

Nylon: Answers

1. (a) $C_6H_{10}O_4$ [1]

(b) 1. Oxidation; 2. Oxidation; 3. Reduction; 4. Acid-base; 5. Dehydration
One mark for each [5]

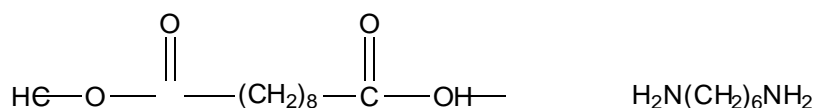
(c) (i) $C_6H_8N_2 + 4H_2 \rightarrow C_6H_{16}N_2$ [1]

(ii) Formula mass of $C_6H_{16}N_2 = 72 + 16 + 28 = 116$ g [1]
Mass of hydrogen = 8 tonnes [1]
(allow error carried forward in (c) (ii))

2. (a) NH_2 groups of hexamethylene diamine gain H^+ ions [1]
COOH groups of adipic acid lose H^+ ions [1]

(b) Partial charges in water molecules [1]
Water molecules surround and bond to ions [1]

(c) (i)

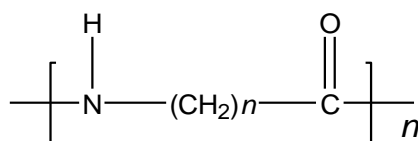


[2]

(ii) Nylon 6:6 . Both diacid and diamine contain six carbon atoms.
Nylon 6:10. Diamine contains six carbon atoms and diacid 10 carbon atoms. [2]

(d) (i) 5 (Molecule contains six carbon atoms) [1]

(ii)



Two marks for correct structure. Deduct one mark for slight mistake. It is important students show that the polymer links to other molecules at both ends. [2]