B. Action potential spreads from SA node to AV node, to Purkinje fibre then Bundle of His (False, SA node, AV node, Bundle of His, Purkinje fibres)
C. The plateau phase is due to the opening of Calcium channels in the cardiomyocytes.
D. The closing of K channels cause the repolarization of cardiomyocytes (false, the opening of K channels)

2. Which statement is correct?
   A. Intrinsic pacemaker cells have a more negative resting membrane potential (false, more positive, -60)
   B. The pacemaker cells depolarise slowly to threshold membrane potential through If current (funny current)
   C. The funny current is mostly a calcium driven current (false it is mostly a sodium driven current and involve potassium)
   D. If channels open and allow for entry of Na ions, hitting the threshold for lots of Na2+ channels open (hitting threshold to open up more Ca channels)

3. Which statement is false?
   A. A lot of L type Ca2+ channels open first in depolarisation.
   B. Potassium channels open, efflux of potassium causes the repolarisation of cell.
   C. ***Only a few cardiac cells are capable of becoming pacemakers (false, most cells c***an)
   D. People with arrhythmias and elderly's heart beat in uncontrolled manner.

4. Which statement is correct?
   A. Autonomic control of the heart have neuromuscular junction (false, neurotransmitters are released from nerve varicosities)
   B. Parasympathetic system have noradrenaline that binds to beta 1 receptors in the SA and AV nodes and beta 1 in ventricles that increases contraction (false, sympathetic)
   C. ***Parasympathetic system have ACh binds to muscarinic receptors in SA and AV***.
   D. In fight or flight, the funny current drops (false, the funny current increases in sympathetic activation)

5. Which statement is false?
   A. If sympathetic system is activated, the If current increases, leading to a faster depolarisation thus the heart rate increases.
   B. In sympathetic activation, the resting membrane potential is more positive/less negative.
   C. Noradrenaline binds to G protein coupled receptor which activates GTP.
   D. ***GTP binds to beta and gamma subunits which dissociate from alpha subunits and binds to adenylyl cyclase and produces cAMP. (false, alpha subunit dissociate with beta and gamma s***ubunits and bind to cyclase)

6. Which statement is false?

A. ***cAMP activates protein kinase A/PKA which binds the calcium channel. PKA dephophorylate the calcium channel (false, PKA phosphorylate the Calcium channel)***
B. Phosphorylation of the calcium channel by PKA increases the funny current and flow of Ca, leading to a faster depolarisation and faster heart rates.
C. ACh binds to G protein coupled receptor. GTP binds to alfa subunit. Beta and gamma subunits dissociate from alfa subunit. They bind to potassium channel.
D. In parasympathetic stimulation, the potassium channel allows for increased efflux of potassium, repolarizing further of the cell. (Hyperpolarization and slow down the heartrate)

7.Which statement is correct?
A. In skeletal muscle there are long refractory period (false, short refractory period)
B. ***In the heart, the refractory period is as long as 250 ms meanwhile the L type Ca channels are inactivated for a longer period, protecting the heart from premature beats and early re-excitation***.
C. The heart has efferent innervation only (false, it has afferent innervation towards brain and heart)
D. Brainbridge reflex has low range pressure receptors in the aortic arch and carotid sinus (false, at these locations, these are baroreceptors)

8. Which statement is false?
A. Brainbridge reflex have low range pressure receptors in the atria, pulmonary artery, right ventricle.
B. The baroreceptor reflex can correct for a change in arterial pressure by increasing or decreasing heart rate. In contrast, the Bainbridge reflex responds to changes in blood volume
C. If there are increased venous return back to the heart, there is afferent feedback towards the brain, increase vasodilation of kidney, increase urine production in order to decrease blood volume.
D. Baroreflex refers to the vasoconstriction when there is increased blood pressure entering the aortic arch and carotid sinus (false, vasodilation)

B4. Hormonal control of cardiac function
1. Which statement is false?
A. Adrenal medulla is a sympathetic ganglion.
B. ***Postganglionic neurons of adrenal medulla have axons (false, no axons, adrenaline/epinephrine is released*** into blood)
C. Adrenaline is more of a circulatory hormone whereas epinephrine is neuronal control.
D. Adrenaline acts on beta-1 adrenergic receptors in SA and AV nodes, heart muscles, increase HR and contractility.

2. Which statement is false?
A. Adrenaline mainly act on beta 1 and beta2 receptors.
B. Adrenaline acts on *beta 2 receptors in coronary vessels to cause vasodilation*.
C. Adrenaline acts on alfa 1 receptors in heart muscles to increase contractility.