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SIDDHARTH INSTITUTE OF ENGINEERING &amp; TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech IV Year I Semester Regular Examinations February-2022

DESIGN &amp; DRAWING OF IRRIGATION STRUCTURES

(Civil Engineering)

Time: 3 hours

Max. Marks: 60

(Answer any One Question 1 x 60 = 60 Marks)

- 1 Design a sluice taking off from a tank irrigating 200 hectares at 1000 ha/cumec duty. **L4 60M**  
 The tank bund through which the sluice is taking off has atop width of 2 meters with 2:1 side slopes. The top level of bank is +40.00 and the ground level at site is +34.50. Good hard soil for foundation is available at +33.50. The sill of the sluice at off-take is +34.00. The maximum water level in tank is +38.00. The full tank level is +37.00. Average low water level of the tank is +35.00. The details of the channel 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 section.

OR

- 2 Design a regulator cum road bridge with the following data: **L4 60M**  
**Hydraulic particulars of canal upstream:**  
 Full supply discharge : 20 m<sup>3</sup>/s  
 Bed width : 15 m  
 Bed Level : + 20.00  
 Full Supply Depth : 2.0 m  
 F.S.L. : + 22.00  
 Top level of bank : + 23.00  
 The right bank is 5 m wide and left bank is 2 m wide  
**Hydraulic particulars of canal downstream :**  
 Full supply discharge : 16 m<sup>3</sup>/s  
 Bed width : 15 m  
 Bed Level : + 20.00  
 Full Supply Depth : 1.75 m  
 F.S.L. : + 21.75  
 Top Level of Bank : + 22.75  
 Good foundation soil is available at : + 19.00  
 The general ground level at site : + 22.00  
 Top width of banks is 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. Also draw the plan and longitudinal section

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