Seat No.

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MAR_APR 2026 SUMMER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Water Resource Engineering-I

Sub. Code: 66235/80763/81000

Day and Date: Thursday ,14-05-2026 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions:
1. **All questions are compulsory**
2. **Draw neat labelled diagrams wherever necessary**
3. **Figures to the right indicate full marks**
4. **Use of Scientific calculator is allowed**

Special Inst.: **Question no.4 and 8 are compulsory questions. Solve any two questions from question 1 to 3 and any two questions from question 5 to 7**

Q1) Solve the following **[12]**

a. Define Precipitation ? Explain different types of precipitation ? **[6]**

b. A catchment area has 7 raingauge stations. In a year the annual precipitation recorded by the gauges are as follows: **[6]**

Station	P	Q	R	S	T	U	V
Precipitation (CM)	130	142.10	118.20	108.50	165.20	102.10	146.90

For 5% error in mean rainfall, calculate the minimum number of additional stations required to be established in the catchment

Q2) Solve the following **[11]**

a. Define runoff ? which are the types of Runoff ? **[5]**

b. The rate of precipitation in mm/hr observed over a catchment of 30 km^ for successive 30 min is as follows: **[6]**
16, 20, 24,36,28, 12, 4.
If the value of Phi index is 22 mm/hr. Find runoff in ha-m.

Q3) Solve the following **[11]**

a. Define the term hydrograph ? Along with neat sketch explain various components of flood hydrograph ? **[5]**

b.

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Given are the ordinates of 6 hours storm hydrograph. Compute the ordinates of 6 hours unit hydrograph if the base flow is 10 m^3/s and catchment area is 205 Sq. Km. **[6]**

Time (Hours)	0	6	12	18	24	30	36	42	48	54	60	66
Ordinates (m3/S)	10	35	85	100	78	60	42	32	20	16	12	10

Q4) Write Short notes on: (Solve any two) **[12]**

a. Hydrological cycle and its importance in water resources engineering **[6]**

b. Determination of runoff by infiltration Indices **[6]**

c. Methods of Seperation of base flow from Storm hydrograph **[6]**

Q5) Solve the following **[11]**

a. Describe Recuperation test for open well **[5]**

b. Derive an Expression for discharge from a well in confined aquifer the well fully penetrating it ? **[6]**

Q6) Solve the following **[11]**

a. Define irrigation ? Explain the necessacity and ill effects of irrigation ? **[5]**

b. Explain with neat sketch, the layout and working of kolhapur type weir ? **[6]**

Q7) Solve the following **[12]**

a. Define duty, delta and base period ? derive releation between them ? **[6]**

b. A field channel has culturable command area of 2000 ha. The intensity of irrigation for gram is 30% and for wheat is 50%. Gram has a kor period of 18 days and kor depth of 12 cm. while wheat has a kor period of 15 days and a depth of 15 cm. Calculate the discharge of the field channel. **[6]**

Q8) Write short Notes on: (Solve any two) **[12]**

a. Constructional features of open well and tube well **[6]**

b. Types of Irrigation Systems **[6]**

c. Types of command area **[6]**

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End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (66235) Water Resource Engineering-I Part 3 SEM 5
2] (101) Bachelor of Engineering (81000) Water Resource Engineering-I Part 3 SEM 5
3] (1154) B.Tech. CBCS (80763) Water Resource Engineering-I Part 3 SEM 5

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