Question 26: What mass of N_2H_4 can be oxidised to N_2 by 24.0 g K_2CrO_4 , which is reduced to $Cr(OH)_4^-$ (Given: Molar mass of K_2CrO_4 = 194.2)

ANSWER: OPTION 2

The oxidation number of chromium changes from +6 to +3.
The oxidation number of each N atom changes from −2 to 0.
Net increase in the oxidation number of two N atoms in hydrazine = 4.
Thus, 3 moles of hydrazine = 4 moles of K_2CrO_4.
Molar mass of hydrazine is 32 g/mol.
Molar mass of potassium chromate is 194.19 g/mol.
The mass of hydrazine that can be oxidized is 3/4× (24/194.19)×32g/mol **= 2.97g**