

STUDENT NAME:

STUDENT NUMBER:

University of Ottawa

ANP 1105D

Midterm #2

Date: March 9th, 2017

Duration: 50 minutes

Instructor: Balwant Tuana

INSTRUCTIONS:

1. 50 multiple choice questions (0.5 mark/1 correct answer per question). Total possible mark = 25.
2. Please do not forget to put **your course code (ANP 1105D), your student number, your surname (last name) and the initials, on the first page of the scantron sheet!!!**
3. Please write **the exam version #** (indicated at the bottom left of this page) **on the right top corner of the scantron sheet!!!**
4. Please answer the multiple choice questions on the scantron sheet that is provided.
5. Make sure this exam is complete. This exam contains 9 pages.
6. The excuse of missing a page will not be accepted after the examination.

Good luck!!!!

1. The function of the intercalated discs in cardiac muscle is to:
 - a. provide the mechanism by which all of the cardiac muscle cells can behave as syncytium
 - b. separate sarcomers from each other
 - c. generate the appropriate neurotransmitters to regulate heart rate
 - d. store ATP

2. Oxygenated blood flows to the _____ through the _____:
 - a. right atrium; superior vena cava
 - b. left atrium; pulmonary veins
 - c. right atrium; pulmonary artery
 - d. left atrium; coronary veins

3. If the length of the absolute refractory period in cardiac muscle cells was the same as it is for skeletal muscle cells _____.
 - a. it would be much longer before cardiac cells could respond to a second stimulation
 - b. contractions would last as long as the refractory period
 - c. tetanic contractions might occur, which would stop the heart's pumping action
 - d. it would be less than 1/2 ms

4. Which of the following lists the elements of the heart's conduction system in the correct order?
 - a. SA node, AV bundle, bundle branches, AV node, Purkinje fibres
 - b. AV node, AV bundle, SA node, bundle branches, Purkinje fibres
 - c. Purkinje fibers, AV bundle, bundle branches, AV node, SA node
 - d. SA node, AV node, AV bundle, bundle branches, Purkinje fibres

5. In the myogenic (autorhythmic) cardiac cells:
 - a. the resting potential is less negative than in the contractile cardiac muscle cells
 - b. there is a stable resting membrane potential
 - c. depolarization of the action potential is caused by an efflux of sodium ions
 - d. depolarization is caused by an influx of potassium ions

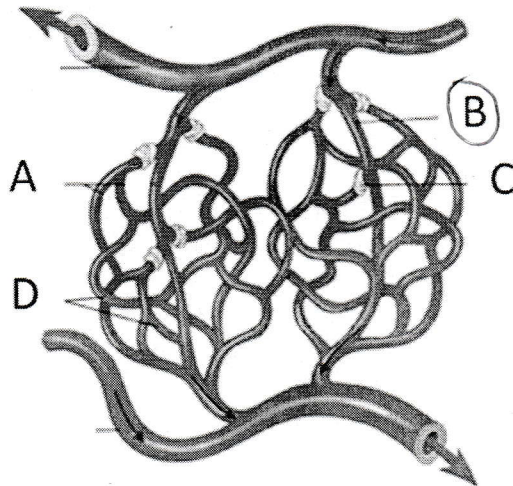
6. Which blood type is called the universal donor?
 - a. A
 - b. B
 - c. AB
 - d. O
 - e. O (minus)

7. An individual with type B blood can donate to:
 - a. only type B recipients
 - b. only type O recipients
 - c. only type AB recipients
 - d. both type B and type O recipients
 - e. both type B and type AB recipients

8. Isovolumetric contraction _____.
- a. refers to the short period during ventricular systole when the ventricles are completely closed chambers
 - b. occurs while the AV valves are open
 - c. occurs immediately after the aortic and pulmonary valves close
 - d. occurs only in people with heart valve defects
9. The source of blood carried to capillaries in the myocardium would be the _____.
- a. coronary sinus
 - b. fossa ovalis
 - c. coronary arteries
 - d. coronary veins
10. The fact that the left ventricle of the heart is thicker than the right ventricle reveals that it _____.
- a. pumps a greater volume of blood
 - b. pumps blood against a greater resistance
 - c. expands the thoracic cage
 - d. sends blood through a smaller valve
11. If the blood pressure is elevated, the cardiovascular centers would compensate by
- a. increasing the heart rate
 - b. sending parasympathetic signals to the heart
 - c. increasing cardiac output
 - d. causing vasoconstriction
12. Which of these pressures pulls water into capillaries?
- a. blood hydrostatic pressure
 - b. blood colloid osmotic pressure
 - c. tissue hydrostatic pressure
 - d. tissue colloid osmotic pressure
13. Which of these factors would increase peripheral resistance?
- a. decreased blood viscosity
 - b. decreased hematocrit
 - c. decreased vessel radius
 - d. decreased blood volume
14. Pulse pressure is calculated by
- a. adding diastolic pressure to systolic pressure
 - b. subtracting diastolic pressure from systolic pressure
 - c. adding the diastolic and systolic pressure, then dividing by 2
 - d. adding one-third of the difference between the diastolic and the systolic pressure to the diastolic pressure.

15. Adenosine is a:
- Powerful vasoconstrictor
 - Powerful vasodilator
 - Weak effector of tone
 - Is not produced during exercise.
16. Which of the following is not a cause of bleeding disorders?
- thrombocytopenia, a condition of decreased circulating platelets
 - excess secretion of platelet-derived growth factor (PDGF)
 - a defect in the clotting cascade
 - vitamin K deficiency
17. Damage to the _____ is referred to as heart block.
- SA node
 - AV valves
 - AV bundle
 - AV node

18. A thoroughfare channel provides a bypass for a capillary bed is shown in A, B, C or D?
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19. Asha has a platelet count of 100,000 per microliter of blood. Which of the following statements is true about Asha's platelets count?
- It indicates thrombocytopenia
 - It indicates thrombocytosis
 - It is normal
 - None of the above
20. Select the correct statement regarding RBCs:
- the main site of aged and damaged RBCs disposal is the liver
 - red bone marrow is the main site of RBCs disposal in adults
 - each RBC contains about 25 million hemoglobin molecules
 - CO₂ combines with the globin part of hemoglobin

21. Which of the following is true about the RBCs?
- Mature RBCs divide in response to hypoxia
 - RBCs colour depends on the shape of RBCs
 - Production of RBCs stops at high altitudes
 - Iron, vitamin B12 and folic acid deficiency leads to anemia
22. Which of the following is true?
- Athletes can develop anemia due to abnormally low ferritin levels
 - Thalassemia is a disorder of blood clotting
 - Lysis of blood clots is initiated 2-3 months after blood clot formation
 - Excess dietary iron is stored in platelets
23. Which of the following statements is true?
- Platelets do not have nuclei⁺
 - RBC's occupy about 15% of a total blood volume⁺
 - The number of RBC's is higher in females than in males
 - Reticulocytes are old RBCs
 - Absorption of iron from the plant foods is inhibited by vitamin C
24. Sickle-cell anemia:
- is a disorder transmitted by snake bites
 - is associated with changes in shape of RBCs
 - is particularly common in people of Greek and Italian origin
 - is associated with lack of globin production
25. Which of the following is incorrect regarding erythropoietin:
- is a glycoprotein
 - can be produced by the kidney
 - increased by hypoxia
 - increased by RBC destruction
 - inhibited at high altitude
26. The largest arteries are the
- conducting (elastic) arteries
 - distributing (muscular) arteries
 - metarterioles
 - arterioles
27. All of the following statements are TRUE about arteries EXCEPT _____.
- arteries are under higher pressure than veins
 - arteries have one-way valves
 - arterial walls have a thicker layer of smooth muscle than found in venous walls
 - arteries carry blood away from the heart

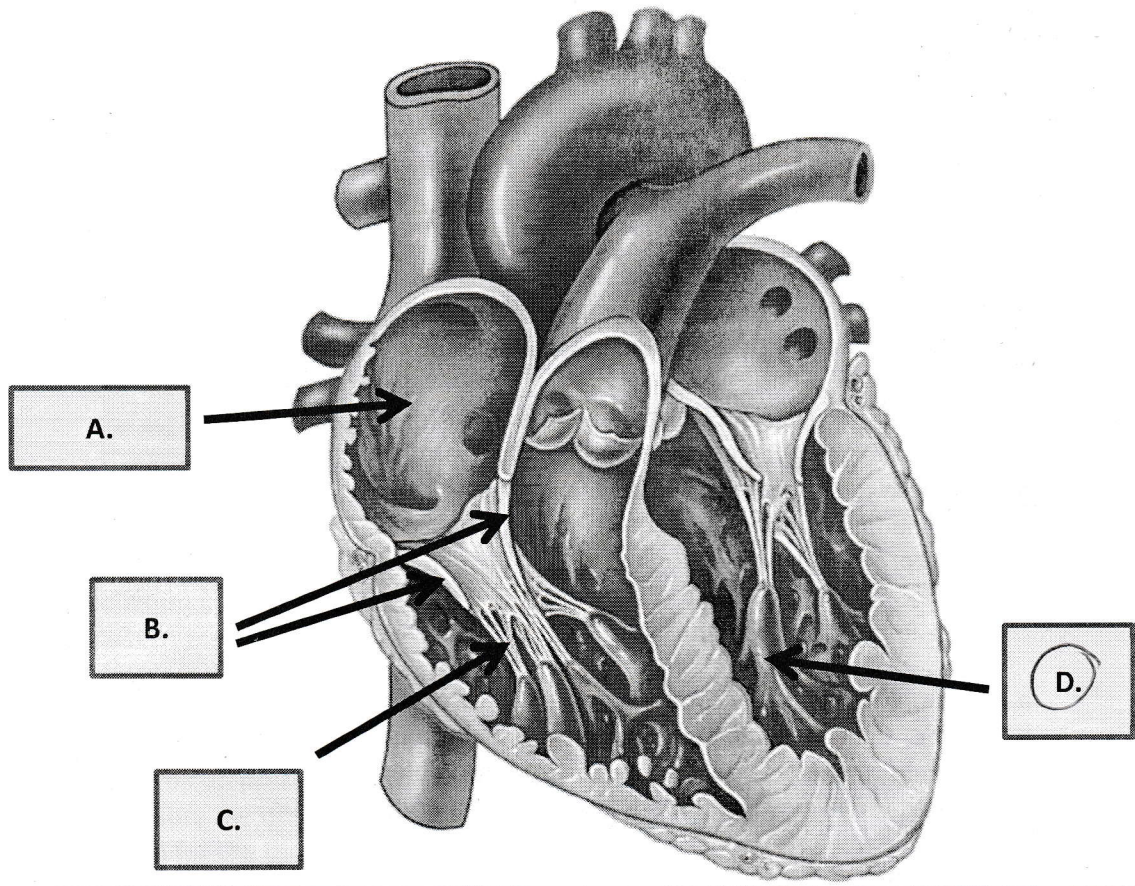
28. Homeostatic regulation of the cardiovascular system is designed to maintain _____.
- constant blood volume
 - constant arterial blood pressure
 - constant cardiac output
 - constant venous blood pressure
29. Which of the following statements concerning the nervous regulation of the circulation is correct?
- The baroreceptors are mainly responsible for the long-term regulation of systemic blood pressure.
 - If the arterial pressure suddenly falls the baroreceptor reflex increases the heart rate.
 - The baroreceptors are found in the aortic and carotid bodies
 - The coronary blood flow is regulated by the cardiac volume receptors.
30. Which of the following statements concerning the control of the vasculature is correct?
- Autoregulation refers to the nervous control of the blood vessels
 - Reactive hyperemia is due to vasodilatation caused by the accumulation of metabolites during a period of exercise.
 - Parasympathetic vasodilator fibers innervate the blood vessels of the exocrine glands of the gastro-intestinal tract.
 - The diameter of the arterioles is entirely regulated by the sympathetic nervous system.
31. Venous return would be increased by
- dilation of the veins
 - loss of the venous valves
 - increased skeletal muscle activity
 - decreased respiratory rate
32. When taking blood pressure by the auscultatory method, the stethoscope is used to
- measure the pressure of the blood pushing against the wall of the artery.
 - listen for the turbulent blood flow in the artery
 - measure the speed at which the blood is flowing through the artery
 - measure the pressure of air in the cuff
33. Which of these hematocrits indicates polycythemia?
- 35-40%
 - 40-45%
 - 55%
 - None of the above
34. Which of the following cause ONLY the extrinsic pathway of blood coagulation to be followed?
- sticking of platelets to roughened blood vessel walls
 - activation of a proenzyme exposed to collagen
 - release of heparin by the liver
 - the conversion of prothrombin to thrombin
 - the release of tissue factor by damaged tissue cells

35. The waste product bilirubin is produced from:
- globin chains of hemoglobin
 - portions of heme molecules that contain iron
 - portions of heme molecules that do not contain iron
 - iron found in hemoglobin molecules
 - abnormal proteins found in red blood cells
36. Which of the following chemicals is an enzyme that converts fibrinogen to fibrin?
- Heparin
 - Thrombin
 - Prothrombin
 - coagulation factor VI
 - tissue factor
37. All of the following are properties of erythrocytes EXCEPT:
- Biconcavity
 - reversible deformability
 - presence of hemoglobin in cytoplasm
 - presence of many mitochondria in cytoplasm
38. Which of these statements about plasmin is TRUE?
- It is involved in the intrinsic blood clotting system
 - It is involved in the extrinsic blood clotting system
 - It functions in fibrinolysis
 - It is a procoagulant
39. Which of the following statements is true?
- Hemophilia is equally common in men and women
 - Lack of the coagulation factor VIII is the main cause of thalassemia
 - Plasmin converts soluble fibrinogen into insoluble fibrin
 - Polycythemia may be initiated by injection of erythropoietin
40. The heart's pacemaker is:
- atrioventricular node
 - Purkinje fibers
 - sinoatrial node
 - atrioventricular bundle
41. Which valve is located between the right atrium and right ventricle:
- mitral valve
 - pulmonary semilunar valve
 - aortic valve
 - tricuspid valve

42. The T wave on an ECG represents:

- a. atrial repolarization
- b. ventricle repolarization
- c. atrial depolarization
- d. ventricle depolarization

43. Which of the following (A, B, C or D) represents the papillary muscle?



44. Which layer of the heart wall contracts and is composed of muscle cells:

- a. Pericardium
- b. endocardium
- c. myocardium
- d. epicardium

45. The circulation of the heart is referred to as:

- a. pulmonary
- b. systemic
- c. coronary
- d. venous

46. Which of the following will increase heart rate:
- a. Acetylcholine
 - b. increased vagus nerve activity
 - c. decreased sympathetic drive
 - d. epinephrine
47. The second heart sound is heard during which phase of the cardiac cycle?
- a. isovolumetric relaxation
 - b. isovolumetric contraction
 - c. ventricular ejection
 - d. ventricular filling
48. If we were able to artificially alter the membrane permeability of pacemaker cells so that sodium influx is decreased, _____.
- a. threshold is reached more quickly and heart rate would increase
 - b. potassium channels compensate and no change in heart rate would occur
 - c. heart rate would decrease
 - d. tetanic contraction would occur due to the short absolute refractory period of cardiac muscle
49. Select the correct statement about cardiac output.
- a. A slow heart rate decreases end diastolic volume, stroke volume, and force of contraction.
 - b. Increased venous return will result in increased end diastolic volume
 - c. If a semilunar valve were partially obstructed, the end systolic volume in the affected ventricle would be decreased.
 - d. Stroke volume increases if end diastolic volume decreases.
50. During contraction of heart muscle cells _____.
- a. the action potential is initiated by voltage-gated slow calcium channels
 - b. some calcium enters the cell from the extracellular space and triggers the release of larger amounts of calcium from intracellular stores
 - c. the action potential is prevented from spreading from cell to cell by gap junctions
 - d. calcium is prevented from entering cardiac fibers that have been stimulated