Hall Ticket Number:

Code No. : 32015

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (Civil Engg.) III Year II-Semester Main Examinations, May-2017

Water Resources Engineering-I

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Discuss the Ill Effects of Irrigation.

2. List factors affecting duty.

3. Distinguish between recording and non – recording type rain gauges.

4. What are the various factors affecting evaporation?

5. Define surcharge storage, valley storage.

6. What is middle third rule?

7. What are the factors on which selection of site for a dam depends?

8. Distinguish clearly between a low gravity dam and high gravity dam.

9. Briefly describe an 'ogee spillway'.

10. Define T.W.C and J.H.C.

Part-B (5 × 10 = 50 Marks)

11. a) Define duty and delta. Explain how duty of canal water increases from head works to tail end of the command area. [5]

    b) List the factors affecting duty of water. [5]

12. a) During a month a rain gauge went out of order while the other three gauges in the basin reported rainfalls of 107, 89 and 120mm. If the normal annual rainfall for these three gauges are 1120,935 and 1200mm respectively and the normal annual rainfall of the broken gauge is 978mm. Estimate the missing monthly rainfall. [5]

    b) Define unit hydrograph. List the various assumptions made in it. [5]

13. A masonry 8 m high is trapezoidal insertion with a top width of 1.2 m and bottom width 8.25 m. The face exposed to water has a slope of 1:10. Test the stability of dam. Assume specific weight of masonry as 22 KN/m^3 and coefficient of static friction as 0.7. [10]

14. a) Write advantages and disadvantages of Buttress dam and Arched Buttress dam. [5]

    b) The following are the details of the section of a gravity dam. Calculate [5]
       i) Maximum vertical stress at the heel and tope of the dam.
       ii) Major principal stress at the toe of the dam.
       iii) Intensity of shear stress on a horizontal plane near the toe.
       RL of top of dam   = 584.00 m
       Top width   = 6m;
       u/s face is vertical;
       RL of water level on u/s   = 580.00 m.
       The batter on the d/s face starts from RL of 575.00 m;
       Slope of d/s batter   = 2H:3V;
       RL of Tail water level   = 506.00 m
       Consider reservoir full condition and neglect earthquake, silt pressure and wave pressure effects. Assume any other data not given.

15. a) Describe the functioning of chute spillway and shaft spillway with the help of neat   [5]
       sketches.

    b) Explain the solid bucket type energy dissipator with a neat sketch.   [5]

16. a) What is wilting point? Explain the types of wilting of crops.   [5]

    b) Why base flow is to be separated from runoff? Explain methods of base flow separation. [5]

17. Answer any *two* of the following:

    a) Write a note on reservoir sedimentation. How do you estimate the probable life of a   [5]
       reservoir?

    b) Design the practical profile of a gravity dam for the following data.   [5]
       R.L. of base of dam   = 1250m
       R.L. of HFL   = 1280 m
       Specific gravity of masonry   = 2.4
       Safe compressive stress for masonry of dam   = 120 t/m^2

    c) Explain Siphon spillway with a neat sketch.   [5]

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