

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY:: PUTTUR (AUTONOMOUS)
Siddharth Nagar, Narayanavanam Road – 517583



QUESTION BANK (DESCRIPTIVE)

Subject with Code: Design and Drawing of Irrigation Structures (19CE0144) **Course & Branch:** B. Tech & CE

Year & Sem: IV B.Tech & I-Sem

Regulation: R19

UNIT-I

DESIGN AND DRAWING OF TRAPEZOIDAL NOTCH

1	<p>Design a Canal drop of 2 meters with the following data</p> <p><u>Hydraulic particulars of the canal above drop :</u></p> <p>Full supply discharge : 4.0 m³/s Bed width : 6.00 m Bed level : +10.00 Full supply depth : 1.50 m F.S.L : +11.50 Top of bank 2m wide at level : +12.50 Half supply depth : 1.00 m</p> <p><u>Hydraulic particulars of the canal below drop :</u></p> <p>Full supply discharge : 4.0 m³/s Bed width : 6.00 m Bed level : +8.00 Full supply depth : 1.5 m F.S.L : +9.50 Top of bank 2m wide at level : +10.50 Good soil is available for foundation at : +8.50</p> <p><u>Draw to a suitable scale:</u></p> <p>1) <u>Plan</u> 2) Half sectional elevation 3) longitudinal section (c/s through the drop wall)</p>	[L4][CO1]	[60M]
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UNIT- II

DESIGN AND DRAWING OF SURPLUS WEIR

1	<p>Design a surplus weir for a minor tank forming a group of tanks with the following data:</p> <p>Combined Catchment area : 25.89 Km²</p> <p>Intercepted Catchment area : 20.71 Km²</p> <p>Top width of the bund : 2 m</p> <p>Side slopes of the bund : 2:1 on both sides</p> <p>Top level of bund : +14.50</p> <p>Maximum Water level (M.W.L) : +12.75</p> <p>Full Tank Level : +12.00</p> <p>General ground level at the site : +11.00</p> <p>General level slopes off to a level : +10.00 in about 6m distance</p> <p>The foundation are of hand gravel : +9.50</p> <p>Saturation gradient : 4:1 with 1 m clear cover</p> <p>Provision is to be made to store water up to MWL in times of necessity.</p> <p><u>Draw the Following:</u></p> <ol style="list-style-type: none"> 1) Half plan at top and half plan at foundation level 2) Half longitudinal section and half longitudinal elevation 	[L4][CO2]	[60M]
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UNIT-III

DESIGN AND DRAWING OF TANK SLUICE WITH TOWER HEAD

1	<p>Design a Tank sluice with tower head for the data given below</p> <p>Ayacut to be irrigated : 200 ha</p> <p>Duty : 1000 ha/cumec</p> <p>Top width of the tank bund : 2 m with 2:1 side slopes</p> <p>The top level of bank : +40.00</p> <p>The ground level at the site : +34.50</p> <p>Hard soil for foundation : +33.50</p> <p>The sill of the sluice at off take : +34.00</p> <p>The maximum water level of the tank : +38.00</p> <p>The Full tank level : +37.00</p> <p>Average low water level of the tank : +35.00</p> <p>The channel bed level : +34.00</p> <p>Full supply level : +34.50</p> <p>Bed width : 1.25 m</p> <p>Side slopes of channel : 1.5 to 1 with top of bank at +35.50</p> <p><u>Draw the Following:</u></p> <p>1) Half plan at top & half plan at foundation level</p> <p>2) Longitudinal section through the barrel</p>	[L4][CO3]	[60M]
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UNIT-IV

DESIGN AND DRAWING OF TYPE-III SYPHON AQUEDUCT

1	<p>Design a siphon aqueduct Type – III for the following data:</p> <p><u>Canal :</u></p> <p>Discharge : 35 m³/s</p> <p>Bed width : 20.00m</p> <p>Bed level : +40.00</p> <p>Full supply level : +42.00</p> <p>Ultimate bed level : +39.75</p> <p>Ultimate full supply level : +42.50</p> <p>Average velocity in the canal : 0.83m/s</p> <p>Left bank top width : 5.00</p> <p>Right bank top width : 2.00</p> <p>Canal side slopes both inside and outside : 2:1</p> <p>Top of canal bank : +43.50</p> <p><u>Drain:</u></p> <p>Catchment area : 8.0km²</p> <p>Maximum computed discharge : 60 m³/s</p> <p>Maximum flood level of the drain at the side crossing : +39.75 (observed)</p> <p>Average bed level of the drain at the site crossing : +38.00</p> <p>Hard soil is available at : +37.00</p> <p><u>Draw the Following:</u></p> <ol style="list-style-type: none"> 1) Half plan at top & half plan at foundation level 2) Longitudinal section through the barrel 	[L4][CO5]	[60M]
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UNIT-V

DESIGN AND DRAWING OF CANAL REGULATOR

1	<p>Design a regulator cum road bridge with the following data</p> <p><u>Hydraulic particulars of canal upstream:</u></p> <p>Full supply discharge : 20 m³/s Bed width : 15.00m Bed level : +20.00 Full supply depth : 2.0 m Full supply level : +22.00 Top level of bank : +23.00</p> <p>The right bank is 5m wide and left bank is 2m wide</p> <p><u>Hydraulic particulars of canal downstream:</u></p> <p>Full supply discharge : 16 m³/s Bed width : 15.00m Bed level : +20.00 Full supply depth : 1.75 m Full supply level : +21.75 Top level of bank : +22.75 Good foundation soil is available at : +19.00 The general ground level at site : +22.00</p> <p>Top widths of banks are the same as those on the upstream side. The regulator carries a road way single lane designed for IRC loading class 'A' provides clear free board of one meter above F.S.L. for the road bridge.</p> <p><u>Draw to a suitable scale:</u></p> <ol style="list-style-type: none"> 1) Plan 2) Half sectional elevation 3) Cross section 	[L4][CO6]	[60M]
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PREPARED BY: V. Indraja