R15

Code: 15A01704

B.Tech IV Year I Semester (R15) Regular Examinations November/December 2018
WATER RESOURCES ENGINEERING – II
(Civil Engineering)

Time: 3 hours   Max. Marks: 70

PART – A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
   (a)   What is a penstock?
   (b)   What is necessity of fall?
   (c)   List the equipments used to measure stage in a river.
   (d)   What is function of fish weight in a current meter?
   (e)   List the forces acting on a gravity dam.
   (f)   What are filters used in earthen dam?
   (g)   What are canal outlets?
   (h)   What is a stilling basin?
   (i)   Explain the role of energy dissipaters.
   (j)   Explain the term utilization factor.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2   What are the different types of canal regulators? Explain distributor head regulatory with a neat sketch.

OR

3   With a neat sketch explain the following cross drainage works:
         (i) Super passage.   (ii) Aqueducts.

UNIT – II

4   (a)   What are the factors controlling process of meandering?
    (b)   What are the functions of the following:
           (i) Marginal embankments.   (ii) Groynes.

OR

5   Explain midsection method of computing the discharge in a stream. Show in a neat sketch position of velocity measurements over the cross sectional area.

UNIT – III

6   (a)   Classify reservoirs based on purpose and what investigations are necessary for reservoir planning.
    (b)   The below table gives the monthly inflows during the critical low water period at the site of a proposed dam the corresponding monthly evaporation and precipitation at a nearby station and the estimated monthly demand for water. Prior water rights require the release of full natural flow or 10 ha-m per month, whichever is least. Assume that 30 percent of the rain fall on the land area to be flooded by the reservoir has reached the stream in the past. Using a net increased pool area of 500 hectares, find the required useful storage. Use a pan evaporation coefficient of 0.72.

Months	Inflow at the proposed site (ha-m)	Pan evaporation (cm)	Precipitation (cm)	Demand (ha-m)
January	8.6	2.2	0.8	14.5
February	2.2	2.3	1.2	15.8
March	1.8	3.1	0.0	16.2
April	0.0	8.6	0.0	16.8
May	0.0	12.8	0.0	17.5
June	13.5	15.6	4.8	18.0
July	280.6	12.3	12.2	18.0
August	510.2	10.6	18.6	17.0
September	136.2	10.0	8.6	16.5
October	52.5	8.6	1.5	16.0
November	20.6	5.8	0.0	15.8
December	12.3	3.0	0.0	15.0

OR

7   What preliminary investigations should be conducted for the selection of a dam site? Compare gravity and earth dams.

UNIT – IV

8   (a)   Design the practical profile of a gravity dam of stone masonry, given the following data:
RL of base of dam = 1450 m
RL of H.F.L = 1480.5 m
Specific gravity of the masonry = 2.4
Safe compressive stress for masonry = 120 tonnes/m^2
Height of waves = 1 m.

   (b)   Derive the expression for determining base width of a dam based on stress criteria.

OR

9   (a)   List the causes for failure of earth dam. What precautions are to be taken to avoid the failure during design?

   (b)   Explain the method of plotting phreatic line for an earthen dam with horizontal filter at downstream. Also sketch the phreatic line if there is no filter.

UNIT – V

10   (a)   What are spillways? Explain siphon spillway in detail.

    (b)   What are the design principles for an ogee spillway?

OR

11   (a)   Classify hydel schemes according to available head.

    (b)   Write notes on:
(i) Forebay.
(ii) Intake structure.

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