

R7

Code: R7420109

B.Tech IV Year II Semester (R07) Supplementary Examinations, March/April 2013

DESIGN & DRAWING OF HYDRAULIC STRUCTURES

(Civil Engineering)

Time: 3 hours

Max Marks: 80

Answer any ONE question
All questions carry equal marks

- 1 Design a regulator cum road bridge with the following data hydraulic particulars of canal.

Parameter	u/s	d/s
Full supply discharge	20 m ³ /sec	16 m ³ /sec
Bed width	15 m	15 m
Bed level	+ 20.00	+ 20.00
F.S. depth	2.00 m	1.75 m
F.S.L	+ 22.00	+ 21.75
Top level of bank	23.00	+ 22.75

The right bank is 5 m wide and left is 2 m wide. Top widths of banks are the same as those on the upstream side. The regulator carries a road way single lane designed for J.R.C loading class 'A'. Provide clear freeboard of 1 m above F.S.L for the road bridge. Good foundation soil is available at + 19.00. Assume the ground level site as + 22.00. Draw the plan and section through regulator vent. Also draw half sectional elevation.

- 2 Design a sluice taking off from a tank irrigating 200 hectares at 1000 duty. The tank bund through which the sluice is taking off has a top width of 2 m 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 m

Side slopes = 1.5 to 1 with top of bank at + 35.50.

Draw the plan and longitudinal section.
