

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code: Design and Drawing of Irrigation Structures (16CE140) Course & Branch: B.Tech & CE Year & Sem: IV-B.Tech & II-Sem

Regulation: R16

<u>UNIT-I</u> DESIGN AND DRAWING OF SLOPING GLACIS WEIR

1	Design a sloping glacis weir with	[L4][C01]	[60M]		
	Full supply discharge Bed width Bed level F.S.D. (Full Supply Depth) F.S.L. Top of Bank Level Hard soil is available for four <u>Draw the following</u> : a) Plan b) Sectional Elevation	$ \frac{U/S}{7.5 \text{ cumer}} : 7.5 \text{ cumer} : 6.0 \text{ m} : +10.00 : 1.5 \text{ m} : +11.50 : +12.50 adations below + 8 $	6.0 m + 8.00 1.5 m + 9.50 + 10.50		
2	Design the sloping glacis weir acr Full supply discharge Bed width Bed level F.S.D. (Full Supply Depth) F.S.L.	<u>U/S</u> : 7.0 cumec : 6.0 m : + 12.00	$\frac{D/S}{7.0 \text{ cumecs}} + 10.00 \\ 1.5 \text{ m}$	[L4][CO1]	[60M]
	Top of Bank Level Hard soil is available for foun <u>Draw the following</u> : a) Plan b) Sectional Elevation	: + 14.50 adations below $+ 1$	+ 12.50 0.00 level		
3	Design the sloping glacis weir acr	Toss the stream for	the following data:	[L4][CO1]	[60M]
	Hydraulic particulars	drop	of drop		
	Full supply discharge	9.0 m ³ /sec	9.0 m ³ /sec		
	Bed width	6.5 m	6.5 m		
	Bed level	+ 19.00	+ 17.00		
	Full supply depth	1.60 m	1.60 m		
	F.S.L	+20.60	+ 18.60		
	Top of bank level(T.B.L)	+ 21.60	+ 19.60		
	Hard strata is available below + 1 Draw the plan and sectional eleva				

4	Design the sloping glacis weir acr	[L4][C01]	[60M]		
	Hydraulic particulars	Up-stream of drop	Downstream of drop		
	Full supply discharge	$7.5 \text{ m}^3/\text{sec}$	$7.5 \text{ m}^3/\text{sec}$		
	Bed width	6.0 m	6.0 m		
	Bed level	+ 10.00	+ 8.00		
	Full supply depth	1.50 m	1.50 m		
	F.S.L	+ 11.50	+ 9.50		
	Top of bank level(T.B.L)	+ 12.50	+ 10.50		
	Hard strata is available below + 8	.00 level for found	lation.		
	Draw the plan and sectional eleva	tion to the suitable	e scale		
5	Design the sloping glacis weir acr	oss the stream for	the following data:	[L4][CO1]	[60M]
		<u>U/S</u>	D/S		
	Full supply discharge	: 8.0 cumec	es 8.0 cumees		
	Bed width	: 6.0 m	6.0 m		
	Bed level	: + 12.00	+ 10.00		
	F.S.D. (Full Supply Depth)	: 1.5 m	1.5 m		
	F.S.L.	: + 13.50	+ 11.50		
	Top of Bank Level	: + 14.50	+ 12.50		
	Hard soil is available for four	dations below + 1	0.00 level		
	Draw the following:				
	a) Plan				
	b) Sectional Elevation				

<u>UNIT-II</u> DESIGN AND DRAWING OF SURPLUS WEIR

1	Design a sumplus weighter a minor tent	[L4][CO1]	[60M]	
1	Design a surplus weir for a minor tank following data:			
	Combined catchment area	$= 25.89 \text{ km}^2$		
	Intercepted catchment area	$= 20.71 \text{ km}^2$		
	Top width of the bund	$= 2 \mathrm{m}$		
	Side slopes of the bund	= 2:1 on both sides		
	Top level of bund	= +14.50		
	Maximum Water Level (MWL)			
	Full Tank Level (FTL)	= +12.00		
	General ground level at the site	= +11.00		
	Ground level slopes off to a level	= +10.00 in about 6 m		
	The foundations are of hand gravel	distance = + 9.50		
	Saturation gradient	= $4:1$ with 1 m clean cover		
	Provision is to be made to store water u	up to MWL in-times of necessity		
	Draw the following:	-		
	(a) Half plan at top and half plan at fou			
	(b) Half longitudinal section and half lo			
2	Design a surplus weir for a minor tank following data:	forming a group of tanks with the	[L4][CO1]	[60M]
	Combined catchment area	$= 35 \text{ km}^2$		
	Intercepted catchment area	$= 10 \text{ km}^2$		
	Top width of the bund	= 2 m		
	Side slopes of the bund	= 2:1 on both sides		
	Top level of bund	= + 12.25		
	Maximum Water Level (MWL)	= + 10.75		
	Full Tank Level (FTL)	= +10.00		
	General ground level at the site	= +8.50		
	Ground level slopes off to a level	= +8.00 in about 6 m		
		distance		
	The foundations are of hand gravel	= +7.00		
	Saturation gradient	= 4:1 with 1 m clean cover		
	Provision is to be made to store water u	up to MWL in-times of necessity		
	Draw the following:			
	(a) Half plan at top and half plan at fou			
	(b) Half longitudinal section and half lo			
3	Design the surplus work of a tank form		[L4][C01]	[60M]
	combined catchment area of the group	of tanks is 25.89 sq. kilometers		
	and the area of the catchment intercept	ed by the upper tanks is 20.71 sq.		
	kilometers.			
	It is decided to store water in the t			
	above M.S.L. (Mean Sea Level) limit	-		
	lands up to a level of +11.75 meters a			
	level at the proposed site of work is +10	0.00 meters, and the ground level		
	below the proposed surplus slopes off	till it reaches +09.00 meters in		
	about 6 meters distance.			
			1	1

	The tank bund has a top width of 2			
	side slopes on eitherside. The tank bu	-		
	gradient of 4:1 with 1 meter clear co	ver.Provision may be made to		
	make kutcha regulating arrangements	s to store water up to M.W.L. at		
	times of necessity.			
	The foundations are of hard gravel at a	a level of 8.50 meters near the site		
	of work. Also draw the plan and longit	tudinal section.		
4	Design a surplus weir for a minor tank	[L4][CO1]	[60M]	
	following data:			
	Combined catchment area	$= 25.89 \text{ km}^2$		
	Intercepted catchment area	$= 20.71 \text{ km}^2$		
	Top width of the bund	= 2 m		
	Side slopes of the bund	= 2:1 on both sides		
	Top level of bund	= +14.50		
	Maximum Water Level (MWL)	= +12.75		
	Full Tank Level (FTL)	= + 12.00		
	General ground level at the site	= +11.00		
	Ground level slopes off to a level	= + 10.00 in about 6 m distance		
	The foundations are of hand gravel			
	Saturation gradient	= 4:1 with 1 m clean cover		
	-			
	Provision is to be made to store water	up to MWL in-times of necessity		
	Draw the following:			
	(a) Half plan at top and half plan at for	undation level		
_	(b) Section across weir			E (0) 5]
5	Design a surplus weir for a minor tank	forming a group of tanks with the	[L4][CO1]	[60M]
	following data:	251^{2}		
	Combined catchment area	$= 35 \text{ km}^2$		
	Intercepted catchment area	$= 10 \text{ km}^2$		
	Top width of the bund	$= 2 \mathrm{m}$		
	Side slopes of the bund	= 2:1 on both sides		
	Top level of bund	= +12.25		
	Maximum Water Level (MWL)	= +10.75		
	Full Tank Level (FTL)	= +10.00		
	General ground level at the site	= +8.50		
	Ground level slopes off to a level	= +8.00 in about 6 m		
		distance		
	The foundations are of hand gravel	= +7.00		
	Saturation gradient	= 4:1 with 1 m clean cover		
	Provision is to be made to store water	up to MWL in-times of necessity		
	Draw the following:	-		
	(a) Half plan at top and half plan at for	undation level		
	(b) Section across weir			

<u>UNIT-III</u> <u>DESIGN AND DRAWING OF TANK SLUICE WITH A TOWER HEAD</u>

4			11 411 00 11	[(0] []
1	Design a tank sluice with tower head	for the data given below:	[L4][CO1]	[60M]
	Ayacut to be irrigated	= 200 ha		
	Duty	= 1000 ha/cumec		
	Top width of the tank bund	= 2m with 2:1 side slopes		
	The top level of bank	= +40.00		
	The ground level at the site	= +34.50		
	Hard soil for foundation	= +33.50		
	The sill of the sluice at off take	= +34.00		
	The maximum water level in tank	= +38.00		
	The Full Tank Level	= +37.00		
	Average low water level of the tank			
	The channel bed level	= +34.00		
	Full supply level	= + 34.50		
	Bed width	= 1.25 m		
	Side slopes of channel	= 1.25 m $= 1.5$ to 1 with top of bank at		
	side slopes of channel	+ 35.50		
	Draw the following:			
	(a) Half plan at top & half plan at fou	indation level		
	(b) Longitudinal section through the			
2			[L4][C01]	[60M]
4	Design a tank sluice with tower head	-		[00141]
	Ayacut to be irrigated	= 200 ha		
	Duty	= 900 ha/cumec		
	Top width of the tank bund	= 2m with 2:1 side slopes		
	The top level of bank	= +140.00		
	The ground level at the site	= +134.50		
	Hard soil for foundation	= +133.50		
	The sill of the sluice at off take	= +134.00		
	The maximum water level in tank			
	The Full Tank Level	= +137.00		
	Average low water level of the tank	= +135.00		
	The channel bed level	= +134.00		
	Full supply level	= + 134.50		
	Bed width	= 1.25 m		
	Side slopes of channel	= 1.25 m $= 1.5$ to 1 with top of bank at		
	side slopes of challier	+135.50		
	Draw the following:			
	(a) Half plan at top & half plan at fou	indation level		
	(b) Longitudinal section through the			
3	Design a tank sluice with tower head	for the data given below:	[L4][CO1]	[60M]
	Ayacut to be irrigated	= 400 ha		
	•	= 1000 ha/cumec		
	Duty Top width of the tank bund			
	1	= 3m with 2:1 side slopes		
	The top level of bank	= +40.00		
	The ground level at the site	= +34.50		
	Hard soil for foundation	= +33.50		
	The sill of the sluice at off take	= +34.00		
	The maximum water level in tank	= +38.00		
	The Full Tank Level	= +37.00		
	Average low water level of the tank			
	The channel bed level	= +34.00		



	r			r
		= +34.50		
		= 1.25 m		
	Side slopes of channel	= 1.5 to 1 with top of bank at		
		+ 35.50		
	Draw the following:			
	(a) Half plan at top & half plan at four	dation level		
	(b) Longitudinal section through the ba	arrel		
4	Design a sluice taking off from a ta	nk irrigating 200 hectares at 1000	[L4][CO1]	[60M]
	ha/cumec duty. The tank bund through			
	top width of 2 meters with 2:1 side slo			
	and the ground level at site is $+34.50$	1 1		
	available at $+33.50$. The sill of the			
	maximum water level in tank is +38			
	Average low water level of the tank is			
	below the sluice are as under.			
	Bed level $+34.00$			
	F.S.L. +34.50			
	Bed width 1.25 meters			
	Side slope 1.5 to 1 with top of bank	at +35.50.		
	Also draw the plan and longitudinal se			
5			[L4][CO1]	[60M]
	Design a tank sluice with tower head f	-		[00112]
	Discharge	= 0.2 cumec		
	Top width of the tank bund			
	The top level of bank	= +40.00		
	The ground level at the site	= +34.50		
	Hard soil for foundation	= +33.50		
	The sill of the sluice at off take The maximum water level in tank	= +34.00 = +38.00		
	The Full Tank Level	= +38.00 = +37.00		
	Average low water level of the tank	= +37.00 = +35.00		
	The channel bed level	= +33.00 = +34.00		
	Full supply level	= +34.50		
	Bed width	= 1.25 m		
	Side slopes of channel	= 1.5 to 1 with top of bank at		
	Let a transferred by the second se	+ 35.50		
	Draw the following:			
	(a) Half plan at top & half plan at four	ndation level		
	(b) Longitudinal section through the b			

<u>UNIT –IV</u> <u>DESIGN AND DRAWING OF TYPE – III SYPHON AQUEDUCT</u>

1		C 11	• 1 /		
1	Design a syphon aqueduct Type – III for the	e toll	owing data:	[L4][CO1]	[60M]
	<u>Canal</u> :		2		
	Discharge		$35 \text{ m}^3/\text{s}$		
	Bed width	=	20100 III		
	Bed Level		+40.00		
	Full supply level		+42.00		
	Ultimate Bed level		+ 39.75		
	Ultimate full supply level		+ 42.50 0.83 m/s		
	Average velocity in the canal				
	Left bank top width	=	5.00 m		
	Right bank top width	=	2.00 m		
	Canal side slopes both inside and outside	=	2:1		
	Top of canal bank	=	+ 43.50		
	<u>Drain :</u>				
	Catchment area	=	8.0 km^2		
	Maximum computed discharge	=	$60 \text{ m}^{3}/\text{s}$		
	Maximum flood level of the drain at the	=			
	site crossing				
	Average bed level of the drain at the site	=	+38.00		
	crossing				
	Hard soil is available at	=	+ 37.00		
	Draw the following:		1 37.00		
	a) Half plan at top and half plan at foundation	tion			
	b) Section across syphon barrel				
2	Design a syphon aqueduct Type – III for the	e foll	owing data:	[L4][CO1]	[60M]
			8		
	Canal:				
	<u>Canal</u> : Discharge	_	$35 \text{ m}^{3/\text{s}}$		
	Discharge	=	35 m ³ /s 20 00 m		
	Discharge Bed width		20.00 m		
	Discharge Bed width Bed Level	=	20.00 m + 40.00		
	Discharge Bed width	=	20.00 m + 40.00 + 42.00		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level	= = =	20.00 m + 40.00		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level	= = =	20.00 m + 40.00 + 42.00 + 39.75		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level	= = = =	20.00 m + 40.00 + 42.00 + 39.75 + 42.50		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank Drain :		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1 + 43.50		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank <u>Drain :</u> Catchment area		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1 + 43.50 8.0 km ²		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank Drain : Catchment area Maximum computed discharge		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1 + 43.50 8.0 km^2 $60 \text{ m}^3/\text{s}$		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank <u>Drain :</u> Catchment area		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1 + 43.50 8.0 km ²		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank Drain : Catchment area Maximum computed discharge Maximum flood level of the drain at the site crossing Average bed level of the drain at the site		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1 + 43.50 8.0 km^2 $60 \text{ m}^3/\text{s}$		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank Drain : Catchment area Maximum computed discharge Maximum flood level of the drain at the site crossing Average bed level of the drain at the site crossing		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1 + 43.50 8.0 km^2 $60 \text{ m}^3/\text{s}$ + 39.75 (observed)		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank Drain : Catchment area Maximum computed discharge Maximum flood level of the drain at the site crossing Average bed level of the drain at the site		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1 + 43.50 8.0 km^2 $60 \text{ m}^3/\text{s}$ + 39.75 (observed)		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank Drain : Catchment area Maximum computed discharge Maximum flood level of the drain at the site crossing Average bed level of the drain at the site crossing Hard soil is available at <u>Draw the following:</u>		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1 + 43.50 8.0 km^2 60 m ³ /s + 39.75 (observed) + 38.00		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank Drain : Catchment area Maximum computed discharge Maximum flood level of the drain at the site crossing Average bed level of the drain at the site crossing Hard soil is available at		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1 + 43.50 8.0 km^2 60 m ³ /s + 39.75 (observed) + 38.00		
	Discharge Bed width Bed Level Full supply level Ultimate Bed level Ultimate full supply level Average velocity in the canal Left bank top width Right bank top width Canal side slopes both inside and outside Top of canal bank Drain : Catchment area Maximum computed discharge Maximum flood level of the drain at the site crossing Average bed level of the drain at the site crossing Hard soil is available at <u>Draw the following:</u>		20.00 m + 40.00 + 42.00 + 39.75 + 42.50 0.83 m/s 5.00 m 2.00 m 2:1 + 43.50 8.0 km^2 60 m ³ /s + 39.75 (observed) + 38.00		

3				[L4][CO1]	[60M]
3	Design a syphon aqueduct Type – III for the following data:				[00101]
	<u>Canal</u> :		2.		
	Discharge	=	$35 \text{ m}^3/\text{s}$		
	Bed width	=	20.00 m		
	Bed Level		+40.00		
	Full supply level		+ 42.00		
	Ultimate Bed level	=	+ 39.75		
	Ultimate full supply level	=	+42.50		
	Average velocity in the canal		0.83 m/s		
	Left bank top width	=	5.00 m		
	Right bank top width	=	2.00 m		
	Canal side slopes both inside and outside	=	2:1		
	Top of canal bank	=	+ 43.50		
	Drain :				
	Catchment area	=	8.0 km ²		
			$60 \text{ m}^3/\text{s}$		
	Maximum computed discharge				
	Maximum flood level of the drain at the	=	+ 39.75 (observed)		
	site crossing		. 20.00		
	Average bed level of the drain at the site	=	+ 38.00		
	crossing				
	Hard soil is available at	=	+37.00		
	Draw the following:				
	a) Half plan at top and half plan at foundat				
	b) Elevation from D/S drain and section th	rougl	n road arches		
4	Design a syphon aqueduct Type – III for the	e foll	owing data:	[L4][CO1]	[60M]
	<u>Canal</u> :		0		
	Discharge	=	$36 \text{ m}^{3}/\text{s}$		
	Bed width	=	20.00 m		
	Bed Level	=	+40.00		
	Full supply level	=	+ 42.00		
	Ultimate Bed level	=	+ 39.75		
	Ultimate full supply level	=	+ 42.50		
	Average velocity in the canal	=	0.83 m/s		
	Left bank top width	=	5.00 m		
	Pight heads ton width	_	2 00 m		
	Right bank top width	=	2.00 m		
	L constructed along both incide and outside	=	2:1		
	Canal side slopes both inside and outside				
	Top of canal bank	=	+ 43.50		
	_				
	Top of canal bank				
	Top of canal bank Drain :	=	+ 43.50		
	Top of canal bank <u>Drain :</u> Catchment area Maximum computed discharge	=	+ 43.50 8.0 km ² 60 m ³ /s		
	Top of canal bank <u>Drain :</u> Catchment area	= = =	+ 43.50 8.0 km ²		
	Top of canal bank <u>Drain :</u> Catchment area Maximum computed discharge Maximum flood level of the drain at the	= = =	+ 43.50 8.0 km ² 60 m ³ /s + 39.75 (observed)		
	Top of canal bank <u>Drain :</u> Catchment area Maximum computed discharge Maximum flood level of the drain at the site crossing	= = =	+ 43.50 8.0 km ² 60 m ³ /s + 39.75 (observed)		
	Top of canal bank Drain : Catchment area Maximum computed discharge Maximum flood level of the drain at the site crossing Average bed level of the drain at the site	= = =	+ 43.50 8.0 km ² 60 m ³ /s + 39.75 (observed)		
	Top of canal bank Drain : Catchment area Maximum computed discharge Maximum flood level of the drain at the site crossing Average bed level of the drain at the site crossing	= = =	+ 43.50 8.0 km ² 60 m ³ /s + 39.75 (observed) + 38.00		
	Top of canal bank Drain : Catchment area Maximum computed discharge Maximum flood level of the drain at the site crossing Average bed level of the drain at the site crossing Hard soil is available at		+ 43.50 8.0 km ² 60 m ³ /s + 39.75 (observed) + 38.00		

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5	Design a syphon aqueduct Type – III for the	[L4][CO1]	[60M]		
	Canal:	1011	owing dutu.		
	Discharge	=	$36 \text{ m}^3/\text{s}$		
	Bed width	=	20.00 m		
	Bed Level	=	+ 40.00		
	Full supply level	=	+ 42.00		
	Ultimate Bed level	=	+ 39.75		
	Ultimate full supply level	=	+ 42.50		
	Average velocity in the canal	=	0.83 m/s		
	Left bank top width	=	5.00 m		
	Right bank top width	=	2.00 m		
	Canal side slopes both inside and outside	=	2:1		
	Top of canal bank	=	+ 43.50		
	<u>Drain :</u>				
	Catchment area	=	8.0 km^2		
	Maximum computed discharge	=	$60 \text{ m}^{3}/\text{s}$		
	Maximum flood level of the drain at the	=	+ 39.75 (observed)		
	site crossing				
	Average bed level of the drain at the site	=	+ 38.00		
	crossing				
	Hard soil is available at	=	+ 37.00		
	Draw the following:				
	a) Half plan at top and half plan at foundation	ion			
	b) Longitudinal section along barrel				

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<u>UNIT –V</u> <u>DESIGN AND DRAWING OF CANAL REGULATOR</u>

1	Design a regulator cum road	d bridge with the following data:	[L4][CO1]	[60M]
_	Hydraulic particulars of	6	[][]	[]
	Full supply discharge	-		
	Bed width	: 15 m		
	Bed Level	:+20.00		
		: 2.0 m		
	F.S.L.	:+22.00		
	Top level of bank			
	The right bank is 5 m wide			
	Hydraulic particulars of			
	Full supply discharge	3		
	Bed width	: 15 m		
		(+20.00)		
		: 1.75 m		
	F.S.L.	: + 21.75		
	Top Level of Bank			
	Good foundation soil is ava			
	The general ground level at			
	1	e same as those on the upstream side. The		
		y single lane designed for IRC loading class		
	-	of one meter above F.S.L. for the road bridge.		
	Also draw the plan and long			
2	Design a regulator cum road	d bridge with the following data :	[L4][CO1]	[60M]
	Hydraulic particulars of c			
	Full supply discharge	$: 18 \text{ m}^{3}/\text{s}$		
	Bed width	: 14 m		
	Bed Level	:+15.00		
	Full Supply Depth	: 2.0 m		
	F.S.L.	:+17.00		
	Top level of bank	:+18.00		
	The right bank is 5 m wide			
	Hydraulic particulars of c			
	Full supply discharge			
	Bed width	: 12 m /s		
	Bed Level			
		:+15.00		
	Full Supply Depth	: 1.60 m		
	F.S.L.	: + 16.60		
	Top Level of Bank	:+17.60		
	Good foundation soil is ava			
	The general ground level at			
	-	e same as those on the upstream side. The		
	regulator carries a road way	y single lane designed for IRC loading class		
		of one meter above F.S.L. for the road bridge.		
	1	č		

Hydraulic parti	culars U/	nal section S canal	D/S canal		
Full supply disch	harge 2	$2 \text{ m}^3/\text{s}$	16 m ³ /s		
Bed width		15 m	15 m		
Bed Level	+	-20.00	+20.00		
Full Supply Dep	th	2 m	1.75 m		
F.S.L	+	-22.00	+21.75		
Top level of ban	k +	-23.00	+22.75		
regulator carries a 'A' provides clea bridge. The right bank is D/S. Good found +22.00	a road way single f ar free board of or 5 m wide and left lation soil is availa	lane designed f ne meter above bank is 2 m w able at + 19.00	upstream side. The for IRC loading class e F.S.L. for the road ride on both U/S and m and ground level		
	Design a regulator cum road bridge with the following data and draw half plan at foundation and longitudinal section		[L4][CO1]	[60M]	
Hydraulic parti	culars	U/S canal	D/S canal		
Full supply disch	narge	16 m ³ /s	$12 \text{ m}^3/\text{s}$		
Bed width		14 m	14 m		
Bed Level		+15.00	+15.00		
Full Supply Dep	th	2 m	1.60 m		
F.S.L		+17.00	+16.60		
Top level of ban	k	+18.00	+17.60		
regulator carries a 'A' provide clear	a road way single free board of one m 5 m wide and left lation soil is availa	lane designed f leter above F.S.I bank is 2 m w able at + 14.00	upstream side. The for IRC loading class L. for the road bridge. ride on both U/S and m and ground level	[L4][CO1]	[60M]
+17.00 Design a regulator					
+17.00 Design a regulator	ation and longitudi		D/S canal		
+17.00 Design a regulator half plan at found	ation and longitudi iculars U/S	nal section	_		
+17.00 Design a regulator half plan at found Hydraulic parti	ation and longitudiicularsU/sharge2	nal section S canal	D/S canal		
+17.00 Design a regulator half plan at found Hydraulic parti Full supply disch	ation and longitudi iculars U/s harge 2	nal section S canal 1 m ³ /s	D/S canal 16 m ³ /s		
+17.00 Design a regulator half plan at found Hydraulic parti Full supply disch Bed width	ation and longitudi iculars U/s narge 2 +	nal section S canal 1 m ³ /s 15 m	D/S canal 16 m ³ /s 15 m		
 +17.00 Design a regulator half plan at found Hydraulic parti Full supply disch Bed width Bed Level 	ation and longitudi iculars U/S harge 2 + th	nal section S canal 1 m ³ /s 15 m -20.00	D/S canal 16 m ³ /s 15 m +20.00		



'A' provides clear free board of one meter above F.S.L. for the road bridge.	
The right bank is 5 m wide and left bank is 2 m wide on both U/S and D/S. Good foundation soil is available at $+$ 19.00 m and ground level $+22.00$	

Prepared by: Mr. A.MOHAN Assistant Professor/CE