



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – PHYSICS

FIFTH SEMESTER – NOVEMBER 2017

PH 5403 - GEOPHYSICS

Date: 14-11-2017
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

PART A

Answer ALL questions

(10×2=20)

1. What are seismic waves?
2. Define Mohorovicic discontinuity?
3. Write a short note on composition of core.
4. How do you analyze magnitude of an earthquake?
5. What is magma?
6. Discuss the merits and demerits of radioactive dating of rocks?
7. Differentiate iso seismal and homo seismal lines of seismic waves.
8. Shortly explain plate tectonics.
9. How seismic moment is significant to explain seismic energy.?
10. If the age of the earth is taken to be 10^9 years what fraction of the original amount of U-238 is still in existence on the earth?
(Given $T_{1/2}$ of U-238= 4.46×10^9 years.)

PART B

Answer any FOUR questions

(4×7.5 = 30)

11. Explain the properties of P waves and S waves?
12. Discuss the radio –active decay scheme of potassium – argon method.
13. With neat schematic figure, explain the recording of seismic vibrations by horizontal seismograph.
14. Give in detail, the process of heat transfer in earth's interior.
15. Describe the working principle of proton precession magnetometer.
16. Give an account on geological time scale.

PART C

Answer any FOUR questions

(4×12.5 = 50)

17. (a) What are dip poles? (2)
- (b) Discuss in detail, the magnetic response of earth by dynamo theory. (10.5)

18. How elastic rebound theory is significant for constructive and destructive margin at plate boundary?
19. Explain the magnitude analysis by Richter scale and mercalli scale.
20. Discuss the major effects of earthquake.
21. Derive seismograph equation and equation
- (a) Free oscillation (4)
 - (b) Damping correction (4)
 - (c) Electromagnetic effect (4.5)
22. Neatly draw and explain relative measurement on gravity by Worden gravimeter.

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