LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – **NOVEMBER 2016**

PH 5410 – GEO PHYSICS

Date: 11-11-2016 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

PART - A

Answer ALL Questions (10x2=20)

1. Discuss the causes and effects of earthquake?
2. What is seismology?
3. Differentiate P-waves and S-waves.
4. Write a short note on classification of seismograh?
5. Write down laplace's and Poisson's equation of gravitational potential.
6. How do you determine the magnitude of Earthquake?
7. Discuss the merits and demerits of Rb-Sr method of radioactive dating.
8. If the velocity of P wave is 6 km/s and Poisson's ratio is 0.25.Find the velocity of S wave.?
9. Draw shadow zone.
10. Give an account on" Earthquake resistant buildings".

PART B

Answer ANY FOUR Questions (4x7.5=30)

11. Discuss in detail constructive and destructive margin at plate boundary?
12. Explain the magnitude analysis by Richter scale.
13. Define seismic discontinuty. Explain the boundaries of Gutenberg discontinuity.
14. With neat diagram explain push and pull force of Earthquake.
15. Discuss the working principle of saturation induction magnetometer.
16. Date a meteorite which contains potassium knowing that its content of K^{40} is 1.189×10^{14} atoms/g,of Ar is 4.14×10^{17} atoms/g ,and that tha half life of K^{40} is 1.19×10^{9} years.

PART C

Answer ANY FOUR Questions. (4x12.5=50)

17. Discuss in detail the behaviour of seismic waves.
18. Derive seismograph equation for horizontal seismograph.
19. Explain the working principle of Alkali vapour magnetometer and discuss its merits and demerits.
20. Briefly discuss radio active dating by Uranium - Thourium mrthod.
21. Determine the significance of geological time scale.
22. The magnitude Ms of an earthquake as calculated for surface waves of period 20sec is 6.13.
    a) Calculate the amplitude of these waves at a station 3000km away.If the instrument's amplification si 1500,What will be the amplitude of the seismogram's waves and the seismic energy?
    b) If Ms=Mw and the area of the fault is 12km x8Km with $\mu=4.4 \times 10^{4}$ MPa,find the fault slip Δu.

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