LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **PHYSICS**

SECOND SEMESTER – **APRIL 2022**

PPH 2602 – GEOPHYSICS

Date: 24-06-2022 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A

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

1 Outline the major causes of earth quakes.

2 List the various types of seismic waves.

3 Define Mohorovicic discontinuity.

4 Neatly draw Horizontal seismograph and name the parts.

5 How does earth acts as permanent magnet?

6 Write a short note on components of GIS software.

7 Calculate resistivity using the following data: r=3 cm. I=10 mA and V=30 volts, by single current electrode at surface.

8 Write a short note on earthquake resistant buildings.

9 List out the electrode spread methods for resistivity analysis.

10 Draw travel-time curve of seismic waves.

PART – B

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

11 Elaborate on push -pull mechanism of earthquakes.

12 Explain the significance of various layers of earth's atmosphere.

13 How does ground water get contaminated?

14 Discuss the origin of main field of earth.

15 What is the role of Geochronology study in the determination of age of the earth?

16 Determine the values of gravity at the following series of points belonging to a gravimetric survey with a worden gravimeter, specifying the draft correction for each of them.

Station	Time	Reading
A(base)	08:50	562.5
B	09:21	400.7
C	11:34	437.9
D	13:20	360.1
A	14:33	568.8

The gravity at the base is 980.139 82 Gal, and the gravimeter constant is 0.314681 mGal/ru (ru :

Reading unit).

PART – C

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

17 Illustrate Mercalli scale of intensity analysis with simple examples.

18 Explain zones of convergence, divergence and fracture zones.

19 Describe shortly on size and shape of earth.

20 Discuss field work analysis of resistivity meters.

21 Summarize the age determination of rocks by rubidium-strontium method of dating.

22 The magnitude Ms = 5.37 is calculated for surface waves of period 20 s.

(i) Calculate the amplitude of these waves at a station 2000 km away. If the instrument's amplification is 1500, what will be the amplitude of seismic waves and seismic energy? **(6.5)**

(ii) If Ms=Mw and the area of the fault is 12 km×8 km with $\mu = 4.8\times10^4$ MPa. Find the fault slip Δu. **(6)**

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