1. Which of the following is not important in preventing backflow of blood?

chordae tendineae
papillary muscles
AV valves
Endocardium

2 . Which valve separates the left atrium from the left ventricle?

mitral
tricuspid
pulmonary
aortic

3. Which of the following lists the valves in the order through which the blood flows from the vena cava through the heart?
tricuspid, pulmonary semilunar, bicuspid, aortic semilunar
mitral, pulmonary semilunar, bicuspid, aortic semilunar
aortic semilunar, pulmonary semilunar, tricuspid, bicuspid
bicuspid, aortic semilunar, tricuspid, pulmonary semilunar

4. Which chamber initially receives blood from the systemic circuit?
left atrium
left ventricle
right atrium
right ventricle

5. The _____ layer secretes chemicals that help to regulate ionic environments and strength of contraction and serve as powerful vasoconstrictors.
pericardial sac
endocardium
myocardium
epicardium

6. The myocardium would be the thickest in the _____.
left atrium
left ventricle
right atrium
right ventricle

7. In which septum is it normal to find openings in the adult?
interatrial septum
interventricular septum
atrioventricular septum
all of the above

8. Which of the following is unique to cardiac muscle cells?
Only cardiac muscle contains a sarcoplasmic reticulum.
Only cardiac muscle has gap junctions.
Only cardiac muscle is capable of autorhythmicity
Only cardiac muscle has a high concentration of mitochondria

9. The influx of which ion accounts for the plateau phase?
sodium
potassium

chloride
calcium

10. Which portion of the ECG corresponds to repolarization of the atria?
P wave
QRS complex
T wave
none of the above: atrial repolarization is masked by ventricular depolarization.

11. Which component of the heart conduction system would have the slowest rate of firing?
atrioventricular node
atrioventricular bundle
bundle branches
Purkinje fibers

12. The cardiac cycle consists of a distinct relaxation and contraction phase. Which term is typically used to refer ventricular contraction while no blood is being ejected?
systole
diastole
quiescent
isovolumic contraction

13. Most blood enters the ventricle during _____.
atrial systole
atrial diastole
ventricular systole
isovolumic contraction

14. The first heart sound represents which portion of the cardiac cycle?
atrial systole
ventricular systole
closing of the atrioventricular valves
closing of the semilunar valves

15. Ventricular relaxation immediately follows _____.
atrial depolarization
ventricular repolarization
ventricular depolarization
atrial repolarization

16. The force the heart must overcome to pump blood is known as _____.
preload
afterload
cardiac output
stroke volüme

17. The cardiovascular centers are located in which area of the brain?
medulla oblongata
pons
mesencephalon (midbrain)
cerebrum

18. In a healthy young adult, what happens to cardiac output when heart rate increases above 160 bpm?
It increases.

It decreases.
It remains constant.
There is no way to predict.

19. What happens to preload when there is venous constriction in the veins?
It increases.
It decreases.
It remains constant.
There is no way to predict.

20. Which of the following is a positive inotrope?
Na+
K+
Ca2+
both Na+ and K+

21. The earliest organ to form and begin function within the developing human is the _____.
brain
stomach
lungs
heart

22. Of the three germ layers that give rise to all adult tissues and organs, which gives rise to the heart?
ectoderm
endoderm
mesoderm
placenta

23. The two tubes that eventually fuse to form the heart are referred to as the _____.
primitive heart tubes
endocardial tubes
cardiogenic region
cardiogenic tubes

24. Which primitive area of the heart will give rise to the right ventricle?
bulbus cordis
primitive ventricle
sinus venosus
truncus arteriosus

25. The pulmonary trunk and aorta are derived from which primitive heart structure?
bulbus cordis
primitive ventricle
sinus venosus
truncus arteriosus

26. Which of the following statements about blood is true?
Blood is about 92 percent water.
Blood is slightly more acidic than water.
Blood is slightly more viscous than water.
Blood is slightly more salty than seawater.

27. Which of the following statements about albumin is true?
It draws water out of the blood vessels and into the body's tissues.
It is the most abundant plasma protein.

It is produced by specialized leukocytes called plasma cells.
All of the above are true.

28. Which of the following plasma proteins is not produced by the liver?
fibrinogen
alpha globulin
beta globulin
immunoglobulin

29. Which of the formed elements arise from myeloid stem cells?
B cells
natural killer cells
platelets
all of the above

30. Which of the following statements about erythropoietin is true?
It facilitates the proliferation and differentiation of the erythrocyte lineage.
It is a hormone produced by the thyroid gland.
It is a hemopoietic growth factor that prompts lymphoid stem cells to leave the bone marrow.
Both a and b are true.

31. Interleukins are associated primarily with which of the following?
production of various lymphocytes
immune responses
inflammation
all of the above

32. Which of the following statements about mature, circulating erythrocytes is true?
They have no nucleus.
They are packed with mitochondria.
They survive for an average of 4 days.
All of the above

33. A molecule of hemoglobin _____.
is shaped like a biconcave disk packed almost entirely with iron
contains four glycoprotein units studded with oxygen
consists of four globin proteins, each bound to a molecule of heme
can carry up to 120 molecules of oxygen

34. The production of healthy erythrocytes depends upon the availability of _____.
copper
zinc
vitamin B12
copper, zinc, and vitamin B12

35. Aging and damaged erythrocytes are removed from the circulation by _____.
myeoblasts
monocytes
macrophages
mast cells

36. A patient has been suffering for 2 months with a chronic, watery diarrhea. A blood test is likely to reveal
_____.
a hematocrit below 30 percent

hypoxemia
anemia
polycythemia

37. The process by which leukocytes squeeze through adjacent cells in a blood vessel wall is called _____.
leukocytosis
positive chemotaxis
emigration
cytoplasmic extending

38. Which of the following describes a neutrophil?
abundant, agranular, especially effective against cancer cells
abundant, granular, especially effective against bacteria
rare, agranular, releases antimicrobial defensins
rare, granular, contains multiple granules packed with histamine

39. T and B lymphocytes _____.
are polymorphonuclear
are involved with specific immune function
proliferate excessively in leukopenia
are most active against parasitic worms

40. A patient has been experiencing severe, persistent allergy symptoms that are reduced when she takes an ntihistamine.
Before the treatment, this patient was likely to have had increased activity of which leukocyte?
basophils
neutrophils
monocytes
natural killer cells

41. Thrombocytes are more accurately called _____.
clotting factors
megakaryoblasts
megakaryocytes
platelets

42. The first step in hemostasis is _____.
vascular spasm
conversion of fibrinogen to fibrin
activation of the intrinsic pathway
activation of the common pathway

43. Prothrombin is converted to thrombin during the _____.
intrinsic pathway
extrinsic pathway
common pathway
formation of the platelet plug

44. Hemophilia is characterized by _____.
inadequate production of heparin
inadequate production of clotting factors
excessive production of fibrinogen

excessive production of platelets

45. The process in which antibodies attach to antigens, causing the formation of masses of linked cells, is called_____.
sensitization
coagulation
agglutination
hemolysis

46. People with ABO blood type O _____.
have both antigens A and B on their erythrocytes
lack both antigens A and B on their erythrocytes
have neither anti-A nor anti-B antibodies circulating in their blood plasma
are considered universal recipients

47. Hemolytic disease of the newborn is a risk during a subsequent pregnancy in which _____.
a type AB mother is carrying a type O fetus
a type O mother is carrying a type AB fetus
an Rh+ mother is carrying an Rh- fetus
an Rh- mother is carrying a second Rh+ fetüs

Disgestive system

1. Which of these organs is not considered an accessory digestive structure?
mouth
salivary glands
pancreas
liver

2. Which of the following organs is supported by a layer of adventitia rather than serosa?
esophagus
stomach
small intestine
large intestine

3. Which of the following membranes covers the stomach?
falciform ligament
mesocolon
parietal peritoneum
visceral peritoneum

4. Which of these processes occurs in the mouth?
ingestion
mechanical digestion
chemical digestion

all of the above

5. Which of these processes occurs throughout most of the alimentary canal?
ingestion
propulsion
segmentation
absorption

6. Which of the following stimuli activates sensors in the walls of digestive organs?
breakdown products of digestion
distension
pH of chyme
all of the above

7. Which of these statements about reflexes in the GI tract is false?
Short reflexes are provoked by nerves near the GI tract.
Short reflexes are mediated by the enteric nervous system.
Food that distends the stomach initiates long reflexes.
Long reflexes can be provoked by stimuli originating outside the GI tract.

8. Which of these ingredients in saliva is responsible for activating salivary amylase?
mucus
phosphate ions
chloride ions
urea

9. Which of these statements about the pharynx is true?
It extends from the nasal and oral cavities superiorly to the esophagus anteriorly.
The oropharynx is continuous superiorly with the nasopharynx.
The nasopharynx is involved in digestion.
The laryngopharynx is composed partially of cartilage.

10. Which structure is located where the esophagus penetrates the diaphragm?
esophageal hiatus
cardiac orifice
upper esophageal sphincter
lower esophageal sphincter

11. Which phase of deglutition involves contraction of the longitudinal muscle layer of the muscularis?
voluntary phase
buccal phase
pharyngeal phase
esophageal phase

12. Which of these cells secrete hormones?
parietal cells
mucous neck cells
enteroendocrine cells
chief cells

13. Where does the majority of chemical digestion in the stomach occur?
fundus and body
cardia and fundus
body and pylorus
body

14. During gastric emptying, chyme is released into the duodenum through the _____.

esophageal hiatus
pyloric antrum
pyloric canal
pyloric sphincter

15. Parietal cells secrete _____.
gastrin
hydrochloric acid
pepsin
pepsinogen

16. In which part of the alimentary canal does most digestion occur?
stomach
proximal small intestine
distal small intestine
ascending colon

17. Which of these is most associated with villi?
haustra
lacteals
bacterial flora
intestinal glands

18. What is the role of the small intestine's MALT?
secreting mucus
buffering acidic chyme
activating pepsin
preventing bacteria from entering the bloodstream

19. Which part of the large intestine attaches to the appendix?
cecum
ascending colon
transverse colon
descending colon

20. Which of these statements about bile is true?
About 500 mL is secreted daily.
Its main function is the denaturation of proteins.
It is synthesized in the gallbladder.
Bile salts are recycled.

21. Pancreatic juice _____.
deactivates bile.
is secreted by pancreatic islet cells.
buffers chyme.
is released into the cystic duct

22. Where does the chemical digestion of starch begin?
mouth
esophagus
stomach
small intestine

23. Which of these is involved in the chemical digestion of protein?
pancreatic amylase
trypsin
sucrase

pancreatic nuclease

24. Where are most fat-digesting enzymes produced?
small intestine
gallbladder
liver
pancreas

25. Which of these nutrients is absorbed mainly in the duodenum?
glucose
iron
sodium
water

1. Which of the following anatomical structures is not part of the conducting zone?
pharynx
nasal cavity
alveoli
bronchi

2. What is the function of the conchae in the nasal cavity?
increase surface area
exchange gases
maintain surface tension
maintain air pressure

3. The fauces connects which of the following structures to the oropharynx?
nasopharynx
laryngopharynx
nasal cavity
oral cavity

4. Which of the following are structural features of the trachea?
C-shaped cartilage
smooth muscle fibers
cilia
all of the above

5. Which of the following structures is not part of the bronchial tree?
alveoli
bronchi
terminal bronchioles
respiratory bronchioles

6. What is the role of alveolar macrophages?
to secrete pulmonary surfactant
to secrete antimicrobial proteins
to remove pathogens and debris

to facilitate gas Exchange

7. Which of the following structures separates the lung into lobes?
mediastinum
fissure
root
pleura

8. A section of the lung that receives its own tertiary bronchus is called the _____.
bronchopulmonary segment
pulmonary lobule
interpulmonary segment
respiratory segment

9. The _____ circulation picks up oxygen for cellular use and drops off carbon dioxide for removal from the body.
pulmonary
interlobular
respiratory
bronchial

10. The pleura that surrounds the lungs consists of two layers, the _____.
visceral and parietal pleurae.
mediastinum and parietal pleurae.
visceral and mediastinum pleurae.
none of the above

11. Which of the following processes does atmospheric pressure play a role in?
pulmonary ventilation
production of pulmonary surfactant
resistance
surface tension

12. A decrease in volume leads to a(n) _____ pressure.
decrease in
equalization of
increase in
zero

13. The pressure difference between the intra-alveolar and intrapleural pressures is called _____.
atmospheric pressure
pulmonary pressure
negative pressure
transpulmonary pressure

14. Gas flow decreases as _____ increases.
resistance
pressure
airway diameter
friction

15. Contraction of the external intercostal muscles causes which of the following to occur?
The diaphragm moves downward.
The rib cage is compressed.
The thoracic cavity volume decreases.
The ribs and sternum move upward.

16. Which of the following prevents the alveoli from collapsing?
residual volume
tidal volume
expiratory reserve volume
inspiratory reserve volüme

17. Gas moves from an area of _____ partial pressure to an area of _____ partial pressure.
low; high
low; low
high; high
high; low

18. When ventilation is not sufficient, which of the following occurs?
The capillary constricts.
The capillary dilates.
The partial pressure of oxygen in the affected alveolus increases.
The bronchioles dilate.

19. Gas exchange that occurs at the level of the tissues is called _____.
external respiration
interpulmonary respiration
internal respiration
pulmonary ventilation

20. The partial pressure of carbon dioxide is 45 mm Hg in the blood and 40 mm Hg in the alveoli.
What happens to the carbon dioxide?
It diffuses into the blood.
It diffuses into the alveoli.
The gradient is too small for carbon dioxide to diffuse.
It decomposes into carbon and oxygen.

21. Oxyhemoglobin forms by a chemical reaction between which of the following?
hemoglobin and carbon dioxide
carbonic anhydrase and carbon dioxide
hemoglobin and oxygen
carbonic anhydrase and oxygen

22. Which of the following factors play a role in the oxygen-hemoglobin saturation/dissociation curve?
temperature
pH
BPG
all of the above

23. Which of the following occurs during the chloride shift?
Chloride is removed from the erythrocyte.
Chloride is exchanged for bicarbonate.
Bicarbonate is removed from the erythrocyte.
Bicarbonate is removed from the blood.

24. A low partial pressure of oxygen promotes hemoglobin binding to carbon dioxide. This is an example of the _____.
Haldane effect
Bohr effect
Dalton's law

Henry's law

25. Increased ventilation that results in an increase in blood pH is called _____.
hyperventilation
hyperpnea
acclimatization
apnea

26. Exercise can trigger symptoms of AMS due to which of the following?
low partial pressure of oxygen
low atmospheric pressure
abnormal neural signals
small venous reserve of oxygen

27. Which of the following stimulates the production of erythrocytes?
AMS
high blood levels of carbon dioxide
low atmospheric pressure
erythropoietin

28. The olfactory pits form from which of the following?
mesoderm
cartilage
ectoderm
endoderm

29. A full complement of mature alveoli are present by _____.
early childhood, around 8 years of age
birth
37 weeks
16 weeks

30. When do fetal breathing movements begin?
around week 20
around week 37
around week 16
after birth

1. Diabetes insipidus or diabetes mellitus would most likely be indicated by _____.
anuria
polyuria
oliguria
none of the above

2. The color of urine is determined mainly by _____.
diet
filtration rate
byproducts of red blood cell breakdown
filtration efficiency

3. Production of less than 50 mL/day of urine is called _____.
normal
polyuria

oliguria
anuria

4. Peristaltic contractions occur in the _____.
urethra
bladder
ureters
urethra, bladder, and ureters

5. Somatic motor neurons must be _____ to relax the external urethral sphincter to allow urination.
stimulated
inhibited

6. Which part of the urinary system is not completely retroperitoneal?
kidneys
ureters
bladder
nephrons

7. The renal pyramids are separated from each other by extensions of the renal cortex called _____.
renal medulla
minor calyces
medullary cortices
renal columns

8. The primary structure found within the medulla is the _____.
loop of Henle
minor calyces
portal system
ureter

9. The right kidney is slightly lower because _____.
it is displaced by the liver
it is displace by the heart
it is slightly smaller
it needs protection of the lower ribs

10. Blood filtrate is captured in the lumen of the _____.
glomerulus
Bowman's capsule
calyces
renal papillae

11. What are the names of the capillaries following the efferent arteriole?
arcuate and medullary
interlobar and interlobular
peritubular and vasa recta
peritubular and medullary

12. The functional unit of the kidney is called _____.
the renal hilus
the renal corpuscle
the nephron
Bowman's capsule

13. _____ pressure must be greater on the capillary side of the filtration membrane to achieve filtration.
Osmotic
Hydrostatic

14. Production of urine to modify plasma makeup is the result of _____.
filtration
absorption
secretion
filtration, absorption, and secretion

15. Systemic blood pressure must stay above 60 so that the proper amount of filtration occurs.
true
false

16. Aquaporin channels are only found in the collecting duct.
true
false

17. Most absorption and secretion occurs in this part of the nephron.
proximal convoluted tubule
descending loop of Henle
ascending loop of Henle
distal convoluted tubule
collecting ducts

18. The fine tuning of water recovery or disposal occurs in _____.
the proximal convoluted tubule
the collecting ducts
the ascending loop of Henle
the distal convoluted tubule

19. Vasodilation of blood vessels to the kidneys is due to _____.
more frequent action potentials
less frequent action potentials

20. When blood pressure increases, blood vessels supplying the kidney will _____ to mount a steady rate of
filtration.
contract
relax

21. Which of these three paracrine chemicals cause vasodilation?
ATP
adenosine
nitric oxide

22. What hormone directly opposes the actions of natriuretic hormones?
renin
nitric oxide
dopamine
aldosterone

23. Which of these is a vasoconstrictor?
nitric oxide
natriuretic hormone
bradykinin
angiotensin II

24. What signal causes the heart to secrete atrial natriuretic hormone?
increased blood pressure
decreased blood pressure
increased Na+ levels
decreased Na+ levels

25. Which of these beverages does not have a diuretic effect?
tea
coffee
alcohol
milk

26. Progesterone can bind to receptors for which hormone that, when released, activates water retention?
aldosterone
ADH
PTH
ANH

27. Renin is released in response to _____.
increased blood pressure
decreased blood pressure
ACE
Diuretics

28. Which step in vitamin D production does the kidney perform?
converts cholecalciferol into calcidiol
converts calcidiol into calcitriol
stores vitamin D
none of these

29. Which hormone does the kidney produce that stimulates red blood cell production?
thrombopoeitin
vitamin D
EPO
Renin

30. If there were no aquaporin channels in the collecting duct, _____.
you would develop systemic edema
you would retain excess Na+
you would lose vitamins and electrolytes
you would suffer severe dehydration