Code No: **R41012**   **R10**   Set No. 1

IV B.Tech I Semester Supplementary Examinations, October/November - 2017
DESIGN AND DRAWING OF IRRIGATION STRUCTURES
(Civil Engineering)

Time: 3 hours   Max. Marks: 75

Note: Answer any ONE of the following Two Questions
Assume any of the data if required
Khosla curves are allowed
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1   Design a sluice (tank sluice with tower head) taking off from a tank with a following data:

Discharge	: 0.40m^3/sec
Top width of the bund	: 2.0 m
Side slopes	: 2H: 1V
Top level of the bund	: +61.00
Ground level at the site	: +55.50
Sill of the sluice at off-take	: +55.00
Maximum water level in the tank	: +59.00
Full tank level	: +58.00
Average low water level	: +56.00

Good hard soil for foundation is available at +54.50.
Details of canal below the sluice

Bed level	: +55.00
F.S.L	: +55.50
Bed width	: 1.50 m
Side slopes	: 1.5H : 1V with top of bank at +56.50

Draw the longitudinal section. Assume any other suitable data.

2   Design a surplus weir of a tank forming a chain of tanks. The combined catchment area of the group of tank is 40 square kilometers and the area of the catchment intercepted by the upper tank is 30 square kilometers.
It is decided to store water in the tank to the level of + 112.00m limiting the submersion of foreshore lands up to a level of + 112.75m. The ground level at the proposed site of work is +111.00m, and the ground level below the proposed surplus slopes of till it reaches+ 110.00m in about 6metres distance. The tank bund has a top width of 2meters at level + 114.50 with 2:1 side slopes on either side. The tank bunds are designed for a saturation gradient of 4:1 with one meter clear cover. The foundations are of hard gravel at a level of + 109.50m near the site of work. Assume any other suitable data. Draw the Plan, Longitudinal Section and Longitudinal Elevation of the weir.