



**Physiology
final-past
papers**

**THIS FINAL EXAM INCLUDES α BODY FLUIDS +
CARDIAC MUSCLE + CONDUCTION SYSTEM
+MICROCIRCULATION and EDEMA materials:**

1-A decrease in which one of the following would tend to increase lymph flow:

- A-Hydraulic conductivity of the capillary wall
- B-Capillary hydrostatic pressure
- C-Albumin concentration of the interstitium
- D-Interstitial colloid osmotic pressure
- E-plasma colloid osmotic pressure

2-If the ventricular Purkinje fibers become the pacemaker of the heart, what is the expected heart rate?

- A-30/min
- B-65/min
- C-75/min
- D-50/min
- E-85/min

3-At phase (2) of an action potential in a ventricular muscle cell which of the following is true?

- A-The chemical gradient for Ca^{++} tends to move this ion inside
- B-The electrochemical gradient for K^+ tends to move this ion inside
- C- Na^+ permeability greatly increases
- D-This phase is responsible for the short refractory period of cardiac action potential

E-The chemical gradient for K^+ tends to move this ion inside

4-In the back the two-points discrimination is larger than on the finger tips because?

A-The excitability of the receptors from back is greater

B-The cortical space specified for sensory reception from the back is smaller

C-The receptive field in the back is smaller

D-The density of receptors in the back is greater

E-The discharge rate from the afferents from the back is greater

5-Which of the following structures will have the slowest rate of conduction of the cardiac action potential?

A-Atrial muscle

B-Ventricular muscle

C-Purkinje fibers

D-Atrioventricular node

E-Sinoatrial node

6-Intracellular calcium homeostasis in cardiac muscle cell is characterized by:

A- Na^+/Ca^{++} exchanger is found in cardiac as well as in skeletal muscle

B-Mitochondrial Na^+/Ca^{++} exchanger works in pathological states

C- Na^+/Ca^{++} exchanger exchanges one sodium for one calcium ions

D- Ca^{++} pump in the cardiac muscle sarcolemma is low affinity but high capacity pump

E- Ca^{++} pump of the sarcoplasmic reticulum is not found in the cardiac muscle cells

7-Slow response action potential (pacemaker potential) is characterized by?

- A-During phase 4 the transmembrane potential is closer to Ca^{++} equilibrium potential rather than to Na^{+} equilibrium potential
- B-It has longer plateau phase than fast response potential of ventricular cells
- C- dV/dT (change in voltage per unit change in time)of phase 0 is much slower than ventricular cell potential phase 0
- D- Ca^{++} ions is responsible for phase 2
- E- It has more negative resting membrane potential than ventricular cell potential

8-With regard to measurements of body fluids, which of the followings is TRUE:

- A-Inulin can be used to measure blood volume
- B- $^{22}\text{Na}^{+}$ radioisotope is used to measure total body fluids
- C- $^{40}\text{K}^{+}$ radioisotope is used to measuring intracellular fluid volume
- D- ^{125}I -albumin is used to measure intravascular fluids
- E- ^{51}Cr -labeled RBCs can be used for measuring extracellular fluid volume

9-Which of the following is NOT caused by Sympathetic stimulation:

- A-Increase in the heart rate
- B-Decrease of the permeability of the sinoatrial node to K^{+}
- C-Positive inotropic effect
- D-Decrease of the slope of the slow depolarization phase pf the pacemaker potential
- E-Increase of the conduction of the atrioventricular phase

10-Parasympathetic stimulation of the heart leads to:

A-Negative chronotropic but almost no inotropic action

B-Negative chronotropic and negative inotropic effect

C-Negative chronotropic and positive inotropic effect

D-Positive chronotropic but negative inotropic effect

E-Positive chronotropic and positive inotropic effect

11-Which type of neuronal pool circuits is important well localized sharp sensation:

A-Convergence of neurons

B-Reverberatory circuits

C-Divergence of neurons

D-Lateral inhibitory circuits

E-Parallel circuits

12-Which of the following changes favor(s) the movement of surrounding interstitial fluid into the capillary lumen (i.e., fluid reabsorption into the capillary):

A-An increase in the colloid osmotic pressure of the interstitial fluid surrounding the capillary

B-An increase in the hydrostatic blood pressure in the capillary

C-An increase in the colloid osmotic (oncotic) pressure of plasma

D-An decrease in the hydrostatic pressure of the interstitial fluid surrounding the capillary

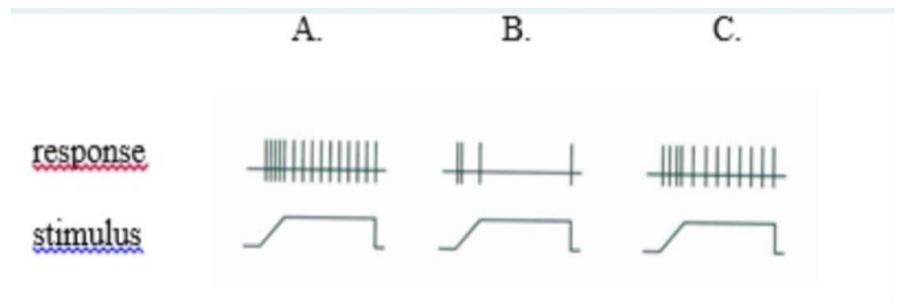
E-An increase in the capillary permeability

13-The sinoatrial (SA) node and atrioventricular (AV) are autorhythmic because:

- A-Their cells are rounded instead of rectangular
- B-Their cells are more permeable to Na^+ at rest
- C-Their cells have a lot of voltage-gated slow Ca^{++} channels
- D-Their cells are non-contractile
- E-Their cells are leaky to anions

14-Which figure below represents the response of the most rapidly adapting receptor to the stimulus?

- A-Figure C
- B-Figure A
- C-Figure B



15-Which of the following is NOT a mechanism used to prolong signal transmission ?

- A-Synaptic after discharge
- B-Parallel circuits
- C-Reverberatory circuits
- D-Convergence from different sources with both excitatory and inhibitory signals

16-A drug that increases the permeability of cardiac cells to Na^+ and Ca^{++} but decreases its permeability to K^+ and Cl^- would cause:

- A-Negative chronotropic and negative inotropic effect on the heart
- B-No effect since the effect of Ca^{++} and Na^+ would be counterbalanced by the effect of Cl^- and K^+
- C-Positive chronotropic and negative inotropic effect on the heart

D-Positive inotropic and Positive chronotropic effect on the heart

E-Positive inotropic and negative chronotropic effect on the heart

17-All the followings can lead to hypernatremia with dehydration of cells EXCEPT:

A-Hypotonic sweating

B-Deficiency of aldosterone secretion

C-Deficiency of ADH secretion

D-Excessive intake of salts

E-Excessive administration of hypertonic solution

18-Listed below are the hydrostatic and oncotic pressure across a muscle capillary wall.

Mean capillary hydrostatic pressure=30 mmHg

Plasma colloid osmotic pressure= 25 mmHg

Interstitial colloid osmotic pressure=10 mmHg

Interstitial hydrostatic pressure=5 mmHg

What is the net filtration pressure (in mmHg) for fluid movement across the capillary wall?

A-25 mmHg

B-0 mmHg

C-5 mmHg

D-15 mmHg

E-10 mmHg

19-Edema at interstitial fluids can be generated by all the followings EXCEPT:

- A-Increased oncotic pressure in interstitial fluids
- B-Increased albumin concentration in plasma
- C-Increased hydrostatic pressure in capillaries
- D-Decreased lymph flow from interstitial fluids
- E-Increased capillary permeability

20-The cardiac tissue with the slowed auto-rhythmicity is the:

- A-Atrioventricular bundle cells
- B-Sino-atrial node
- C-Purkinje fibers
- D-Bundle branches cell
- E-Atrioventricular node

21-Which of the following is caused by acetylcholine?

- A-Decreased permeability of the S-A node to potassium ions
- B-Depolarization of the A-V node
- C-Increased permeability of the cardiac muscle to calcium ions
- D-Increased heart rate
- E-Hyperpolarization of the S-A node

22-Na⁺ homeostasis is important for controlling all the followings EXCEPT:

- A-Blood volume
- B-Water homeostasis

C-Oncotic pressure

D-Extracellular fluid volume

E-Osmolality

23-In normal person, plasma is forming about _____ of the total blood volume:

A-55%

B-95%

C-90%

D-10%

E-40%

24-High shift of fluids from intracellular to extracellular compartment can take place by:

A-High release of ADH

B-Intravenous infusion of normal saline

C-Consumption of potable(normal) water

D-Intravenous infusion of hypotonic solution

E-High release of aldosterone

1-E	2-A	3-A	4-B	5-D
6-B	7-C	8-D	9-D	10-A
11-D	12-C	13-B	14-C	15-D
16-D	17-B	18-E	19-B	20-C
21-E	22-C	23-A	24-E	

هذه الأسابيع التي ستقضيها مُنْعَزِلًا بِعَرَفَتِكَ، تَارِكًا أَقْرَابَكَ، وَهَاجِرًا لِأَحِبَّائِكَ سَاعِيًا وَرَاءَ

حِلْمِكَ تَأْكُدُ بِأَنَّهَا لَنْ تَضِيعَ سُدَى بَلْ أَنهَا سَتَبْنِي مُسْتَقْبَلَكَ ♥