 7m. Find the required length of the infiltration gallery.

Q.3 A) What is Reliability? Explain the steps involved in reliability estimation using Load – Resistance analysis. (07)

B) Discuss Step by Step procedures for planning of Water Resource system. (08)

OR

B) Explain the process of reclamation of waste water in water resource system (08)

Q.4 A) Explain the different types of storage reservoirs and storage zones of a reservoir with sketch (07)

OR

A) What are the different cost allocation methods? Explain any two (07)

B) Explain the "Standard Operating Policy" of an impounding reservoir under normal conditions? (08)