Review Questions for ECG topic

Review questions will not be collected and are not worth any points. Doing them will, however, help you prepare for the midterms and quizzes in this course. Furthermore, some of these review questions will appear on the final exam (although the numbers within the questions may be changed).

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1) Which of the following is **not** considered part of the cardiovascular system?

A) Heart
B) Lungs
C) Blood
D) Blood vessels

2) Systole means

A) Contraction of heart chambers
B) Blood flow out of the heart and blood flow into the heart
C) Irregularities of heart beat rhythms
D) Blood flow into the heart and blood flow out of the heart

3) The following list of events of the cardiac cycle is NOT in the correct sequence. Which arrangement is the correct order of events?

1 = The ventricles begin contraction
2 = The ventricles begin relaxation
3 = The atria begin contraction
4 = The atria begin relaxation
5 = All chambers are relaxed

A) 3, 2, 1, 4, 5
B) 1, 3, 5, 4, 2
C) 3, 1, 4, 2, 5
D) 2, 5, 3, 4, 1

4) The _____ is the normal pacemaker of the heart.

A) AV bundle
B) Left atrium
C) Right ventricle
D) SA node

5) An important function of the AV node is to

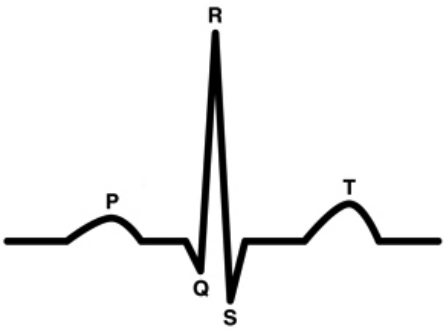
A) rapidly transmit signals to the atria
B) relay signals from the SA node to the bundles of His.
C) serve as a conduit for rapid transmission of signals from the heart to blood vessels in upper body
D) serve the center of the heart muscle contraction (all contractions spread outward from the AV node)

6) An ECG directly measures…

A) The electrical activity of the heart
B) The entire cardiac output
C) The cardiovascular flow rate
D) The cardiac glucose exportation

7) In the ECG to the right, what event in the heart occurs during the P wave?

A) Ventricle contraction starts
B) Ventricle relaxation starts
C) Atria contraction starts
D) Atria relaxation starts



8) In the ECG, what event(s) in the heart occur during the QRS complex? (more than one answer)

A) Ventricle contraction starts
B) Ventricle relaxation starts
C) Atria contraction starts
D) Atria relaxation starts

9) In the ECG, what event(s) in the heart occur during the T wave?

A) Ventricle contraction starts
B) Ventricle relaxation starts
C) Atria contraction starts
D) Atria relaxation starts

10) The two uppermost chambers of the heart are the _____.

11) The two lowermost chambers of the heart are the _____.

12) The muscular wall of each _____ (a heart chamber type) is small because its job is simply to pump blood a few inches into the next heart chamber.

13) The larger, more muscular chambers of the heart are the _____ (a chamber type).

14) _____ refers to the time during which a chamber of the heart are contracting, while _____ refers to the period of a chamber of the heart relaxing.

15) During ventricular systole, the atria are in _____.

16) At the end of each cardiac cycle, ventricles are in diastole/systole (circle one) and the atria are in diastole/systole (circle one).

17) The normal relaxed adult heart rate is _____ beats per minute. The normal range is _____ to _____ beats per minute for adult.

18) Abnormal rapid chaotic contraction and relaxation of the heart (when there is no effective pumping of blood) are called _____.

19) The term for the specialized heart tissue, found throughout the heart, that generates and conducts action potentials to cause the heart chambers to contract and relax is _____.

20) The normal beating of the heart is initiated by the _____ node, a cluster of conducting tissue in the _____ chamber of the heart. Because this clump of conducting tissue sets the overall heart rate, it is often called the _____ of the heart.

21) After the SA node, the next major clump of conducting tissue is the _____ node. This node receives signals from the SA, and delays briefly, and then sends the signals downward toward the ventricles.

22) The AV node is located in the _____ chamber of the heart.

23) The _____ are the conducting tissues located in the septum of the heart (the septum is the area between the left ventricle and the right ventricle). These conducting tissues pass signals downward from the AV node to the apex (the lower tip) of the heart.

24)_____ conduct the electrical signals upward from the apex of the heart up into the _____.

25) A(n) _____ is a recording of all of the electrical activity of the heart.

26) What do the letters ECG stand for? _____

27) When taking an ECG of a patient, the electrical leads are attached to which three places? _____, _____, and _____.

28) The _____ is the highest, strongest group of waves on a normal ECG.

29) The QRS complex causes relaxation/contraction (circle one) of the atria/ventricles (circle one).

30) The first wave on a normal ECG, a small peak, causes relaxation/contraction (circle one) of the atria/ventricles (circle one). This wave is called the _____ wave.

31) After a brief delay, a third and final wave follows the QRS complex. This third wave is called the _____ wave and it causes relaxation/contraction (circle one) of the atria/ventricles (circle one).

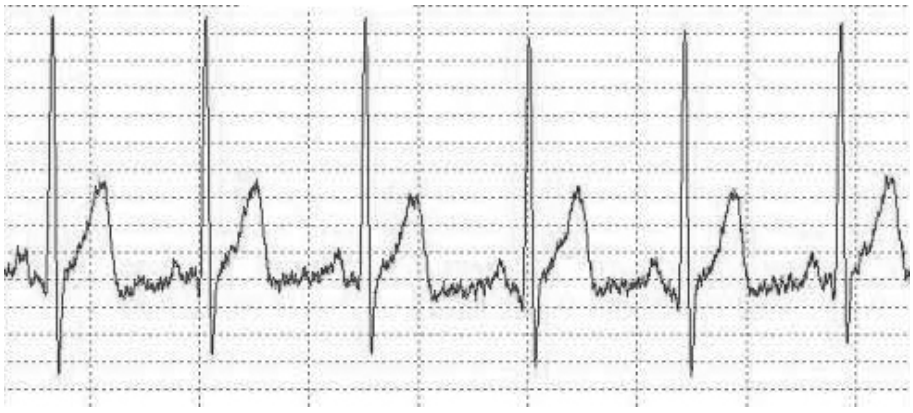
32) If a _____ wave on an ECG is occasionally not followed by a _____; this indicates a second degree AV block.

33) The _____ division of the nervous system contains neurons whose function is to accelerate heart rate.

34) The _____ division of the nervous system contains neurons whose function is to decelerate heart rate.

35) The pacemaker region of the heart is the_____.

36) The figure below is an ECG made during a 10 second period. What is the patient's heart rate? Use the unit conversion factor method and show all work.



37) If the ECG in the above problem showed 8 cardiac cycles in 5 seconds, what would the patient's heart rate be? Use the unit conversion factor method and show all work.

38) Indicate what electrical events in what chambers produce each of these waves:

a) P wave

b) QRS complex

c) T wave

39) An abnormally fast rate of beat is called _____; an abnormally slow rate is called _____.

40) Using letters, match the events in the heart listed on the right with the ECG intervals listed on the left.

QT: _____	a) The atria are in diastole
PR: _____	b) The atria are in systole
TQ: _____	c) The ventricles are in diastole
RP: _____	d) The ventricles are in systole

41) An abnormally long P-R interval indicates a condition called _____.

42) Which ECG wave causes the ventricles to contract?

43) Which ECG wave causes the ventricles to relax?

44) Describe the pathway of conduction from the atria to the ventricles and correlate this conduction with the ECG waves.

45) Using letters, match the descriptions on the right with the heart conditions listed on the left. Some heart conditions require more than one letter.

First degree AV block: _____

Second degree AV block: _____

Third degree AV block: _____

Ventricular fibrillations: _____

a) Some signals get through from SA to AV node, but some do not.

b) Random, rapid, and chaotic contractions and relaxations of the heart; no effective pumping of blood occurs.

c) All signals from SA to AV nodes get through, but they are abnormally delayed.

d) No signals get through from the SA to the AV node.

e) The ECG shows a PR interval longer than 0.2 seconds.

f) The ECG shows the P waves occurring at one steady rate while the QRS/T waves occur at another different steady rate.

g) The ECG shows only tall sharp waves. No P, QRS, or T waves can be discerned.

h) The ECG shows some P waves are followed by QRS/T, but some P waves are not followed by QRS/T.

46) What happens to the beating of the atria and ventricles during third-degree AV node block? Why does this occur?

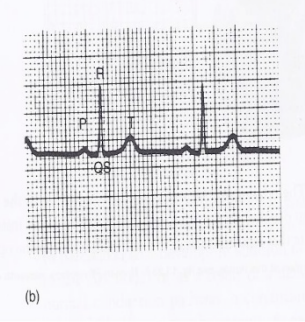
47) The SA node in the heart sends signals to contract the atria. The AV node receives the contraction signal from the SA node, delays a moment, then sends the signal to contract the ventricles. Explain why the AV node delays before sending the contraction signal to the ventricles.

48) Unlike skeletal muscle, cardiac muscle does not get its contractions signals from neurons. Nevertheless, there are motor neurons that synapse with the heart (mostly in the right atrium). What are the names of these motor neurons and what is their function?

49) Refer to the above figure to answer the following questions (the darker lines vertical lines are 0.1 seconds.

a) What is the PR interval in this ECG?

b) What is the cardiac rate in this ECG?



Answers for Review Questions for Taste and Smell Review topic:

1) B

2) A

3) C

4) D

5) B

6) A

7) C

8) A and D

9) B

10) Atria

11) Ventricles

12) Atrium

13) Ventricles

14) Systole
Diastole

15) Diastole

16) Diastole
Diastole

17) 72 beats per minute
60 – 100 beats per minute

18) Ventricular fibrillations

19) Conducting tissue of the heart

20) SA node
` Right atrium
Pacemaker

21) AV node

22) Right atrium

23) Bundles of His

24) Purkinje fibers
Ventricles

25) ECG

26) Electrocardiogram

27) Left wrist, right wrist, and ankle

28) QRS complex

29) Contraction
Ventricles

30) Contraction
Atria
P wave

31) T wave
Relaxation
Ventricle

32) P wave
QRS/T waves

33) Sympathetic division

34) Parasympathetic division

35) SA node

36) 6 cardiac cycles/10 seconds x (60 seconds/minute)

= 36 cardiac cycles/minute

37) 8 cardiac cycles/5 seconds x (60 seconds/minute)

= 96 cardiac cycles/minute

38) a) Depolarization of the atria

b) Depolarization of the ventricles

c) Repolarization of the ventricles

39) Tachycardia
Bradycardia

40) QT = d (ventricular systole)

PR = b (atrial systole)

TQ = c (ventricular diastole)

RP = a (atrial diastole)

41) First degree AV block

42) The QRS complex

43) The T wave

44) The SA node sends a signal to the atria to contract. The depolarization of the atria is the P wave on the ECG. The AV node receives part of the SA node signal, delays briefly, then sends a signal downward toward the ventricles. The signal from the AV node travels downward in the Bundles of His to the apex of the heart. The signal then enters the Purkinje fibers, which carry it to the ventricles. The depolarization of the ventricles is the QRS complex on the ECG. Shortly after they receive the signal to contract, the ventricles receive a signal to relax. The T wave on the ECG is the repolarization of the ventricles.

45) First degree block: C and E

Second degree block: A and H

Third degree block: D and F

Ventricular fibrillations: B and G

46) The beating of the atria occurs at one steady rate, while the beating of the ventricles occurs at a different steady rate. This occurs because the conducting tissue connection between the SA node (which controls the atria) and the AV node (which controls the ventricles) is not carrying any signals. When the AV node is not receiving any signals from the SA node, the AV node begins to send signals to the ventricle at a rate that is not coordinated with the rate of the SA node.

47) The AV node delays briefly to allow the atria time to refill the ventricles with blood. If the AV node did not delay the contraction signal it received from the SA node, then it would immediately send its contraction signal to the ventricles. This would cause the ventricles to contract before the atria had time to fill them with blood.

48) The motor neurons are neurons of the sympathetic and the parasympathetic divisions of the nervous system. These neurons control the SA node of the heart, increasing the SA node's rate (when stimulated by sympathetic neurons) or decreasing the SA node's rate (when stimulated by parasympathetic neurons).

49) a) Roughly 0.08 seconds

b) Each full cardiac cycle on this ECG appears to take roughly 0.5 seconds. Using the unit conversion factor method, we can calculate the heart rate:

1 cardiac cycle/0.5 seconds x (60 seconds/minute)
= 120 cardiac cycles/minute