BSC 2086C
Exam #1
Blood and Heart Sample Exam

Questions on this exam are just examples to show the depth of coverage of the exam. The exact format may vary slightly from this sample exam; there may be matching and/or completion questions on your exam. It will not be the same exam that you are given in class. A check mark (✔) indicates the correct answer for each multiple choice question.

I. Multiple Choice (70 points)

The procedures for the multiple choice part of this test are as follows:

(A) Write the following information on the answer sheet.
Name ____________________________
Subject ____________________________
Date __________________
Social Security Number is not necessary.

(B) Be sure to start on the side of the answer sheet marked 1-50.
(C) Carefully read each choice before answering and then pencil in the space on the answer sheet that best answers the question.
(D) If you change your answer, be sure to erase the original answer thoroughly.
(E) Do not write over the heavy black dashes to the left of the question number: this will foul up the grading machine.
(F) You must keep the completed portion of the answer sheet covered at all times with your test.

1. The viscosity of blood averages ___________________.
   (A) 5 ✔
   (B) 7.4
   (C) 3.5-4.5
   (D) 9.4
   (E) none of these

2. When old RBC’s are destroyed, hemoglobin is broken-down. Globin is released and its amino acids are recycled. The hemes are broken down releasing iron and a colored substance called biliverdin. Biliverdin is converted to an yellow pigments called ___________________.
   (A) erythropoietin (EPO)
   (B) transferrin
   (C) bilirubin ✔
   (D) ferritin
   (E) none of these
3. Hemoglobin is composed of protein (globin portion) and the iron-containing group called ____________.
   (A) carbon dioxide (B) plasminogen (C) heme ✔ (D) the globin portion (E) none of these

4. Which of the following is true?
   (A) Neutrophils reduce inflammation.
   (B) Eosinophils reduce inflammation. ✔
   (C) There are 5-10 thousand RBC’s per cubic millimeter of blood.
   (D) Monocytes cause inflammation.
   (E) none of these

5. Iron is stored in the liver as ________________________________.
   (A) ferritin ✔ (B) proteins in muscles (C) transferrin (D) iron sulfate (E) none of these

6. Which of the following is the differential for monocytes?
   (A) 60-70% (B) 2-4% (C) <1% (D) 3-8% ✔ (E) 20-25%

7. These blood cells are biconcave and lack a nucleus.
   (A) lymphocytes (B) eosinophils (C) RBC’s ✔ (D) monocytes (E) none of these

8. The first stage in blood clotting ends with the formation of ______________. It and calcium ions are needed to convert prothrombin to thrombin during stage II.
   (A) platelet factors (B) prothrombinase ✔ (C) fibrin (D) plasmin (E) none of these
9. Which AV valve is in the right side of the heart?
   (A) tricuspid valve✔
   (B) bicuspid valve
   (C) pulmonary valve
   (D) aortic valve
   (E) none of these

10. Plasminogen ________________________.
    (A) dissolves clots
    (B) converts thrombin to prothrombin
    (C) converts prothrombin to thrombin
    (D) is activated by t-PA✔
    (E) none of these

11. Which of the following blood types is the universal donor?
    (A) A⁺
    (B) O✔
    (C) O⁺
    (D) AB⁻

12. Which of the following is the correct sequence for the heart’s conducting system?
    (A) SA node, AV bundle, Purkinje fibers, bundle branches, AV node
    (B) AV node, SA node, AV bundle, bundle branches, Purkinje fibers
    (C) SA node, AV node, AV bundle, Purkinje fibers, bundle branches
    (D) SA node, AV node, AV bundle, bundle branches, Purkinje fibers✔
    (E) none of these

13. Blood returning to the heart from the lungs enters the ____________.
    (A) right atrium
    (B) right ventricle
    (C) left atrium✔
    (D) left ventricle

14. The QRS complex of an electrocardiogram represents the ________________.
    (A) spread of depolarization through the atria
    (B) spread of depolarization through the AV node
    (C) depolarization of the ventricles✔
    (D) repolarization of the ventricles
    (E) none of these

15. The slow (plateau) part of heart muscle depolarization is caused by the ________.
    (A) inward movement of sodium ions
    (B) inward movement of calcium ions✔
    (C) outward movement of potassium ions
    (D) children
16. The amount of tension (pressure) that the contacting ventricles must produce to open the semilunar valves is called.
   (A) preload
   (B) stroke volume
   (C) cardiac output
   (D) afterload ✔
   (E) none of these

17. If the heart rate is 75 bpm and the stroke volume is 80 ml per beat, the cardiac output is _____________ ml per minute. This higher math is exasperating.
   (A) 1.07
   (B) 6000 ✔
   (C) 5600
   (D) 7500 these
   (E) none of these

18. The first heart sound (S1 or lub) is produced by the ____________________.
   (A) closing of the atrioventricular valves (bicuspid and tricuspid) ✔
   (B) opening of the semilunar valves (pulmonary and aortic)
   (C) closing of the semilunar valves (pulmonary and aortic)
   (D) opening of the atrioventricular valves (bicuspid and tricuspid)
   (D) turbulent flow of blood in the ventricles

19. Repolarization of heart muscle is caused by ____________.
   (A) inward movement of sodium ions
   (B) inward movement of calcium ions
   (C) outward movement of potassium ions ✔
   (D) outward movement of magnesium ions

20. Which of the following will decrease the heart rate
   (A) increased parasympathetic activity ✔
   (B) increased sympathetic activity
   (C) norepinephrine
   (D) none of these

21. Which of the following will speed-up the heart?
   (A) acetylcholine
   (B) epinephrine and norepinephrine ✔
   (C) beta blocker
   (D) none of these
22. The cardiac control centers are located in a part of the brain called the _________________.
   (A) pons
   (B) cerebrum
   (C) medulla oblongata ✔
   (D) midbrain
   (E) none of these

23. Which ion is needed for blood clotting?
   (A) Na\(^+\)
   (B) K\(^+\)
   (C) Fe\(^{2+}\)
   (D) Ca\(^{2+}\) ✔
   (E) none of these

24. Hemolytic disease of the newborn occurs ________________________.
   (A) because of liver failure
   (B) when the Rh\(^{-}\) blood of the first child sensitizes the mother’s Rh\(^{+}\) blood
   (C) when a woman marries an Rh\(^{-}\) man
   (D) when the Rh\(^{+}\) blood of the first child sensitizes the mother’s Rh\(^{-}\) blood ✔
   (E) none of these

25. What part of the heart’s conducting system delays the signal (depolarization) for about 0.1 sec before sending it on toward the ventricles? It is also called the “gateway” to the ventricles.
   (A) SA node
   (B) AV node ✔
   (C) AV bundle
   (D) Purkinje fibers
   (E) none of these

26. Which of the following is a function for neutrophils
   (A) reduce inflammation
   (B) cause inflammation
   (C) phagocytosis ✔
   (D) immunity
   (E) none of these

27. Name the most abundant plasma proteins.
   (A) albumins ✔
   (B) globulins
   (C) fibrinogen
   (D) flabulogen
   (E) none of these
28. Red blood cell formation is called ______________________________.
   (A) erythrocytosis
   (B) erythroblastosis
   (C) erythrocyclusis
   (D) erythropoiesis ✔
   (E) none of these

29. The proper name for the heart’s pacemaker is ________________________.
   (A) SA node ✔
   (B) AV node
   (C) AV bundle
   (D) Purkinje fibers
   (E) none of these

30. The contraction phase of the heart’s chambers is called __________________.
    (A) systole ✔
    (B) diastole
    (C) preload
    (D) ESV
    (E) none of these

31. The amount of blood in the ventricles before ejection of the stroke volume is the _________________.
    (A) end diastolic volume (EDV) ✔
    (B) end systolic volume (ESV)
    (C) preload
    (D) CO
    (E) none of these

32. What chemical converts fibrinogen to fibrin?
    (A) prothrombinase
    (B) prothrombin
    (C) thromboplastin
    (D) plasmin
    (E) none of these ✔ (It is thrombin)

33. Which of the following is a vitamin that is needed to form RBC’s?
    (A) K
    (B) C
    (C) B₁₂ ✔
    (D) riboflavin
    (E) none of these
34. Blood helps to regulate our fluid balance.
   (A) true✔
   (B) false

35. Which stem cells give rise to most formed elements?
   (A) lymphoid stem cells
   (B) myeloid stem cells✔

II. Describe the cardiac cycle as presented in class. (10 points)
III. Use numbered statements or a fully explained diagram to describe the formation of RBC’s. (6 points)

IV. Extra Credit (5 points)
Describe the following:
1. hemophilia

2. leukopenia

3. atherosclerosis

4. angina pectoris

5. myocardial infarction