Spatial summation - CORRECT ANSWERS -When several presynaptic neurons connect to one postsynaptic neuron. Each releases neurotransmitters which, when built up to a high enough level, trigger an AP in the next neuron.

Can spatial summation cancel itself out? - CORRECT ANSWERS -Yes, if some are excitatory and some are inhibitory, then they can cancel eachother out. The sum of excitatory-inhibitory = whether AP happens.

Synaptic convergence - CORRECT ANSWERS -When many neurones connect to one neurone information can be amplified

Synaptic divergence - CORRECT ANSWERS -When one neurone connects to many neurones information can be dispersed to different parts of the body

Reflexes - CORRECT ANSWERS -Involuntary, innate actions not involving the conscious part of the brain (it is informed after). They are meant to protect the organism, ensure survival and prevent injury.

Reflexes either move through - CORRECT ANSWERS -Non-conscious parts of the brain, e.g. medulla oblongata/pons (cranial reflexes) or spinal cord (spinal reflexes).

Reflex arc - CORRECT ANSWERS -Pathway of neurons in a reflex; a receptor detects a stimulus, passes the AP onto a sensory neuron, which passes the AP onto a relay neuron in the spinal cord, which passes the AP to a motor neuron, which passes the AP onto an effector. Synapses are involved

Smooth muscle - *CORRECT ANSWERS* – non-striated and involuntary

- no arrangement

- slow and long contraction time

Skeletal muscle appearance - *CORRECT ANSWERS* -tubular, multi-nucleated and striated

Smooth muscle appearance - *CORRECT ANSWERS* -No cross striations, spindle shaped, and uni-nucleated cells

Cardiac muscle appearance - *CORRECT ANSWERS* -fainter striations, branched, one nucleus,

Where is smooth muscle found? - *CORRECT ANSWERS* – Arterioles (vasodialation)

- Trachea/bronchi (relaxes during exercise)

- In digestive tract (peristalsis)

- In eye (controls pupil dilation)

Muscle fibre structure - *CORRECT ANSWERS* – Enclosed by a plasma membrane called sarcolemma

- Contains many nuclei

- Longer than most cells

- Cytoplasm known as sarcoplasm

Adaptations of muscle fibres - CORRECT ANSWERS – Parts of sarcolemma fold inwards (known as t-tubules) to spread electronic impulses throughout it.

- Formed through many embryonic muscle cells fusing together, making it stronger as gaps are weak points

- Many mitochondria for ATP

- Sarcoplasmic recticulum for Ca2+ for contraction

Myofibrils - CORRECT ANSWERS -Long cylindrical organelles made of protein which are specialised for contraction, aligned in parallel to provide maximum contractile force

Protein filaments making myofibrils - CORRECT ANSWERS - Actin and myosin

Actin in muscles - CORRECT ANSWERS -Thinner filaments consisting of 2 strands twisted around each other.

Myosin in muscles - CORRECT ANSWERS -Thicker filament, long rod-shaped fibres with bulbous heads projecting to one side

Parts of myofibrils - CORRECT ANSWERS -I-bands, A-bands, Z-line, M-line, H-zone.

I-bands - CORRECT ANSWERS -Light bands, region where actin and myosin filaments don't overlap (ONLY ACTIN)

What other tissues do skeletal muscles also have? - CORRECT ANSWERS - Connective tissue, adipose tissue, and capillaries running between the fibres.

Neuromuscular junction - CORRECT ANSWERS -(MOTOR-END PLATES) Connection between a motor neuron and a muscle fibre

What neurotransmitter do neuromuscular junctions use? - CORRECT ANSWERS -ACh, which is always excitatory and causes muscle contraction

Motor unit - CORRECT ANSWERS -A motor neuron + all the muscle fibres it connects to

All or none law in muscles - CORRECT ANSWERS -Either all muscle fibres contract or none contract

The number of motor neuron connections to muscle fibres can be - CORRECT ANSWERS -Only one (e.g. as in eye) or multiple (e.g. in quadriceps) allowing for big, powerful movements.

Synaptic transmission in a neuromuscular junction - CORRECT ANSWERS - Action potential arrives at a motor neuron, membrane depolarises, Na+ enters, voltage-gated Ca2+ channels open, vesicles fuse with membrane, releasing ACh via exocytosis. ACh diffuses across cleft + 2 binds to nicotinic ACh receptors, causing Na+ to enter the muscle fibre, if reaches threshold potential, Na+ channels open and Na+ enters, causing depolarisation and voltage-gated channels to open.