Physiology

Guyton:

1. Sympathetic stimulation of the heart does which of the following? (guyton)
   A) Releases acetylcholine at the sympathetic endings
   B) Decreases sinus nodal discharge rate
   C) Decreases excitability of the heart
   D) Releases norepinephrine at the sympathetic endings
   E) Decreases cardiac contractility

Ans:D

2. Which condition at the A-V node will cause a decrease in heart rate?
   A) Increased sodium permeability
   B) Decreased acetylcholine levels
   C) Increased norepinephrine levels
   D) Increased potassium permeability
   E) Increased calcium permeability

Ans: D

3. Which statement best explains how sympathetic stimulation affects the heart?
   A) The permeability of the S-A node to sodium decreases
   B) The permeability of the A-V node to sodium decreases
   C) The permeability of the S-A node to potassium increases
   D) There is an increased rate of upward drift of the resting membrane potential of the S-A node
   E) The permeability of the cardiac muscle to calcium decreases

Ans: D

4. Which condition at the S-A node will cause heart rate to decrease?
   A) Increased norepinephrine level
   B) Increased sodium permeability
   C) Increased calcium permeability
   D) Increased potassium permeability
   E) Decreased acetylcholine level

Ans: D

5. Which condition at the A-V node will cause a decrease in heart rate?
   A) Increased sodium permeability
   B) Decreased acetylcholine level
   C) Increased norepinephrine level
   D) Increased potassium permeability
   E) Increased calcium permeability

Ans: D

6. Sympathetic stimulation of the heart normally causes which condition?
   A) Acetylcholine release at the sympathetic endings
   B) Decreased heart rate
   C) Decreased rate of conduction of the cardiac impulse
   D) Decreased force of contraction of the atria
   E) Increased force of contraction of the ventricles

Ans:E

7. Which condition will result in a dilated, flaccid heart?
   A) Excess calcium ions in the blood
   B) Excess potassium ions in the blood
   C) Excess sodium ions in the blood
   D) Increased sympathetic stimulation
   E) Increased norepinephrine concentration in the blood

Ans: B

8. What decreases the risk of ventricular fibrillation?
   A) A dilated heart
   B) An increased ventricular refractory period
   C) Decreased electrical conduction velocity
   D) Exposure of the heart to 60-cycle alternating current
   E) Epinephrine administration

Ans: B

9. A 55-year-old man has been diagnosed with Stokes- Adams syndrome. Two minutes after the syndrome starts to cause active blockade of the cardiac impulse, which of the following is the pacemaker of the heart?
   A) Sinus node
   B) A-V node
   C) Purkinje fibers
   D) Cardiac septum
   E) Left atrium

Ans: B

BRS:

10. Which of the following agents or changes has a negative inotropic effect on the heart?
   A) Increased heart rate
   B) Sympathetic stimulation
   C) Norepinephrine
   D) Acetylcholine (ACh)
   E) Cardiac glycosides

Ans: D

11. Myocardial contractility is best correlated with the intracellular concentration of :
   A) $Na+$
   B) $K+$
   C) $Ca2+$
   D) $Cl-$
   E) $Mg2+$

Ans: C

020:

12. The SA node is the normal pacemaker because of its :
A) rate of impulse discharge
B) location in the atrium
C) neural control
D) muscular structures
E) relative position to the A.V node.

Ans: A

13. Regarding the S-A node :
A) cells within the S-A node act as heart pace maker because their membrane depolarized to threshold and initiate an action potential .
B) acetyl choline increases the slope of the pacemaker potential .
C) sympathetic stimulation decreases the slope of the pacemaker potential .
D) the pacemaker cells within the S-A node are neurons rather than myocytes .

Ans: A

14. The duration of cardiac cycle with a heart rate of 75 beat/minute is;
A) 2.0 second.
B) 0.2 seconds.
C) 0.8
D) 1.5 second.

Ans: C

15. Propagation of the action potential through the heart is fastest in the :
A) SA node
B) atrial muscle
C) AV node
D) purkinje fibers
E) ventricular muscle .

Ans: D

16. Myocardial contractility is increased by the following EXCEPT:
A) An increase in fiber length
B) Calcium ions
C) An increase in parasympathetic nervous system activity
D) Catecholamines
C) Strenuous exercise is undertaken

Ans: C

17. What causes decreased heart rate:
A) Increased sodium permeability
B) Increased calcium permeability
C) Increased potassium permeability

Ans: C

18. During total block to bundle of his what happens:
A) PR interval stays constant
B) Ventricles rate becomes 30-40
C) QRS complex changes in shape

Ans: B

19. The slowest conduction:
A) SA node
B) AV node
C) Ventricle muscle
D) Purkinje fiber

Ans: B

20. Which of the following regarding the diastolic depolarization phase 4 of SA potential is INCORRECT:
A) Fast depolarization is due to the opening of slow calcium channels
B) The SA membrane is continuously leaking sodium ions
C) Slow depolarization occurs more slowly with sympathetic stimulation
D) Repolarization occurs due to opening of potassium channels
E) Acetylcholine increases the permeability of the membrane to potassium

Ans: C

21. In an ECG, the heart rate indicated AV pacemaker, the rate would be:
A) 50 bpm
B) 80 bpm
C) 20 bpm

Ans: A

22. Sympathetic stimulation can increase contractility by:
A) Increasing sodium intracellularly
B) Increasing calcium intracellularly

Ans: B

23. SA node is the normal pacemaker because:
A) Has higher conduction rate
B) It has the fastest discharge

Ans: B

24. Which is wrong:
A) SA node is the normal pacemaker
B) Purkinje fibers lack intercalated discs.

Ans: B

25. When the bundle of His is completely interrupted, the:
A) Ventricles contract at a rate of 30-40 beats/minute
B) Atria beat irregularly
C) SA node stops discharging
D) P-R interval remains constant from beat to beat
E) QRS complexes vary in shape from beat to beat
Ans: A