Code No: 138BP **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, September - 2020
DESIGN AND DRAWING OF IRRIGATION STRUCTURES
(Civil Engineering)

Time: 2 Hours **Max. Marks: 75**

Note: This question paper contains one part only.

Answer any one question out of three questions.
Each question carries 75 marks.

1. Design a 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 are 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. [75]

2. Design a siphon well drop for the given data.

Description	Upstream	Down stream
Discharge	0.5 cumecs	0.5 cumecs
Bed width	1.75m	1.75m
Bed level	+18.0m	+17.0m
Full supply depth	0.75m	0.50m
Full supply level	+18.75m	+17.5m
Top bank(1m wide)level	+20.0m	+18.0m

For both upstream and downstream, there are one meter wide berms at ground level inside canal section. Slopes of channel section in cutting and embankment are 1.5:1 and 1:1 respectively. Provide 1m wide catch drains at the end of embankment. Good soil at foundation is available at +17.0m. The width of cart track is 5m at level of +18.50m. Draw the longitudinal section. Assume any other suitable data. [75]

3. Design and draw a type-III siphon aqueduct for the following data: Discharge of the channel = 30m^3/sec. Bed width of the canal = 20m. Depth of water in canal = 1.6m Bed level of the canal = 260.0m. High flood discharge of the drain = 261.00m. High flood level of the drain = 260.0m Bed level of the drain = 258.00m General ground level = 260.00m Silt factor = 0.9. Draw longitudinal section. Assume any other suitable data. [75]

--ooOoo--

JNTUH USED PAPER SEP-2020