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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree (S,FE) Examination January 2022 (2015 Scheme)

Course Code: CE309

Course Name: WATER RESOURCES ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

- 1 a) What are the different methods of representing rainfall data? (5)
- b) What are the methods to prepare probable maximum rainfall chart and what is the significance of finding out probable maximum rainfall? (5)
- c) Explain any one method of measuring rainfall. (5)
- 2 a) What are the basic concepts in unit hydrograph theory? (5)
- b) Distinguish between hietograph, storm hydrograph and direct runoff hydrograph. (5)
- c) What is infiltration index? What are the different types of infiltration indices? (5)
- 3 a) Ordinate of 6 hrs UH for a basin are given below. Derive 9hrs UH from it by S- curve method. (12)

Time(hrs)	0	3	6	9	12	15	18	21	24	27	30	33	36	39	42
UH ordinates(m ³ /s)	0	9	20	35	49	43	35	28	22	17	12	9	6	3	0

- b) What are the different methods of estimating runoff? (3)

PART B

Answer any two full questions, each carries 15 marks.

- 4 a) Duty and delta are two way of representing the water requirement of crop. Justify the statement. (5)
- b) Suggest the best method of irrigation for the following crops. Justify the answer. (2)
 - 1) rice 2) pulses 3) orchard plants (e0g. apple) 4) tea
- c) A crop is to be grown in a field having field capacity 25% and permanent wilting point 15%. Find the storage capacity in 75 cm depth of soil, if the dry weight of the soil is 1.5 gm/cc. When the average soil moisture falls to 20 %, the irrigation to be given, find the water depth to be supplied to the field if the application efficiency is 75%. Also, calculate the amount of water needed at the canal outlet assuming 15% of the outlet discharge loss throughout the movement of water? (8)

- 5 a) What is the necessity of irrigation? What are the ill effects of irrigation? (5)
b) What are the factors affecting duty of water? (10)
- 6 a) How will you estimate the discharge in a stream by area velocity method? (5)
b) What is the application of stage discharge curve? (5)
c) Suggest the river training works with sketches for the following situation .1) to protect a monument near to the river 2) to construct a bridge over a wide river. (5)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) What are the different storage zones of reservoir? (5)
b) What are the different methods to control sedimentation in reservoirs? (7)
c) Explain trap efficiency and flow duration curve. (8)
- 8 a) State Darcy's law. What is the significance of the law in groundwater hydrology? (5)
b) Define : Porosity, Specific yield, specific retention, coefficient of permeability, transmissibility (7)
c) What are the different methods to estimate the yield of an open well? (8)
- 9 a) What is a mass curve? How it is used to find out the capacity of reservoir? (10)
b) Design a tube well for the following data (a) yield required= 0.08 cumec (b) thickness of confined aquifer =30m (c) radius of influence =300m (d) permeability coefficient =60m/ day (6)
(e) drawdown=5m
c) Distinguish between storage and diversion systems. (4)
