

Exam Type Questions

Slope Stability



Question 1

Describe the key factors that influence slope stability. Discuss at least four factors and explain how each contributes to either stabilising or destabilising a slope.



Question 2

Describe the primary techniques used to monitor slopes for potential landslides. Your response should cover four different methods, explaining the type of data each provides, along with their advantages and limitations.



Question 3

Describe the key methods used for soil stabilisation. Your response should include four different techniques, explaining how each method works, the types of soil it is most effective for, and its advantages and limitations.

Exam Type Questions

Retaining Walls



Question 1

Describe the key functions of a retaining wall



Question 2

Describe three types of retaining walls and their common applications. Explain the primary mechanism each wall uses to resist lateral earth pressure, and include diagrams where applicable.

Question 3

What factors affect the magnitude and distribution of earth pressure against a retaining wall?

Exam Type Questions

Groundwater



Question 1

What is groundwater and how is it formed?



Question 2

Explain the two types of aquifer.



Question 3

Explain the difference between porosity and permeability.

Question 4



How does hydraulic head determine the direction and potential for fluid flow



Question 5

What assumptions are made when analysing flow to a well?



Question 6

If pollution poses a threat to the borehole, explain the significance of it reaching quicker or slower?

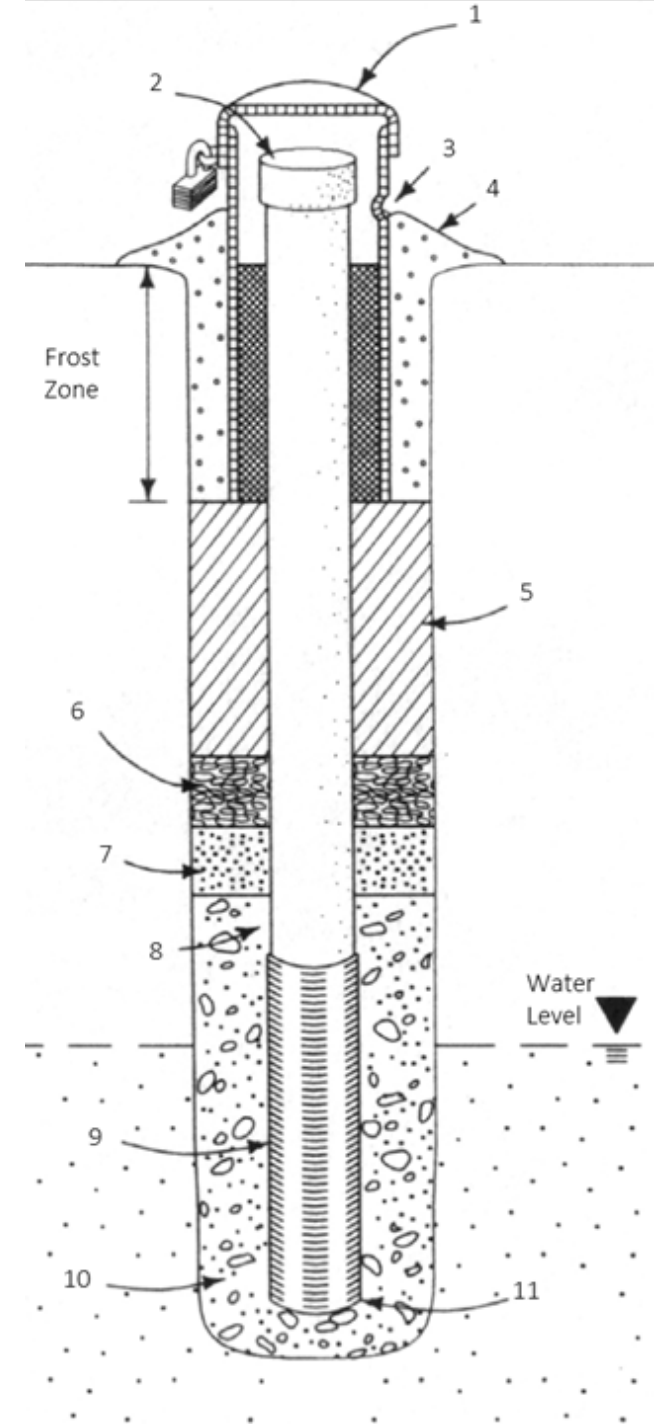


Question 7

What are Source Protection Zones (SPZs), and why are they important for protecting groundwater quality?

Question 8

Label the following diagram of a borehole

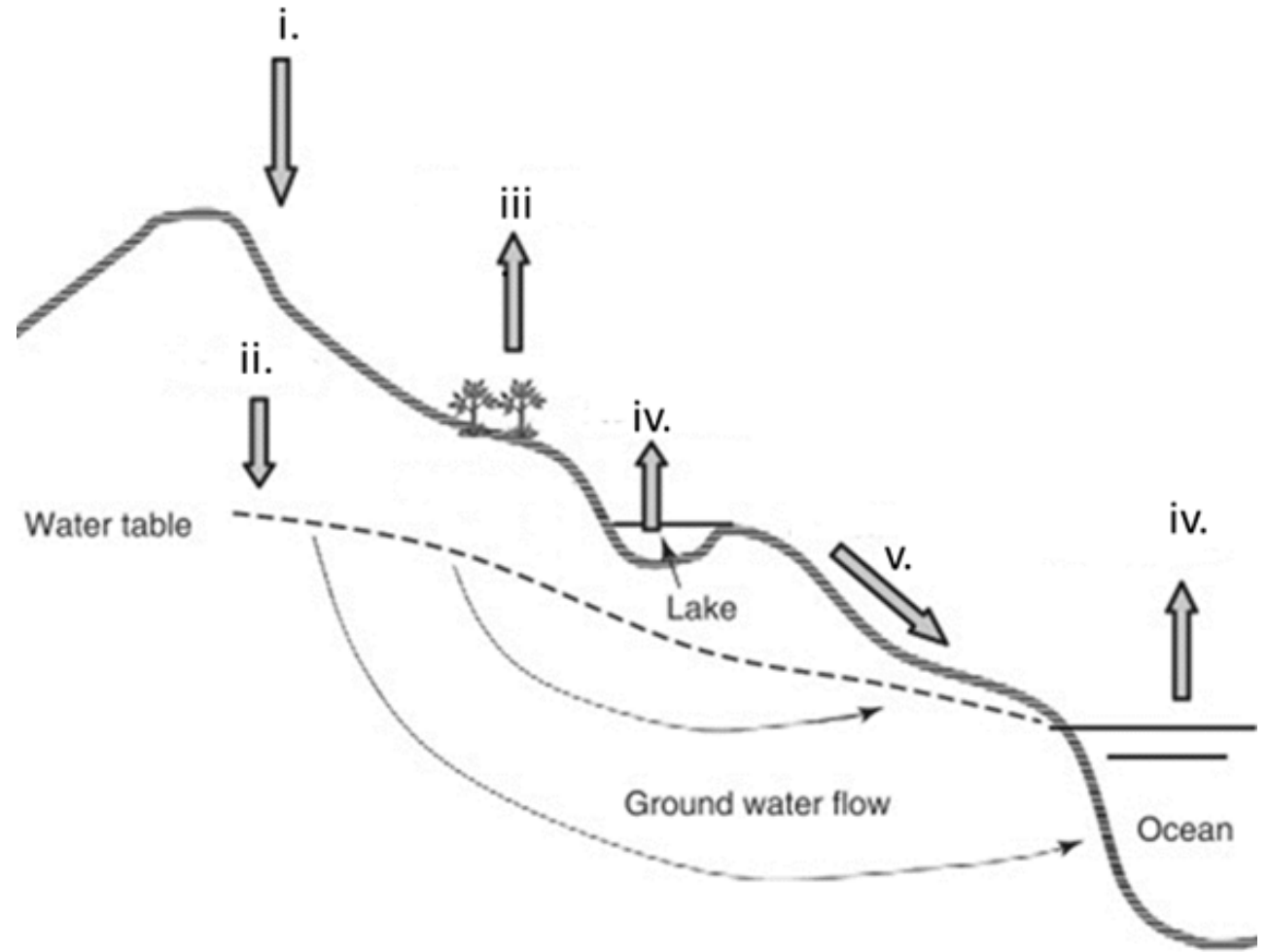


Exam Type Questions

Hydrology

Question 1

Label the following diagram of the hydrological cycle



Question 2

Explain 2 impacts that increased urbanisation has on water infiltration

Question 3



What are the 3 main reasons that make hydrology important to engineers?

Question 4



Define a catchment and a watershed

Question 5



What does a 20 year return period mean?

Question 6



Describe 2 methods for measuring discharge

Exam Type Questions

Coastal Structures

Question 1



What are the 3 factors that influence wave formation?

Question 2



Briefly explain the process of wave overtopping

Question 3



Briefly explain the two primary purposes of coastal structures

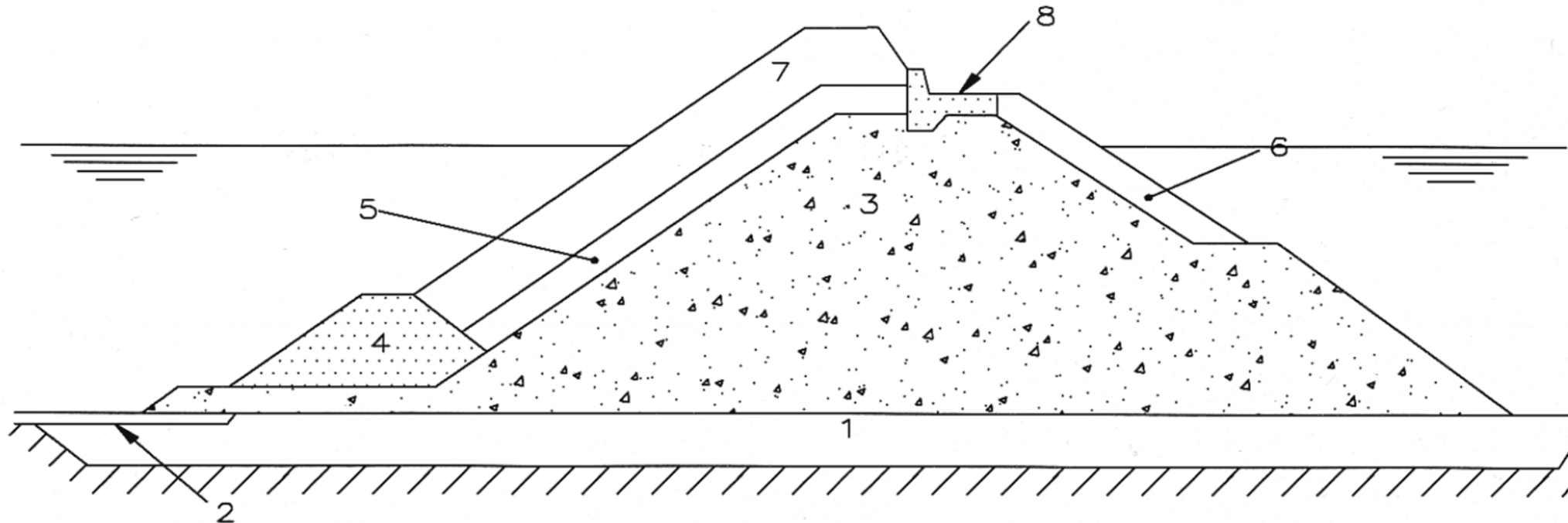
Question 4



What are the 3 main types of coastal structure?

Question 5

Label the following drawing of a rubble mound breakwater



Question 6

What are the 3 overtopping hazard categories?



Question 7

Suggest two measures for decreasing the level of overtopping



Exam Type Questions

Embodied Carbon

Question 1

What is embodied carbon, and why is it important in the context of construction and building materials?

Question 2

Explain how Embodied Carbon calculations can be used to help choose sustainable construction materials

Question 3

Describe the lifecycle stages of a building that contribute to embodied carbon emissions

Question 4

How does embodied carbon differ from operational carbon in buildings?

Question 5

How can the embodied carbon of a building be reduced?

Exam Type Questions

Carbon Capture

Question 1

What is meant by 'net zero'?

Question 2

What are the three main methods for capturing CO₂ from fossil fuel combustion?

Question 3

Describe the process of geological sequestration and its different storage methods.

Exam Type Questions

Climate Change

Question 1

How does climate change impact infrastructure in the UK?

Question 2

Describe the changes in temperature and rainfall patterns expected in the UK in the future.

Question 3

How could climate change affect the transport system in the UK?

Exam Type Questions

Renewable Energy

Question 1

How does the difference in air pressure across the blade create lift and drag? Use diagrams where necessary.

Question 2

What factors influence the choice of foundation for an offshore wind turbine structure?

Question 3

What are the movements of a floating offshore wind platform?
Use diagrams where necessary.

Question 4

Explain the 3 different types of hydroelectric power facilities.