



KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Agrl. Engg.) 2022 & Previous admissions
V Semester Final Examinations - January 2025

Lwre.3107

Water Harvesting and Soil Conservation Structures (2+1)

Marks: 50
Time: 2 hours

I Fill in the blanks (10x1=10)

1. The importance of water harvesting is
 2. Simson's formula used to estimate
 3. Head of drop spillway is m
 4. is a type of structure used to release the water safely from dam / reservoir.
 5. For controlling soil erosion, graded bund is suitable for..... (%) of slope.
- State True or False**
6. Apron is a structure used to dissipate hydraulic energy.
 7. Semi-circular bund is a long term runoff water harvesting structure.
 8. Negarim Micro catchment is suitable for low rainfall areas.
 9. Clay soil is most suitable type of soil for construction of farm pond.
 10. Gabbion structure is a example of permanent gully control structure.

II Write short notes on ANY FIVE of the following (5x2=10)

1. Illustrate the components of the check dam.
2. What is the use of a mechanical spillway?
3. List out the factors considered for the site selection of the percolation pond.
4. Illustrate the permanent gully control structures.
5. Write the advantages and disadvantages of drop spillway.
6. What is meant by hydraulic jump efficiency?
7. What is an overturning effect in chute spillway?

III Answer ANY FIVE of the following (5x4=20)

1. Explain different components of the percolation pond.
2. Explain the structural design criteria for drop inlet spillway.
3. Describe the hydrologic design criteria for the construction of a check dam.
4. Describe the water erosion control structures.
5. List the factors for the site selection of water harvesting catchments.
6. Describe the design of the nala bund.
7. The areas enclosed by contour lines at 5m intervals, for a reservoir up to the face of a proposed dam are shown below:

Contour (m)	1005	1010	1015	1020	1025	1030	1035
Area (sq.m)	400	1500	3000	8000	18000	25000	40000

Taking 1005 and 1035 m as the bottommost and topmost water levels respectively, determine the capacity of the reservoir using trapezoidal and Prismoidal formula

IV Write an essay on ANY ONE of the following (1x10=10)

1. Explain in detail long-term water harvesting structures with neat sketches.
2. Define energy dissipater. Explain the design criteria of the SAF stilling basin and write its limitations.
