

## CARDIAC ELECTROPHYSIOLOGY MCQ answers

1. Compared to other cardiac cells, Purkinje fibres have

- A: lower internal resistance ✓
- B: more distinct cell boundaries
- C: more mitochondria
- D: similar density of striations

2. Cardiac myocyte resting membrane potential is approximately

- A: +20mV
- B: -20mV
- C: -60mV
- D: -90mV ✓

3. Cardiac pacemaker cells produce their action potential when this channel opens:

- A: H Na<sup>+</sup>/K<sup>+</sup> channel
- B: L Ca<sup>++</sup> channel ✓
- C: Na<sup>+</sup> channel
- D: T Ca<sup>++</sup> channel

4. Myocardial fibres repolarise after an action potential due to

- A: K<sup>+</sup> and Ca<sup>++</sup> influx ✓
- B: K<sup>+</sup> efflux and Ca<sup>++</sup> influx
- C: Na<sup>+</sup> and Ca<sup>++</sup> efflux
- D: Na<sup>+</sup> efflux and K<sup>+</sup> influx

5. Stimulation of the sympathetic cardiac nerves

- A: hyperpolarises pacemaker cell membranes
- B: increases the rate of repolarisation of pacemaker cells
- C: inhibits the rate of spontaneous discharge of pacemaker cells
- D: speeds the depolarisation of pacemaker cells ✓

6. AV nodal delay is usually

- A: 0.1 milliseconds
- B: 0.5 milliseconds
- C: 0.05 seconds
- D: 0.1 seconds ✓

7. Your medical student asks if this ECG has U waves. You instantly recall that U waves are due to

- A: atrial depolarisation during a refractory period
- B: slow repolarisation of the AV node
- C: Na<sup>+</sup> channel blockade
- D: ventricular myocytes with a prolonged action potential ✓

8. The most common source of atrial flutter is

- A: counter-clockwise circus movement in the right atrium ✓
- B: depolarisation of the SA node by atrial extrasystoles
- C: multifocal atrial extrasystoles
- D: retrograde conduction via the bundle of Kent

9. It's Sim Man's unlucky day. He has a ventricular extrasystole during the midpoint of his T wave. The result is

- A: atrial fibrillation
- B: paroxysmal ventricular tachycardia
- C: ventricular fibrillation ✓
- D: ventricular standstill

10. A patient presents with shortness of breath & chest tightness, ?COVID. His ECG shows ST segment elevation in the anteroseptal leads. The anteroseptal myocardial cells are exhibiting

- A: decreased resting membrane potential ✓
- B: delayed repolarisation
- C: electrical silence
- D: rapid depolarisation

11. Arrhythmias due to increased automaticity after a myocardial infarction are most common after

- A: 30 minutes
- B: 4 hours
- C: 12 hours ✓
- D: 24 hours