October 2025
B.A./B.Sc.
Third Semester
MULTI-DISCIPLINARY COURSE – 3
PHYSICS
Course Code: PHO 3.11
(Water Science)

Total Mark: 50   *Pass Mark: 20*
Time: 2 hours

I. Answer <u>three</u> *questions, taking* <u>one</u> *from each unit.*

UNIT–I

1. (a) Discuss the importance of studying water in the context of the global water crisis.   6
   (b) Classify aquatic ecosystems with example.   4
   (c) What is meant by river basin?   2

2. (a) Discuss the role of international organisation in shaping global water policy debates.   6
   (b) Examine the causes and consequences of transboundary water conflicts within Indian states with suitable example.   4
   (c) List the two socio-economic benefits of water.   2

UNIT–II

3. (a) Describe how the hydrological cycle varies around the globe.   4
   (b) Give an overview of potential sources of error in the measurement of rainfall and snowfall and explain how they might be minimised.   8

4. (a) Why is scale such an important issue in the analysis of precipitation in hydrology?   6
   (b) Briefly explain water hydraulics and write the equation to describe the flow of water in and out of a system.   4+2=6

UNIT–III

5. (a) How do variations in porosity and aquifer type influence groundwater storage capacity and flow dynamics in different geological formations?   6

   (b) What is Darcy's law? Give the experimental verification.   6

6. (a) Write a short note on geophysical exploration. Describe the basic principle behind the electrical resistivity method used in groundwater exploration.   2+6=8

   (b) How does long term exposure to contaminated water affect vulnerable populations?   4

II. Answer <u>*any two*</u> *questions from the following.*

UNIT-I

7. What is integrated water resources management? Explain the major drivers of change in Inland aquatic ecosystem.   2+5=7

UNIT-II

8. How can remote sensing technologies be applied to assess and monitor the quality of surface water sources used for drinking water supply?   7

UNIT-III

9. How do measured concentrations of fluoride, nitrate, and arsenic in groundwater affect its classification as potable or non-potable?   7

–––––––––––––––