

Time: Three hours

Full Marks 100

(50 marks for each part)

Use a separate Answer-Script for each part

Q No.	Part I	Marks																		
	Answer question no.1 (compulsory) and any three from the rest. Assume relevant data if necessary.																			
Q1. a)	Fill in the blanks:	1×10=10																		
i.	For anti-cyclone, in the southern hemisphere the wind flows in _____ direction.																			
ii.	A plot between cumulative rainfall versus time is called _____																			
iii.	The diameter of ISI standard evaporimeter is _____																			
iv.	The most suitable chemical used as water evaporation inhibitor is _____																			
v.	The SI unit commonly used for stream discharge measurement is _____																			
vi.	The instrument used for measuring stream velocity is _____																			
vii.	Full form of PET is _____																			
viii.	The name of recording type of rain gauge used in India is _____																			
ix.	Isohyetal method is used to calculate _____ of a catchment area																			
x.	The probability of occurrence of 25 year 24 hour maximum rainfall equal to or greater than 200 mm in Kolkata is _____																			
b)	Distinguish Between:	2.5																		
i.	Mass curve and double mass curve	×4=10																		
ii.	Infiltration rate and infiltration capacity																			
iii.	AET and PMP																			
iv.	Evaporation and transpiration																			
Q 2.a)	Write the effect of wind and atmospheric pressure on evaporation process of a water body. What is pan coefficient for evaporimeter?	2×2+1																		
b)	The catchment area of a reservoir is 10 km ² . A uniform precipitation of 0.5 cm/h for 2 h was observed on 1 st July. 50% of the runoff reached the reservoir. A canal carrying a discharge of 1.25m ³ /s is taken from the reservoir. The rate of evaporation observed was 0.7 mm/m ² /h. The seepage loss was observed to be 50% of the evaporation loss. Find the level of the reservoir level on 1 st July from 8 am to 6 pm. Consider the area of the reservoir is 0.476km ² .	5																		
Q3.a)	Write the three advantages of Isohyetal method over Thiessen method.	3																		
b)	Explain Depth-area-duration curves with a neat sketch.	2																		
c)	The average annual precipitation at five raingauges in a catchment area and rainfall recorded during 2017 at four raingauges are presented in the table since one rainauge was non-operated at that year. Determine the rainfall at the non-operated rainauge station during 2017.	5																		
	<table border="1"> <thead> <tr> <th>Station</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> </tr> </thead> <tbody> <tr> <td>Annual average rainfall(mm)</td> <td>2400</td> <td>2332</td> <td>2431</td> <td>2207</td> <td>2231</td> </tr> <tr> <td>Rainfall during 2017 (mm)</td> <td>?</td> <td>2113</td> <td>2200</td> <td>2028</td> <td>2095</td> </tr> </tbody> </table>	Station	A	B	C	D	E	Annual average rainfall(mm)	2400	2332	2431	2207	2231	Rainfall during 2017 (mm)	?	2113	2200	2028	2095	
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B.C.E. (Evening) 2nd YEAR EXAMINATION, 2018
 1st Semester (Old) Supplementary
 SUBJECT: Hydrology

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(50 marks for each part)

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Q No.	Part I	Marks																		
Q4. a)	Write the basic difference between ϕ -index and W-index.	2																		
b)	What is the advantage of double ring infiltrometer over single ring infiltrometer?	3																		
c)	Results of an infiltrometer test on a soil are given below. Determine the Horton's infiltration capacity equation for the soil analytically	5																		
	<table border="1"> <tr> <td>Time since start(min)</td> <td>0</td> <td>10</td> <td>20</td> <td>30</td> <td>40</td> <td>50</td> <td>60</td> <td>70</td> </tr> <tr> <td>Infiltration capacity(mm/min)</td> <td>0.46</td> <td>0.334</td> <td>0.22</td> <td>0.159</td> <td>0.124</td> <td>0.105</td> <td>0.086</td> <td>0.086</td> </tr> </table>	Time since start(min)	0	10	20	30	40	50	60	70	Infiltration capacity(mm/min)	0.46	0.334	0.22	0.159	0.124	0.105	0.086	0.086	
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Infiltration capacity(mm/min)	0.46	0.334	0.22	0.159	0.124	0.105	0.086	0.086												
Q5. a)	What do you mean by stage discharge relationship for stream flow measurement?	2																		
b)	For tidal river with change in cross section due to weed growth which type of measuring method will you suggest for stream flow measurement and why?	3																		
c)	With a neat sketch explain constant rate injection method for stream flow measurement.	5																		

**BACHELOR OF ENGINEERING (CIVIL ENGINEERING) SECOND YEAR FIRST SEMESTER
SUPPLEMENTARY EXAMINATION 2014**

HYDROLOGY

Time: Three Hours

Full Marks 100
(50 marks for each part)

Use a separate Answer-Script for each part

No. of questions	Part II	Marks
<i>Answering of Question no. 1 is mandatory and any two questions from remaining three. Assume reasonable values of data, if not supplied.</i>		
1.	Define the following i) Cone of depression or Perched aquifers ii) Porosity iii) Zones of underground water iv) Permeability v) The Water-table or Springs formed vi) Unconfined aquifer or Confined aquifer	6x3=18
2.	A pumping test was made in a medium sand and gravel to a depth of 16m, where a bed of clay was encountered. Observed wells were located at a distance of 3.5m and 8m from the pumping well. At a discharge of 4liters/sec. from the pumping well, a steady state condition was attended in about 26hr. The draw-down for 1 st and 2 nd observation wells were 1.65m and 0.36m respectively. The normal ground water level was at surface. What is the coefficient of permeability of the soil?	16
3.	i) What are the limitations of DUPUIT'S equilibrium formulas for unconfined and confined aquifers? ii) Derive an equation for measurement the coefficient of permeability using Dupuit's original equation for gravity well with figure.	4 12
4.	i) What are types of tube-wells? ii) Write a short not on well screens? ii) Describe the widely used type of tube-well with a neat figure.	4 4 8