Mains Practice Questions

Approach

- Start the answer by introducing the origin of seismic waves and their types.
- Discuss the different types of seismic waves and their characteristics.
- Conclude Suitably.

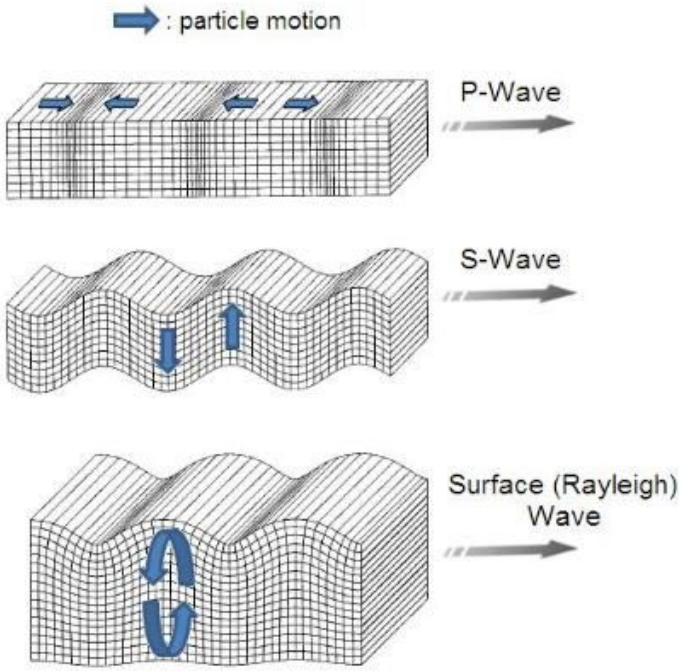
Introduction

During an earthquake seismic waves are generated which spread outwards in all directions from the focus. Seismic waves are of three types (i) P waves or Primary Waves, (ii) S Waves or Secondary Waves, and (iii) L Waves or Surface Waves.

Body

Types of Seismic Waves and their Characteristics

- P-Waves:
  - These are compressional waves which cause the particles of rock to vibrate in the longitudinal direction.
  - The P waves travel fastest, therefore they reach a seismic station first
  - Their velocity is 1.7 times than that of S waves
  - They pass through solids as well as liquids.
- S-Waves:
  - These are shear waves which are transverse in nature.
  - These can only pass through solids.
- L-Waves or Surface Waves:
  - When P and S waves reach the earth's surface, they are converted into L waves.
  - The L waves travel along the surface and cause earthquakes.
  - They are transverse in nature and their velocity is much less than the P and S waves.



Conclusion

Surface waves are responsible for causing earthquakes while the main significance of P and S waves is in the study of the earth's interior. P and S waves travel through the interior of the earth and are reflected and refracted as they enter a layer of different material.