



QUESTION WORKBOOK

The synapse: transmission, and why it runs one way

Nervous coordination, receptors, muscles and behaviour · Unit B14

AQA 3.6.2.2 · OCR A 5.1.3 · Edexcel A Topic 8.10 · CAIE 15.1.6–15.1.8

6 questions · 21 marks

NAVY SCREEN EDITION

SECTION A · Short, 1 to 2 marks

- A1** Give the name of the neurotransmitter used at a cholinergic synapse, and give the name of the enzyme that removes it from the synaptic cleft. [2]

SECTION B · Standard, 3 to 5 marks

- B1** Describe what happens at a cholinergic synapse from the moment an action potential arrives at the presynaptic knob to the moment the cleft is cleared again. [5]

- B2** Explain how an inhibitory synapse reduces the chance that the postsynaptic neurone produces an action potential, and explain why inhibition is useful rather than a fault in the system. [4]

B3 A toxin from a marine snail prevents the voltage-gated calcium channels in presynaptic knobs from opening. Suggest the effect of this toxin on transmission at a neuromuscular junction, and suggest why an injection of extra acetylcholine into the cleft would not restore normal control of the muscle. [4]

B4 Explain why transmission across a synapse can happen in one direction only, and explain why this matters for a reflex arc. [3]

B5 Compare spatial summation with temporal summation at a postsynaptic neurone. [3]
