

Question 28 (Answer: C)

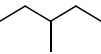
- The saturated hydrocarbon is the one with no C=C, so its radical comes from R'.
- Propagation keeps the radical count the same – a radical goes in and a radical comes out.
- Termination destroys radicals: two combine to give a molecule and no new radical.

Question 29 (Answer: C)

- A catalytic converter *oxidises* the unburnt hydrocarbons and carbon monoxide to CO₂ and water.
- Nitrogen dioxide is *reduced* to nitrogen, not oxidised.
- So the pollutants removed by oxidation are 1 and 3.

Question 25 (Answer: A)

- Electrophilic addition needs a C=C, so only the *unsaturated* hydrocarbon can do it.
- The saturated one can react only by free-radical substitution.
- A termination step must remove two radicals and produce no new one.

3(a)	M1 (family of molecules / compounds / series with) same general formula OR (family of molecules where) molecular formula differs (only) by (units of) CH _{2(n)} . M2 similar chemical properties / reactions
3(b)	M1 strong C—H (bonds) M2 non-polar (C—H / molecule / bonds)
3(c)	cracking
3(d)(i)	M1  M2 
3(d)(ii)	M1 B < A < hexane. M2 hexane / unbranched has stronger / more IMFs M3 hexane / unbranched requires most / more energy
3(e)(i)	H ₂ ((g)) OR hydrogen (gas)
3(e)(ii)	M1 +215 + (–156) – (+48) = M2 +11 kJ mol ^{–1}
3(e)(iii)	C ₈ H ₁₄ + 9½O ₂ → 6CO ₂ + 7H ₂ O