Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

Each answer shows the steps, then the **result**.

2.1

fasciculations: **LMN**

ankle clonus: **UMN**

wasting: **LMN**

2.2

biceps: **C5–C6**

knee: **L3–L4**

ankle: **S1**

2.3

A: **3**

B: **1**

2.4

the **right** side

each cerebellar hemisphere controls the same side of the body (its pathways cross twice)

3.1

(a) the **right** side

(b) the corticospinal tract crosses at the pyramids of the medulla, below the lesion

(c) at first the cord below is stunned ("shock"), so tone and reflexes are lost; later the loss of control from above leaves the reflexes overactive: spasticity and brisk reflexes

(d) **upgoing** (Babinski sign)

(e) arm **extensors**; leg **flexors**

3.2

(a) upper motor neurons: brisk reflexes and upgoing plantars; lower motor neurons: wasting and fasciculations

(b) only motor neurons are affected

(c) **EMG** (electromyography)

(d) **respiratory failure** (weak breathing muscles)

3.3

(a) **bradykinesia** (slow, small movements); **rigidity**; **rest tremor**

(b) dopamine cannot cross the blood–brain barrier; levodopa can

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(c) it stops levodopa being turned into dopamine outside the brain, so more reaches the brain and there is less nausea

(d) cerebellar tremor appears on movement and gets worse near the target (intention tremor); parkinsonian tremor is at rest and eases on movement