Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MVSE-301(E)

M.E./M.Tech III Semester

Examination, June 2016

Rock Mechanics and Foundation Engineering

(Elective-I)

Time : Three Hours

Maximum Marks : 70

Note: Attempt any five questions. All questions carry equal marks.

1. a) Define the terms : 7
   i) Geological Strength Index (GSI)
   ii) Rock Mass Rating
   b) Discuss the three dimensional rock stress measurement by over coring method. 7

2. a) List the factors those affect dynamic properties of soil during seismic loading. 7
   b) Discuss the Griffith theory related to the rock fracture mechanics and its modifications. 7

3. a) How to determine in-situ rock stress by hydraulic fracturing technique? 7
   b) Discuss the procedure to conduct a direct shear test on rock samples in the laboratory. 7

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4. a) How to determine in-situ rock stress by sleeve non-fracturing technique? 7
   b) How to determine magnitude of in-situ stress from drilled core samples by Deformation Rate Analysis (DRA). 7

5. a) Discuss the modified flat-jack technique for stress measurement of rock. 7
   b) Describe the mechanical classification of rock. 7

6. a) Draw the geological map of rock mass features and give the importance of these features. 7
   b) Discuss the different modelling methodologies used in rock engineering. 7

7. a) Classify the rock material based on uniaxial compressive strength. 7
   b) What are the different rock defects and how these defects influence on the strength of rock? 7

8. a) Discuss the factors which are affecting the seismic design of foundation on sandy soil. 7
   b) How the numerical modelling is help for the estimation of stress in rock and what are the parameters are used in numerical modelling? 7

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