USN | | | | | | | | | |

10CV65

Sixth Semester B.E. Degree Examination, June/July 2015
Hydraulic Structures and Irrigation Design Drawing

Time: 4 hrs.

Max. Marks: 100

Note: *1. Answer any TWO full questions from*
Part-A and ONE full question from Part-B.
2. Any missing data may be suitably assumed.

PART – A

1. a. Explain the different storage zones of a reservoir with the help of diagram. **(05 Marks)**
   b. Briefly explain the procedure for determining the storage capacity and yield of a reservoir using mass curve. **(10 Marks)**

2. a. Explain the different types of force acting on a gravity dam. **(07 Marks)**
   b. Briefly explain elementary profile of a gravity dam. **(08 Marks)**

3. a. Explain the design criteria for earthen dam. **(07 Marks)**
   b. Explain the causes for failure of earthen dam. **(08 Marks)**

PART – B

4. Design a surplus weir with stepped apron of a tank forming part of a chain of tanks with the following details: **(25 Marks)**

Combined catchment area	= 24.5 km^2
Intercepted catchment area	= 20.4 km^2
Maximum water level	= +123.75
Full tank level	= +123.00
Ground level @ proposed side	= +122.00
Ground level below proposed weir upto a reach of 5m (Fall)	= +121.00
Tank bund level (TBL)	= +125.50
Top width of tank bund	= 2.0 m
Side slope of bund on either side	= 2:1
Level of hard strata	= +120.50
Ryve's coefficient for combined catchment	= 9
Ryve's coefficient for intercepted catchment	= 1.6
Take hydraulic gradient	= 1:5

Draw to a suitable scale.
   a. Half plan at top and half plan at foundation. **(20 Marks)**
   b. Half elevation and half sectional elevation. **(15 Marks)**
   c. Cross section across the weir. **(10 Marks)**

5   Design a canal drop of 2m with following data: **(25 Marks)**

Particulars	U/S canal	D/S canal
Full supply discharge	4 cumecs	4 cumecs
Bed width	6m	6m
Bed level	+21.00	+19.00
Full supply depth	1.5m	1.5m
Full Simply Level (FSL)	+22.50	+20.50
Top width of bank	2m	2m
Top Bank Level (TBL)	+23.50	+21.50

Side slopes = 1:1 (cutting)

$$1\frac{1}{2}:1 \text{ (filling)}$$

Half supply depth = 1m

Ground level at site = +21.50

Good soil available for foundation = +19.50.

Draw
a.   Half plan at foundation and half plan at top.   **(20 Marks)**
b.   Longitudinal section.   **(15 Marks)**
c.   Cross section showing half elevation and half section.   **(10 Marks)**

* * * * *