Q35

Consider the following: 1. Carbon monoxide 2. Methane 3. Ozone 4. Sulphur dioxide Which of the above are released into atmosphere due to the burning of crop/biomass residue? (a) 1 and 2 only (b) 2, 3 and 4 only (c) 1 and 4 only (d) 1, 2, 3 and 4 Official key: D.

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Explanation

(a)

(a) 1 and 2 only. Crop-residue burning emits carbon monoxide and methane, but ozone (as a secondary pollutant from precursors) and sulphur dioxide are also in the mix, so 1-and-2 is not the key.

(b)

(b) 2, 3 and 4 only. Drops carbon monoxide, a primary incomplete-combustion gas from stubble fires, so this is not the key.

(c)

(c) 1 and 4 only. Incomplete relative to the full emission set, so not the key.

(d) Official key

(d) 1, 2, 3 and 4. Open burning of crop/biomass residue releases CO, methane, SO2 and precursors that form ozone, along with PM2.5. All four listed gases are therefore associated with that burning, and this is the official key.

Summary

- **Official key is (d) all four. Stubble and biomass fires are incomplete combustion:** carbon monoxide, methane, sulphur dioxide and ozone-related photochemistry plus particulates. North Indian winter smog questions often sit next to this fact. Honour the stored letter (d).

Related possible facts

These can be asked in a future Prelims paper.

CO

Incomplete combustion marker

Methane

Also from smouldering biomass

Ozone
Secondary; NOx and VOC from fires

SO2
From sulphur in biomass/residues

Askable twin
PUSA decomposer; happy seeder as alternatives