Sub Sub Tim Ins	ject ject ne: 10 truc 1.	GU M code: 711 Name: W):30 am - tions: Attempt :	UJA1 I. E \$ 204N 7 ater 01:00 all que	RAT SEM Reso 0 pm	T TE ESTI Durce s.	ECHN ER – I • es Eng	NOL • EXA ;ineer	OG MIN ring	ICAI NATIO	L UN N – W I Te	VIVH /INTH Date: otal N	ERSI ER • 20 06-12 Marks	TY)14 2-201 s: 70	4		
	2. 3.	Make sui Figures to	table a o the r	issum ight i	ndica	ns when ate full	rever 1 mark	nece: s.	ssary.							
Q.1	(a) (b)	Discuss briefly the methods of flood control.0'Determine optimum number of rain gauges in a catchment. Use following data:0'(1) Number of rain gauge = 42) Mean annual precipitation at gauge = 820, 640, 410, 560 mm.60'(3) Permissible error = 10 %										07 07				
Q.2	(a) (b)	 What is unit hydrograph? Discuss the limitations and uses of unit hydrograph theory. A well penetrates into an unconfined aquifer having a saturated depth of 110 metres. The discharge is 270 litres / minute at 15 metres drawdown. Assuming equilibrium flow conditions and a homogeneous aquifer, compute the discharge at 18 metres drawdown. The radius of influence may be taken as equal in both cases. 											07 07			
	(b)	Derive Th	iemøs f	formu	la for	confine	ed aqu	ifer.	-							07
Q.3	(a) (b)	Discuss factors affecting infiltration capacity. 07 3 hour unit hydrograph ordinates are given below. Find out 6 hour unit hydrograph 07 ordinates.														07 07
		Time in hours	0	2	3	9	12	15 70	18	21	24	27	20	33		
		0.11.0	0	0	14	50		0	R	00	54	52	10	0		
Q.3	(a) (b)	Discuss factors affecting runoff. The following is the set of observed data for successive 15 minute period of 120 minutes storm in a catchment. Duration(min.) 15 30 45 60 75 90 105 120 Duration(min.) 15 30 45 50 105 120										07 07				
		If the value of w	ue of ø v ó inde	$\frac{2}{9}$ - index.	lex is	$\frac{2.3}{3.0 \text{ cm}}$	n/hr, e	estim	ate the	net ru	noff,	the tot	al rain	ifall an	d the	
Q.4	(a) (b)	Define õfle Use Gu below:	ood ro mbleøs	utingö meth	ö. Exp iod to	olain tria	al and ast flo	erro od f	r metho or 100	d of re years	eservo frequ	ir routi ency.	ing. Use of	ther da	ita as	07 07

Return period (years)	Peak flood (m ³ /s)
35	365
50	450

OR

Q.4 (a) Define and explain: (1) ϕ ó index (2) w ó index

07

(b) Using the 3 hour unit hydrograph given below, find the peak flow resulting from three 07 successive 3 hour periods of rainfall producing 0.25, 0.57 and 0.65 cm of runoff respectively from a basin.

Time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
in hr															
Flow	15	54	160	325	380	416	445	285	224	186	90	75	40	12	0
in															
m ³ /s															

Q.5	(a)	Explain different types of precipitation.	07
	(b)	Explain the methods of estimating design flood.	07
		OR	
Q.5	(a)	Explain with neat sketch float type recording gauge.	07
	(b)	Explain hydrological cycle with neat sketch.	07
