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Q18

With reference to 'fly ash' produced by the power plants using coal as fuel, which of the following statements is/are correct? 1. Fly ash can be used in the production of bricks for building construction. 2. Fly ash can be used as a replacement for some of the Portland cement contents of concrete. 3. Fly ash is made up of silicon dioxide and calcium oxide only, and does not contain any toxic elements. Select the correct answer using the codes given below (a) 1 and 2 (b) 2 only (c) 1 and 3 (d) 3 only Official key: A.

UPSC Civil Services Prelims 2015 · General Studies · 2 marks · Science and Technology

Science, technology, space, defence, IT - Prelims GS Paper I.

Explanation**(a) Official key**

(a) 1 and 2. **Fly ash** is widely used in bricks and as a partial replacement for Portland cement in concrete (**pozzolana**). Statement 3 is false: **fly ash** is not only SiO₂ and CaO and can carry **toxic traces** (arsenic, mercury, lead). 1 and 2 is the official key.

(b)

(b) 2 only. Cement replacement is correct, but brick use is also established. 2 only is too narrow.

(c)

(c) 1 and 3. Bricks are valid; the 'only SiO₂ and CaO, no toxics' claim is not. The pair fails.

(d)

(d) 3 only. Statement 3 is the incorrect one, so it cannot be the key.

Summary

Official key is (a) 1 and 2. Coal **fly ash** goes into bricks and can replace part of Portland cement. It is a mixed oxide ash and may contain toxic elements, so statement 3 is wrong. The keyed choice is bricks plus cement replacement.

Related possible facts

These can be asked in a future Prelims paper.

Fly ash

Fine residue from pulverised-coal combustion

Pozzolana

Siliceous material that reacts with lime in cement

Fly ash bricks

MoEFCC/notifications push utilisation in construction

Bottom ash

Heavier ash from the boiler base, distinct from fly ash

Toxic traces

As, Hg, Pb, Cr can occur in coal ash

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