

**FACULTY OF ENGINEERING**  
**B.E. 2/4 (Civil) I-Semester (Main) Examination, November 2013**

**Subject : Engineering Geology**

**Time : 3 Hours**

**Max. Marks: 75**

**Note: Answer all questions of Part - A and answer any five questions from Part-B.**

**PART – A (25 Marks)**

1. Natural caves and caverns are commonly seen forming mostly in lime stone terrain. Explain the process.
2. Draw a neat sketch of box fold and label it.
3. Match the following two lists:

List I: Grade of Weathering of Granite	List II : Ultrasonic Velocity m/s
a) Fresh	i) < 2000
b) Slightly weathered	ii) 2000 – 3000
c) Moderately weathered	iii) 3000 – 4000
d) Strongly weathered	iv) 4000 - 5000
e) Very strongly weathered	v) > 5000

4. Give the swelling capacity of kaolinite, illite and Montmorillonite.
5. Define the terms – aquifer, aquitard and aquiclude.
6. Explain the stress-strain behaviour of marble in uniaxial compression.
7. In an unconfined compressive strength test, the rock cylinder was 54mm diameter and 108mm long. If failure has occurred at a load of 550 kN, what could be the unconfined compressive strength of the rock.
8. Suggest any three measures to control leakage of reservoirs.
9. Suggest any three methods of stabilizing tension zones or unstable rocks zones in tunnels.
10. Explain any three mitigation measures of landslides.

**PART – B (50 Marks)**

11. Bring out the distinguishing features of the following rocks: (2.5x4)
  - (a) Granite and Gneiss
  - (b) Sandstone and quartzite
  - (c) Shale and slate
  - (d) Limestone and Marble
12. Bring out the differences among the following geological structures with neat sketches: (2.5x4)
  - (a) Cylindrical folds and conical folds
  - (b) Strike-slip fault and Dip-slip fault
  - (c) Columnar fractures in lavas and polygonal cracks in Black soils.
  - (d) Sheeting in Granites and Bedding in sedimentary rocks
- 13.(a) How do you assess the depth and degree of weathering of rocks exposed in a reservoir valley? (5)
- (b) Discuss the importance of geological method in groundwater exploration. (5)
- 14.(a) Give the engineering properties and constructional uses of Granite, sandstone and marble. (6)
- (b) What are the various objectives of borehole drilling? (4)
- 15.(a) Discuss the importance of geological in selecting good building stones. (5)
- (b) Illustrate any dam failure due to unfavourable geological conditions. (5)
16. Explain in detail the elements at risk, causes, typical effects and mitigation measures of earthquakes. (10)
- 17.(a) Explain various engineering geological investigations for tunnels in rock. (5)
- (b) Describe geological aspects earthquakes and tsunamis. (5)

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