Dr. Babasaheb Ambedkar Technological University Lonere Raigad

Department of Civil Engineering

Question Bank

Subject - BTCVE605D_Advanced Engineering Geology

Module 1

1. State and explain general principles of stratigraphy.
2. What are the applications of stratigraphy in civil engineering?
3. Describe the pros and cons of Deccan basaltic lava flows from a civil engineering point of view.
4. Give the lithostratigraphic successions of Vindhyan system and describe in brief their geological characters.
5. Describe detailed lithostratigraphic succession of Deccan trap with its mode of eruption.
6. Describe in detail about geological time scale with respect to the Indian stratigraphic formations.
7. Define and describe important parts of tectonic framework of India.
8. Give a detailed account of the geological time scale.
9. Write a note on Cretaceous-Tertiary boundary mega-extinction.
10. Give the physiographic classification of India and describe in brief their geological characters.
11. Describe the Gondwana Supergroup with reference to lithology and economic importance.
12. Write a short note on the Dravidian rock system.
13. Write a short note on the Aravali craton and its economic importance.
14. What is the type of building stones that occurs in Vindhyan supergroup and their characteristics?
15. Explain in brief various extinctions in the geological history of earth.

Module 2

1. Write a short note on soil and rock sampling methods.
2. What are the criteria of depth of investigation?
3. Describe the procedure of measurement and calculation of Rock Quality Designation Index.
4. Write in detail the division of sub-surface water with a neat labeled diagram.
5. Describe porosity and permeability with their role in the hydrological properties of rock.
6. Describe aquifer and types with a neat labeled diagram.
7. What are the various types of maps used for geological investigations?
8. Explain in-situ testing methods in detail for soil with its advantages.
9. Explain methods of surface and subsurface surveys as a part of geological investigation at a project site.
10. Write a short note on drilling muds used for drilling.
11. What are the various drilling techniques used for rock exploration?
12. What are the various techniques of rock exploration?
13. Describe various forms of groundwater?
14. Explain in detail trial pit sampling method with its pros and cons.
15. Define geological formations of groundwater like

i) Aquifer

ii) Aquiclude

iii) Aquifuge

iv) Aquitard

Module 3

1. State and explain various types of basalts with their engineering properties.
2. Write a detailed note on basalt and associated volcanic rocks?
3. Describe in detail about the formation of geodes and their engineering characteristics.
4. Write an essay on the use of compact and amygdaloidal basalt as a construction material.
5. What are the adverse effects of joints on rock mass quality?
6. Explain the effect of hydrothermal alteration on engineering behavior of basalt.
7. What are the factors helpful to determine the suitability of basalt rock for tunneling?
8. Define and describe columnar joints and problems occurs due to presence of columnar joints.
9. Write a note on types of dykes and their role in civil engineering.
10. What are the adverse effects of red bole volcanic breccia and fractures in Deccan trap on civil engineering structures?
11. Explain the construction criteria of percolation tanks.
12. What are the characteristic features in basalt rock that controls the existence of groundwater?
13. Explain the types of weathering in basalt rocks and their effect on geotechnical properties.
14. Describe in brief characteristics that affect the presence of groundwater in basalt rocks.
15. Write a short note on merits and demerits of using laterites as a building stone.

Module 4

1. Define and explain the process of pedogenesis.
2. Write a detailed note on the geological classification soil.
3. Write a detailed note on textural classification soil.
4. What are the differences between transported and residual soil?
5. Write in detail about texture of soil and its role in civil engineering properties.
6. Write an essay on nature of alluvium formed in Deccan trap region.
7. Explain the engineering properties of various transported soils.
8. Write detailed characteristics of sand from rivers in Deccan trap region.
9. Give the characteristic features of black cotton soil and effects on civil engineering structures.
10. Write in detail about process of genesis and characteristics of alluvial soil.
11. What are the types of soils occurring in India with their special characteristics?
12. What are the major factors plays vital role in formation of soil?
13. Explain in detail of residual soil profile with a suitable diagram.
14. What is the composition of soils derived from different types of rocks?
15. Explain various effects of sand mining on environment.

Module 5

1. Explain the importance and applications of geophysical methods in civil engineering.
2. Explain the gravity method with its applications in civil engineering.
3. What are the major properties that control crushing strength of rocks?
4. Write an essay on factors influencing electric resistivity of earth.
5. Explain in detail about limitations of earth electric resistivity method.
6. Explain in detail about advantages and disadvantages of magnetic method.

7. Enumerate the importance of magnetic method in geophysical exploration.
8. Describe in detail Schlumberger method with its pros and cons.
9. Describe in detail Wenner method with its pros and cons.
10. Write a detailed note on Dipole-Dipole resistivity method.
11. Define porosity and describe its effect on engineering property of rocks.
12. Explain in detail of engineering property of rock fire resistance and frost resistance of rock.
13. Write an essay about abrasive resistance and porosity effect on engineering property of rock.
14. Enumerate the difference between Wenner and Schlumberger resistivity methods.
15. Explain following engineering property of rocks: -

a) **Crushing Strength**
b) **Transverse Strength**
c) **Shear Strength**
d) **Absorption Value**
e) **Density**

Module 6

1. State and explain in detail about concept of plate tectonics.
2. What are the possible causes of earthquake Koynanagar dam region?
3. Describe in detail about types of plate boundaries with examples (neat labeled diagrams).
4. Write an essay on theory of formation of Himalayan Mountain.
5. Explain various reasons behind seismic activities in Maharashtra state.
6. Explain theory behind generation of seismic activities in Jammu and Kashmir region.
7. Explain interior of the earth in detail with neat suitable diagram.
8. What are the mitigation measures for landslides in Deccan trap region?
9. Explain various theories behind earthquake observed nearby Killari.
10. Define and explain various types of landslides.
11. Write a note on occurrence of earthquakes in North eastern parts of India.
12. What are the major factors that are responsible for landslide events?
13. Explain in detail about seismic zones in India with neat labeled diagram.
14. Write a short note on Richter and Mercalli Scale.
15. What are the major reasons behind the origin of earthquakes?

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