Total No. of Printed Pages:2

SUBJECT CODE NO:- P-296
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E. (CIVIL) Examination May/June 2017
Water Resource Engineering - I
(Revised)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) Question No.1 & Q.No.6 are compulsory.
ii) Answer three questions from each section from remaining.
iii) Assume suitable data, if necessary.

Section A

Q.1 Answer the following (any five) 10

a)Enlist various practical applications of hydrology.
b)What are the use & limitations of unit hydrograph.
c)Define Pan coefficient Cp.
d)Enlist factors affecting precipitation.
e)Write empirical evaporation equations.
f) State factors that affect infiltration capacity.
g)Define Potential Evapotranspiration
h)Enlist various forms of precipitation.

Q.2 Describe the different methods of recording of rainfall with neat sketches. 10

Q.3 a)Describe commonly used evaporimeters with neat sketches. 06

b)A Catchment area has seven raingauge stations. In a year the annual rainfall recorded by the gauges are as follows. 04

Station	P	Q	R	S	T	U	V
Rainfall (cm)	130	142.1	118.2	108.2	165.2	102.1	146.9

For a 5% errors in the estimations of the mean rainfall calculate the minimum number of additional stations required to be established in the catchment.

Q.4 Using the 3-hour unit hydrograph below. Find the peak flow resulting from four successive 3 hour periods of rainfall producing 0.35, 0.87, 1.39 and 0.77 cm of runoff respectively from a basin. Neglect base flow. 10

Time (hr)	Flow(m^3/s)
0	0
1	16
2	58
3	173
4	337
5	440
6	400
7	285
8	215
9	165

10	122
11	90
12	60
13	35
14	16
15	0

Q.5 Write short notes on (any two) 10
a)Gumbel's distribution
b)Method of stream flow measurement
c)Supplementing the missing rainfall data
d)S-curve method.

Section B

Q.6 Answer the following (any five) 10
a)What are the different types of irrigation efficiency.
b)A crop requires a total depth of 84 cm of water for a base period of 100 days. Find the duty of water.
c)Define storage coefficient.
d)Define term well loss.
e)Enlist advantages of crop rotation.
f)Find the delta for a crop if the duty for a base period of 90 days is 1250 hectares/cumec.
g)Distinguish between Aquifer and aquitard
h)Define Permanent Wilting Point.

Q.7 Derive the basic differential equation of steady ground. Water flow in a confined aquifer. State clearly the assumptions involved. 10

Q.8 A loam soil has field capacity of 22% and wilting coefficient of 10%. The dry unit weight of soil is 15KN/m^3. If the root zone depth is 70cm determine the storage capacity of the soil. Irrigation water is applied when moisture content falls to 14%. If water application efficiency is 75% determine the water depth required to be applied in the field. 10

Q.9 Explain with neat sketches different water-shed structures in drainage line treatment. 10

Q.10 Write short note on (any two) 10
a)Steps involved in watershed management.
b)Non consumptive use of water
c)Methods of applying water to crop
d)Groundwater estimation