Code No. 2248

FACULTY OF ENGINEERING

B.E. 2/4 (Civil) I – Semester (Main) Examination, Nov./Dec. 2012

Subject: Engineering Geology

Time: 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1. Explain the mode of development of pillow structure in basalts.
2. Draw a neat sketch of reverse fault and label it.
3. Match the following two lists:

List I : Grade of weathering of granite	List II: Unconfined compressive strength (N / mm^2)
a) Fresh	i) Less than 2.5
b) Slightly weathered	ii) 2.5 to 100
c) Moderately weathered	iii) 100 to 150
d) Strongly weathered	iv) 150 to 250
e) Very strongly weathered	v) More than 250

4. Give the ion exchange capacity of Kaolinite, Illite and Montmorillonite.
5. Illustrate any two types of springs that you know.
6. Explain the stress-strain behaviour of sandstone uniaxial compression.
7. In a Brazilian Test, the diameter of the rock disc was 54 mm and the thickness was 27 mm. If failure has occurred at a load of 25 kN, what could be the tensile strength of the rock?
8. Suggest any three measures to control silt in the reservoirs.
9. How do you solve temperature and gases problems in tunnels?
10. Match the following two lists:

List I : Seismic Zones	List II: Geographic places
a) Zone V (Very High Risk Zone)	i) Hyderabad
b) Zone IV (High Rick Zone)	ii) Mumbai & Chennai
c) Zone III (Moderate Risk Zone)	iii)New Delhi
d) Zone II (Low Risk Zone)	iv) All of North-Eastern India

PART – B (50 Marks)

11. Bring out the distinguishing features of the following rocks: (2.5x4=10)
    (a) Basalt and Hornblende-Schist
    (b) Pink Granite and Pink Sandstone.
    (c) Black Limestone and Black Basalt
    (d) Laterite and Khondalite

12. Bring out the differences among the following geological structures with neat sketches: (2.5x4=10)
    (a) Box fold and Fan fold
    (b) Horst and Graben
    (c) Extension (Joints) fractures and release fractures (Joints)
    (d) Dextral and Sinistral strike slip faults.

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13. (a) Explain the genesis of the soils of India and add a note on their characteristic features. (5)

    (b) Briefly describe the magnitude of groundwater availability in various lithological formations of India. (5)

14. Explain in detail the method of seismic refraction survey to determine depth to bedrock. (10)

15. (a) What geological characteristics are important in the selection of rocks as concrete aggregate? (5)

    (b) Illustrate the foundation geology of Bhakra Dam. (5)

16. Explain in detail the elements at risk, causes, typical effects and mitigation measures of landslides. (10)

17. Write a detailed note on any three of the following:
    (i) Problems of tunneling
    (ii) Ground water exploration
    (iii) Engineering classification of rock weathering
    (iv) Bore hole drilling

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