LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc.** DEGREE EXAMINATION – **PHYSICS**

FIFTH SEMESTER – NOVEMBER 2010

# PH 5403 / 5400 - GEOPHYSICS

Date : 13-11-10 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

**PART – A**

Answer **all** questions (10 x 2 = 20)

1. Differentiate between Love and Rayleigh waves
2. How are the ages of a rock determined?
3. What is a travel time curve?
4. What are the important consequences of radioactive disintegration?
5. Give the empirical relation for energy of alpha particles emitted.
6. Explain the principle involved in radioactive dating of rocks.
7. Define the term hypocenter and focus of an earthquake.
8. What is meant by Mohorovicic discontinuity?
9. What are the different types of fault occurring in an earthquake?
10. What was the conclusion drawn by Gauss on the main field of the earth?

**PART – B**

Answer **any four** questions (4x7.5=30)

1. Explain the Ritcher scale of magnitude. State the relation between the magnitude and energy released in earthquake. Compare the energy released for earthquake of magnitude M=5 and M=3
2. Explain the dynamo theory of Earth’s magnetism
3. Explain the principle and working of Worden gravimeter.
4. Describe the principle and working of a proton precession magnetometer.
5. (a) Explain geological time scale (2)

(b) Explain the working of a strain seismograph (5.5)

**PART – C**

Answer **any four** questions (4x12.5=50)

1. (a) Write a note on direct & indirect effects of earthquake. (6)

(b) Derive Adams and Williamson equation for the variation of density with depth. (6.5)

1. Obtain the seismograph equation for a horizontal seismograph & deduce the two types of instrumentation based on the equation
2. Give the decay theory of radioactive dating of rocks and minerals using (a) decay scheme of Rb87  and (b) decay scheme of K40
3. (a) Explain in detail the plate tectonic theory.

(b) Discuss the variation of temperature with depth of the earth.

1. Write short notes on the following

(a) Intensity of an earthquake (4.5)

(b) Alkali vapour magnetometer. (8)

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