Test 1, PHYSIOLOGY 1

1./ When solutes are in motion to fill all of the available volume is called:
A. filtration
B. diffusion
C. osmosis
D. electrical conduction
___ E. regulation

2./ pH
A. indicates the negative concentration of logarithm
B. indicates positive logarithm
C. indicates the negative logarithm of hydrogen ion concentration
D. indicates the logarithm of hydroxyl ion concentration
___ E. none of the above

3./ 40 percent of body weight
A. bones
B. extracellular fluid compartment
C. blood plasma
D. intracellular fluid compartment
___ E. water content of newborns

4./ Filtration and osmosis
A. are accompanied with motion of solutes in a solution
B. occur through a semipermeable membrane
C. expansion to fill all of the available volume
D. are only pathological processes
___ E. occur within one compartments

5./ Which of the following is true?
A. Interstitial compartment is part of the intracellular compartment
B. EC and IC compartments make up the total body fluid compartment
C. Blood plasma is approx..15 percent of body weight
D. Interstitial compartment is located within the blood vessels
___ E. Cytoplasmic water is part of the extracellular compartment.

6./ In error, a patient is infused with large volumes of a solution that causes lysis of his red blood cells. The solution was most likely
A. isotonic NaCl
B. isotonic mannitol
C. hypertonic NaCl
D. hypotonic NaCl
___ E. hypertonic urea

7./ Assuming complete dissociation of all solutes, which of the following solutions would be hyperosmotic to 1 mM NaCl?
A. 1 mM $CaCl_2$
B. 1.5 mM glucose
C. 1 mM glucose
D. 1 mM fructose
___ E. 1 mM KCl

8./ Buffers
A. are strong acids
B. are isosmotic solutions
C. are formed exclusively in the blood
D. are colored solutions
___ E. prevent changes in pH whe H^+ ions are added to or removed from the solution

9./ Increase of interstitial osmotic concentration results in
A. increased blood volume
B. decreased Na+ concentration
C. increased intracellular volume
D. edema
___ E. non of the above

10./ When exsiccosis (dehydration) occurs,
A. the EC volume is decreasing.
B. the EC volume is increasing.
C. concentration of ions is decreasing in the EC
D. edema develops.
___ E. intracellular volume increases.

11./ Which of the following characteristics is shared by simple and facilitated diffusion of glucose
A. requires Na^+ gradient
B. is saturable
C. requires metabolic energy
D. is inhibited by the presence of galactose
___ **E. occurs down on electrochemical gradient**

12./ Buffers
A. are strong bases
B. are isosmotic solutions
C. prevent changes in pH when H^+ ions are added to or removed from the solution
D. are organic solutions
___ E. are mixtures of metal ions

13./ The permeability of a solute in a lipid bilayer will be increased by an increase in the
A. molecular radius of the solute
B. thickness of the bilayer
C. lipophilicity of the solute
D. hydrophilicity of the solute
___ E. concentration difference of the solute across the bilayer

14./ Acidosis
A. increase in blood pCO_2 level
B. increase in hydroxyl ion concentration
C. decrease in hydrogen ion concentration
D. increase in bicarbonate ion concentration in the blood
___ E. decrease in blood pCO_2 level

15./ Body temperature in humans
A. is independent from the environmental temperature
B. lower in newborns
C. higher in the elderly
D. is stable only in pathological conditions
___ **E. is continuously increasing because of overheating**

16 Comparative physiology
A. describes lineage...
B. Deals with physical properties of varius leaving organisms
C D E

17./ A women runs marathon in 28°C weather and replaces all volume lost in sweat by drinking distilled water. After the marathon she will have

A. decreased total body weight
B. decreased hematocrit
C. decreased intracellular fluid(ICF)
D. decreased plasma osmolarity
___ E. increased intracellular osmolarity

18) In error a patient is infused with large volumes of a solution that causes shrinking of his red blood cells. The solution is most likely:

A. Hypotonic Urea
B. Isotonic Mannitol
C. Hypertonic Saline
D. Hypotonic NaCI
E. Isotonic NaCI

19) Etiology of a disease could be:

A. Abdominal
B. Pulmonological
C. Confidential
D. Acquired
E. Impaired

20) Findings:

A. Reflect the subjective experience of the patient
B. Might be determined by instruments
C. Can be detected in the course of physical examination
D. Are obvious reasons of death
E. None of the above

21) Water intake from the food is more or less similar amount to that of:

A. Water intake by cellular metabolism
B. Water intake by drinking
C. Water loss by expiration
D. Water in feces
E. None of the above

22) Typical Sign of hyperkalemia on ECG

A. Narrow QRS
B. Low ST and low T
C. Prominent U
D. ST Elevation
E. ST depression and peaked T

23) 5% of our body weigh is

A. inorganic ions
B. extracellular fluid compartement
C. blood plasma
D. itracellular fluid compartement
E.water content of newborns

24) Which of the followin statement is true;

A. interstitial fluid is located within the blood vessels
B. interstitial comp. Is part of the intracellular comp.
C. blood plasma is the apex 15% of our body weigt
D.increasing fat content is parallel with deacrising water content
E. cytoplasmatic water is part of the extracellular comp.

25) After use pipets ups should remove

A. by hand
B.built up tip remover

C. both above
D. using clean cloth
E. cutting

26) Presaured interstinal osmotic concentration is parallel with
A. increased blood volume
B. increased blood Na+ concetration
C. decreas intacellular volume
D.dehydration
E. non of above

27) equation incorrect
A. Intracellular comp. + plasma= EC
B.Extra comp + plasma = Itr comp.
C. inter comp < plasma
D. extra comp. - plasma = intr comp
E. EC<IC

28)Cells of unicellular organisms
A. are in indirect contact with extern environment
B. exchange material with the exter envi.
C. independent from each other
D. dependent on the extern environment
E. might have cellular organisms

29) Microskopy immersion oil is used :
to generate more detailed picture

Select the single incorrect ansver (126-170).

10) Normal intracellular sodium ion concentration
A. Is lower than extracellular sodium ion concentration
B. Is about 10times higher than extracellular potassium ions...
C. Is 15mmol/L
D. Is about one tenth of intracellular potassium ion concentration
E. Is loer thwan extracellular chloride ion concentration

126./ Parts of regulatory circuits
A. set point
B. control mechanisms
C. actual value
D. overcompensation
___ E. concentration units (return point)

127./ Intracellular cconcentrations of ions
A. 142 mM of Na^+ ion
B. 15 mM of Na^+ ion
C. 3 mM of Cl^- ion
D. 150 mM of K^+ ion
___ E. variable mM of Ca^{++}

128/ The cells of multicellular organisms
A. are in indirect contact with the external environment
B. are in indirect contact with the internal environment
C. are in direct contact with the internal environment
D. are functioning relatively independently from the external environment
____E. are mainly depending on the internal environment

129./ The major elements of homeostasis are
A. isosmosis

B. isothermia
C. isohydria
D. isomeria
____E. isovolemia

130./ Physiological concentrations of plasma ingredients
A. 142 mM of Na^+ ion
B. 102 mM of Na^+ ion
C. 105 mM of Cl^- ion
D. 4.4 mM of K^+ ion
___ E. 2.2 mM of Ca^{++}

131./
A. The pH of IC compartment is 6.8.
B. The pH of blood is 7.35-7.45.
C. The pH of EC compartment is 7.35-7.45.
D. Acidic metabolic products decrease the pH of IC compartment
___ E. The pH of cytoplasm is above 7.45.

132./ Buffers of the blood
A. carbonic acid/bicarbonate
B. TRIS/HCl
C. protein/protein anion
D. dihydrogen phosphate/hydrogen phosphate
___ E. aium ion/ammonia

133/ When body temperature rises above 42 °C,
A. many of the proteins of human body are precipitated.
B. the speed of enzyme reactions will be decreased
C. thermoregulation is set to heat loss
D. hyperventilation is occurring
___ E. it is a life threatening situation.

134./ Typical membrane molecules
A. receptors
B. ion channels
C. surface markers
D. nucleic acids
___ E. phospholipids

135./ Active transport could be
A. symport
B. antiport
C. filtration
D. electroneutral
___ E. electrogenic

136./ Erythropoiesis takes place in
A. fetal spleen.
B. fetal kidney.
C. fetal liver.
D. fetal bone mar8row
___ E. yolk sac

137) Typical analytical error
A. Mislabeling
B. Instrumental error
C. Human Error

D. Incorrectly prepared solutions
E. Dilution and pipetting errors

138) What are the signs of depleted body water?
A. Confusion
B. Dryness of mucous membranes
C. Weight loss
D. Decreased saliva secretion
E. Decreased Urine Volume

Establish the appropriate association

A. Adverse consequence of severe acidemia
B. Adverse consequence of sever alkalemia
C. Both of the Them
D. None of them

16) Hyperventilation A
17) Hypokalemia B
18) Cerebral signs and symptoms C
19) Reduction of threshold in ventricular fibrillation A
20) Cirrhosis D

A – mmol/L
B – mOsmol/L
C – both
D – none

--A-- 176. concentration unit for one solute
--D-- 177. gram-molecular weight /liter
--D-- 178. units of volume
--B-- 179. concentration unit for a mixture of solutes
--B-- 180. the concentration of all osmotically active particles

A – pH
B – pOH
C – both
D – none

--C-- 181. negative logarithm of ion concentration
--D-- 182. chemical formula
--D-- 183. partial concentration
--A-- 184. negative logarithm of hydrogen ion concentration
--B-- 185. negative logarithm of hydroxyl ion concentration

A – buffer
B – aqueous solution
C – both
D – none
--C-- 186. consists of solvent and solute(s)
--D-- 187. mixture of O_2 and N_2
--A-- 188. regulates hydrogen-ion concentration
--A-- 189. H_2CO_3/HCO_3^-
--B-- 190. 0.5 M Hcl

A – active transport
B – facilitated diffusion

C – both
D – none
--C-- 191 . transmembrane process
--B-- 192. occurs down on chemical potential
--A-- 193. occurs up on chemical potential
--C-- 194. requires carrier molecule
--D-- 195. no carrier protein is required

A – behavioral adaptation
B – physiological thermoregulation
C – both
D – none

--B-- 196. thermoreceptors
--B-- 197. increased basic metabolism
--D-- 198. decreased glucose oxidation
--C-- 199. typical to humans
--B-- 200. hyperventillation