

MARKSCHEME - SL MATERIALS

P1A Answer Key:

1.B, 2.C, 3.C, 4.B, 5.B, 6.B, 7.B, 8.C, 9.B, 10.C, 11.B, 12.C, 13.A, 14.B, 15.B

P1B Q1: (a) Polar covalent / network covalent [1]. (b) Higher electronegativity difference between Na and F than Si and O [1]; larger vertical displacement signifies more ionic character [1]. (c) Metallic [1].

P1B Q2: (a) Pure Cu is a regular lattice of same-sized ions [1]. Brass has Zinc atoms of different sizes interspersed in the lattice [1]. (b) Different sizes disrupt the regular arrangement [1]. This prevents layers of ions from sliding over each other [1] when a force is applied [1].

P1B Q3: (a) $-(\text{CH}_2-\text{CH}(\text{CH}_3))-$ repeat unit [2]. (b) Entangle/harm wildlife [1]; fragmentation into microplastics that enter the food chain [1].

P2 Q1: (a) (i) Amine [1], (ii) Aldehyde [1], (iii) Ether [1]. (b) Solubility decreases [1] as the hydrophobic nature of the molecule increases [1].

P2 Q2: (a) LDPE has branched chains [1]. HDPE has linear, unbranched chains [1]. HDPE is more crystalline/densely packed [1]. (b) Linear chains (HDPE) can pack closer [1], increasing strength of London Dispersion forces [1].

P2 Q3: (a) Homogeneous mixture of two or more metals (or metal + non-metal) [1]. Example: Steel [1]. (b) Degradation via UV light/sunlight [1]. Main factor: UV radiation breaks polymer bonds [1].