UJ – 264

VIII Semester B.E. (Civil) Degree Examination, June/July 2016
(2K6 Scheme)
CE 805 : DESIGN & DRAWING – II
(Irrigation Bridges)

Time : 4 Hours Max. Marks : 100

Instructions *:* 1) *Answer* ***any two*** *questions, selecting atleast* ***one*** *from* ***each*** *Part.*
2) *Assume* ***any missing*** *data* ***suitably****.*
3) ***Use*** *of IS Code, IRC code, steel tables* ***permitted****.*

PART – A

1. a) Design a stepped apron type surplus weir for the following data :
   - Combined catchment area = 46 km^2
   - Intercepted catchment area = 42 km^2
   - Top width of the tank bund = 2 m
   - Side slope on either side = 2 (H) : 1 (V)
   - RL of top of bund = 14.70 m
   - Maximum water level = 13.00 m
   - Full tank level = 12.25 m
   - Average ground level at the site = 11 m
   - The ground level on the downstream side of the weir slopes to a level of 10 m in a distance of 6.00 m
   - The foundation is of hard gravel at 9.5 m
   - Ryve's coefficient is 8.0 and modified Ryve's coefficient is 3.0.

Make provisions to store water upto MWL temporarily in times of necessity. **25**

Draw to a suitable scale the following views of the above designed surplus weir.

a) Cross-section of the weir. **10**

b) Half plan at top and half plan at foundation. **15**

c) Downstream end view, half in section and half in elevation. **10**

2. Design a Notch type canal drop for the following data :

Particulars	**Upstream**	**Downstream**
Fully supply discharge	6 m^3/s	6 m^3/s
Bed level	100.00 m	98.00 m
Bed width	6.0 m	6.0 m
Full supply level	101.50 m	99.50 m
Depth for half supply discharge	1.0 m	1.0 m
Top width of canal bank	2.0 m	2.0 m
Top level of canal bank	102.50 m	100.50 m
Side slopes of canal	1:1	1:1

Ground level at the site is 100.00 m. Good soil for foundation is available at 98.50 m. **25**

Draw to a suitable scale the following views of the above designed canal drop

a) Cross-section of the canal drop. **10**

b) Half plan at top and half plan at foundation. **15**

c) Downstream end view, half in section and half in elevation. **10**

PART – B

3. Design a Masonry Arch bridge across a stream bed width of 25 m with a maximum water depth of 3.0 m. The bank slopes at 1.5 (H) : 1 (V). Good soil is available at 2.0 m below stream bed. The bridge is required to be built for a road width of 7.50 m. The arch is of cut stone, abutments and piers are of stone masonry in cement mortar. The foundation bed carries hard gravel. Salient features are

   * RL of stream bed = 100.00 m
   * RL of MWL = 103.00 m
   * RL of Road floor level = 107.00 m
   * Ground level at the site = 103.50 m. **20**

   Draw to a suitable scale the following views of the above designed arch bridge.

   a) Half plan at top and half plan at foundation. **10**
   b) Half longitudinal elevation and half sectional elevation. **10**

4. Design a Deck Slab Bridge for the following details :

   * Loading – IRC class AA
   * Clear span – 6 m
   * Road width – 8.5 m
   * Concrete – M 20
   * Steel – Fe 415 **15**

   Draw to a suitable scale the following views of the above designed deck slab bridge.

   a) Longitudinal Section of the slab. **15**
   b) Sectional details of the slab. **10**

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