10CV65

Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Hydraulic Structures and Irrigation Design–Drawing

Time: 4 hrs.   Max. Marks:100

Note: *Answer any TWO full questions from PART – A,*
and any ONE question from PART – B .

PART – A

1 a. Explain stepwise procedure for fixing capacity of a reservoir using mass curve method.   **(07 Marks)**

b. A reservoir has the following data. Find probable use full life of the reservoir. Reservoir capacity = 20 million–m^3. Average annual flood inflow = 40 million–m^3 volume of annual sediment = 0.060 million–m^3. Life of reservoir terminates when 80% of initial capacity is filled up. C/I ratio v/s trap efficiency(η)(%) is as given in table below :

c/I ratio	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
η%	86	92	94	95	96	96.5	97	97	97	97.5

Assume 20% of initial capacity is filled up in first interval.   **(08 Marks)**

2 a. Explain different forces acting on a gravity dam.   **(10 Marks)**
b. With sketch, explain practical profile of a gravity dam.   **(05 Marks)**

3 a. Explain construction methods of earth Dam.   **(05 Marks)**
b. Explain with sketches, different types of failures of earth dam.   **(10 Marks)**

PART – B

4 Design the surplus work of tank using following data :   **(25 Marks)**

Combined catchment area	29.5 km^2
Intercepted catchment area	22.8 km^2
Tank Bund Level (TBL)	19.5 m
Top width of bund	2m
GL at proposed site	15.8m
GL below the weir up to a reach of 10 mt (fall)	14.8m
Side slopes of bund on either side	2H : 1V
Hydraulic gradient	1 in 5
MWL (Max water level)	18.3m
FTL (Full Tank Level)	17.5m
Level of hard soil	14.00m
Ryve's coefficient for combined catchment area	9
Ryve's coefficient for intercepted catchment	1.5

Take C_d = 0.6 for weir, sp.Gr masonry/concrete as 2.3, make provision to store water up to MWL. The abutments, wing walls, return walls are to be properly designed. The water side faces of abutments, WW and RW can be battered or kept vertical.

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

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5   Design a canal drop for following data :   (25 Marks)

Hydraulic particulars	U/s canal	D/s canal
Full supply discharge	4.0 m^3/s	4.0 m^3/s
Bed level	10.00m	8.00m
Full supply level	11.50m	9.50m
Bed width	6m	6m
Top of embankment	12.50	10.50
Top width of embankment	2m	2m
Half supply depth	1.0m	–
Full supply depth	1.5m	1.5m

General ground level at the site of work is 10.50mt, good soil for foundation is available at 8.50mt. Take C_d = 0.7 for notch and sp.Gr of masonry/concrete = 2.3. Draw to a suitable scale :

a. Cross section along the canal.   (10 Marks)
b. Half plan at top and half plan at foundation.   (20 Marks)
c. Half elevation and half longitudinal section.   (15 Marks)

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