

ROCK MECHANICS GLY 364

Supp. Test Oct 2011

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Time:- 1h30.....

Total Marks:- 75

48

Question 1

Q 1.1 Explain the meaning of Gravitational Stresses:-

[4]

3

Gravitational stresses are stresses caused by
and only by gravitational pull of the earth
vertically.

Q 1.2 Estimate the gravitational Stress in Rock at a depth of 400m below surface:

[6]

4

$\sigma_v = \rho g h$ density of rock
 $= 2700 \times 9.8 \times 400$ 2700 kg/m^3
 $= 10884 \text{ MPa}$

Q 1.3 Name two assumptions you were making for estimation in Q 1.2

[2]

2

• assume that density of rock is 2700 kg/m^3
• assume gravity constant is 9.8 m/s^2

Q 1.4 List at least 5 factors that might cause your estimate in Q 1.1 to be inaccurate:-

[5]

5

• Influence of tectonic factors
• distance from sill, dyke or fault
• Influence of topography
• weathering and erosion
• Effect of glaciers

Q 1.5 Briefly describe Heim's rule and mention what it is used for

[4]

4

Heim's rule states that rock has the inability to stay the same with time. Therefore deformation of rock occurs over time affecting the horizontal and vertical stresses and making them equal with geological time

• Heim's rule is used to estimate in-situ Horizontal stresses