

**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**



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

**FOURTH SEMESTER – APRIL 2022**

**UPH 4603 – GEOPHYSICS**

Date: 23-06-2022

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

**PART – A**

**Q. No** **Answer ALL Questions** **(10 x 2 = 20 Marks)**

- 1 What is lithosphere?
- 2 Define focus and epicenter of earthquake.
- 3 What do you mean by Georeferencing?
- 4 Write a note on gravitational potential.
- 5 The disintegration constant of a radio-active element is 0.00231 per day. Calculate its half-life and mean life.
- 6 Differentiate between absolute and relative measurements on gravity analysis.
- 7 Calculate S-wave velocity, for the given data: P-wave velocity is 8 km/s and Poisson's ratio is 0.25.
- 8 Write a short note on composition of core.
- 9 List out the merits and demerits of magnetometer.
- 10 How Earth behaves like a bar magnet?

**PART – B**

**Answer any FOUR Questions** **(4 x 7.5 = 30 Marks)**

- 11 Distinguish between body waves and surface waves.
- 12 Briefly explain the application of Geographic Information System (GIS) in day to day life.
- 13 Discuss radioactive decay and find the radiation activity of 1 mg ( $10^{-6}$  kg), of  $\text{Sr}^{90}$ . The half-life period of  $\text{Sr}^{90}$  is 28 years.
- 14 Write a short note on geological time scale.
- 15 What are the primary and secondary effects of earthquake?
- 16 Discuss the heat sources within the earth.

**PART – C**

**Answer any FOUR Questions** **(4 x 12.5 = 50 Marks)**

- 17 Discuss earth's interior with neat sketch and explain the dynamo theory of Earth's magnetism.
- 18 Write down the characteristics of Geographic Information System (GIS) and give an account on the role of control points on RASTER dataset.
- 19 Discuss the age determination of rocks by radioactive dating methods.
- 20 Describe the water quality analysis using geochemical methods.
- 21 Discuss in detail, the gravity analysis by Worden gravimeter.
- 22 Determine earth's resistivity by two current electrodes on the surface.

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