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Code No. : 16104 AS N

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (Civil Engg.: CBCS) VI-Semester Advanced Supplementary Examinations, July-2019

Hydrology and Water Resources Engineering

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. Define W-index and ϕ index.
2. Define Unit Hydrograph.
3. Define confined aquifer.
4. State Darcy's law.
5. By means of neat sketch, various zones of storage in a reservoir
6. What is bed load?
7. How do you evaluate the water pressure acting on the gravity dam?
8. State the factors governing the selection of dam site.
9. Distinguish between gross head and net head.
10. Define primary power.

Part-B (5 × 10 = 50 Marks)

- 11.a) Describe the factors affecting the runoff. [6]
- b) Describe in detail any one method adopted for the measurement of rainfall. [4]
- 12.a) Derive an expression for steady radial flow through a confined aquifer. [5]
- b) A tube well of 30cm diameter penetrates fully in an artesian aquifer. The thickness of aquifer is 15m. Calculate the yield from the well under a drawdown of 3m. Assume radius of drawdown as 150m and coefficient of permeability as 50m/day. [5]
- 13.a) Describe the procedure of finding life of a reservoir. [5]
- b) Define flood routing and state why it is required. [5]
- 14.a) Design the practical profile of a gravity dam made of stone masonry given the following data: [5]
R. L. of the base of dam = 198m
R. L. of HFL of reservoir = 228m
Specific gravity of masonry = 2.4
Safe compressive stress in masonry = 1200kN/m²
- b) Write the stability requirements of a gravity dam. [5]

- 15.a) Give the detailed classification of Hydro Power plants. [5]
- b) Write the functions of surge tank. [5]
- 16.a) Explain the procedure involved in computation of mean rainfall over a drainage basin using Theissen's Mean and Isohyetal method. [5]
- b) Explain the subsurface zones in ground water. [5]
- 17. Answer any *two* of the following:
 - a) Write a note on selection of site of a reservoir. [5]
 - b) Distinguish between low and high gravity dam. [5]
 - c) Where do you provide Penstock in Hydro Power Plants along with its functions? [5]

