R15

Code No: 125AC

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, May - 2018

WATER RESOURCES ENGINEERING-I

(Common to CEE, CE)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART – A

(25 Marks)

1.a) List the factors that affect the runoff from catchment area. [2]
b) Describe various types of precipitation. [3]
c) What is effective rainfall? [2]
d) Write down the assumptions of unit hydrograph. [3]
e) Define aquiclude. [2]
f) Draw the divisions of sub-surface water. [3]
g) List the importance of irrigation. [2]
h) What are the ill effects of irrigation? [3]
i) How do you classify the canal, based on the functions of the canal? [2]
j) What are the disadvantages of canal lining? [3]

PART - B

(50 Marks)

2.a) Explain tipping bucket type rain gauge with a neat sketch.
b) Describe the factors affecting infiltration. [5+5]

OR

3.a) Explain any one method of estimation of evaporation in detail.
b) Describe any two methods of computing average rainfall over the basin. [5+5]

4.a) What is unit hydrograph? How do you construct it?
b) Describe the two methods of separating base flow from the total runoff. [5+5]

OR

5. The ordinates of a 4h unit hydrograph of a basin area 300km^2 measured at 1h internals are 6,36,66,91,106,93,79,68,58,49,41,34,27,23,17,13,9,6,3 and 1.5 m^3/s respectively. Obtain the ordinates of a 3h unit hydrograph for the basin using the S-curve technique. [10]

6.a) Explain the types of aquifer.
b) How do you determine the yield of the open well from recuperation test? [5+5]

OR

7. Explain in detail the types of tube wells along with their construction details. [10]

8. Explain in detail the factors affecting duty. [10]

OR

9. After how many days will you supply water to soil in order to ensure efficient irrigation of the given crop, if
   a) Field capacity of soil = 27%
   b) Permanent wilting point = 14%
   c) Dry density of soil = 15kN/m^3
   d) Effective depth of root zone =75 cm
   e) Daily consumptive use of water for the given crop =11mm. [10]

10. Design a regime channel for a discharge of 35 m^3/s with silt factor of 0.9 by Lacey's theory, taking side slopes as 1H:2V. [10]

OR

11.a) Explain the balancing depth of cutting
   b) Explain the flood frequency analysis method. [5+5]

---ooOoo---