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Q65

**Consider the following statements: 1. In a seismograph, P waves are recorded earlier than S waves. 2. In P waves, the individual particles vibrate to and fro in the direction of wave propagation whereas in S waves, the particles vibrate up and down at right angles to the direction of wave propagation. Which of the statements given above is/are correct? (a) 1 only (b) 2 only (c) Both 1 and 2 (d) Neither 1 nor 2 Official key: C.**

UPSC Civil Services Prelims 2023 · General Studies · 2 marks · Geography

Physical, Indian and world geography - Prelims GS Paper I.

**Explanation**

**(a)**

1 only. Both the arrival order and the particle motion are standard.

**(b)**

2 only. P waves are recorded first.

**(c) Official key**

Both. P before S; P is longitudinal, S is transverse.

**(d)**

Neither. Both statements are textbook seismology.

**Summary**

Official key is (c) both. P (primary) waves are faster, so a seismograph records them before S (secondary). P motion is compressional (to-and-fro along the path); S motion is shear, at right angles to the path.

**Related possible facts**

These can be asked in a future Prelims paper.

**P wave**

Primary / compressional; travels through solids and liquids.

**S wave**

Secondary / shear; solids only; slower than P.

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