physiology testbank

2021–2022

WISH YOU ALL THE BEST

Ebaa AL-ZUBI

ANS

1- Which spinal cord level contains the entire population of preganglionic sympathetic neurons?

A) C5-T1

B) C3-C5

C) S2-S4

D) T1-L2

E) T6-L1

2- Preganglionic sympathetic axons pass through which of the following structures?

A) Dorsal root

B) Dorsal primary rami

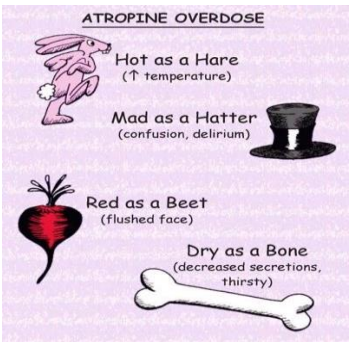
C) White rami

D) Gray rami

E) Ventral primary rami

3- Which of the following reactions can be developed by giving atropine to a Healthy person :

A. Increased heart rate (tachycardia)
B. Increased intestinal movements.
C. High sweating
D. Miosis (constriction of pupil)

1	2	3
D	**C**	**A** 

4- Which type of cholinergic receptor is found at synapses between preganglionic and postganglionic neurons of the sympathetic system?

A) Muscarinic

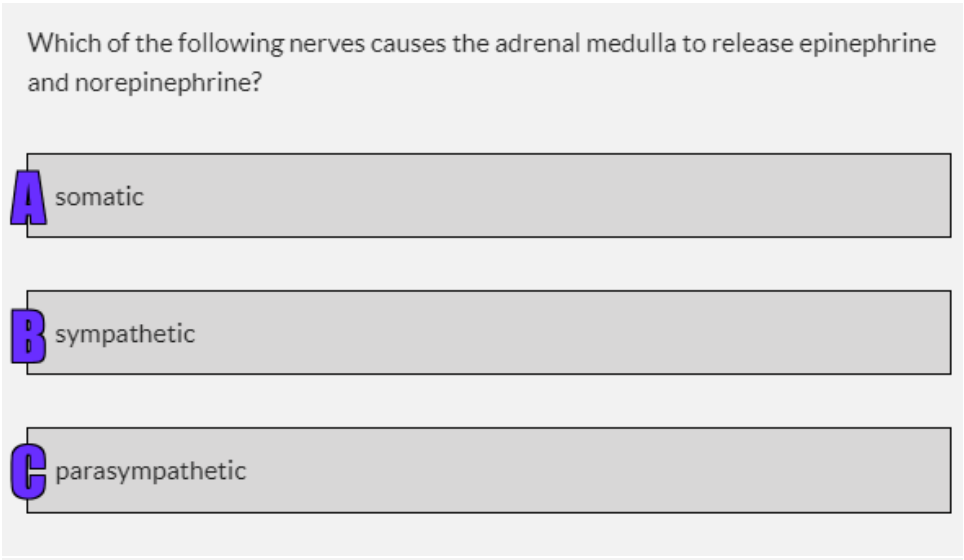
B) Nicotinic

C) Alpha

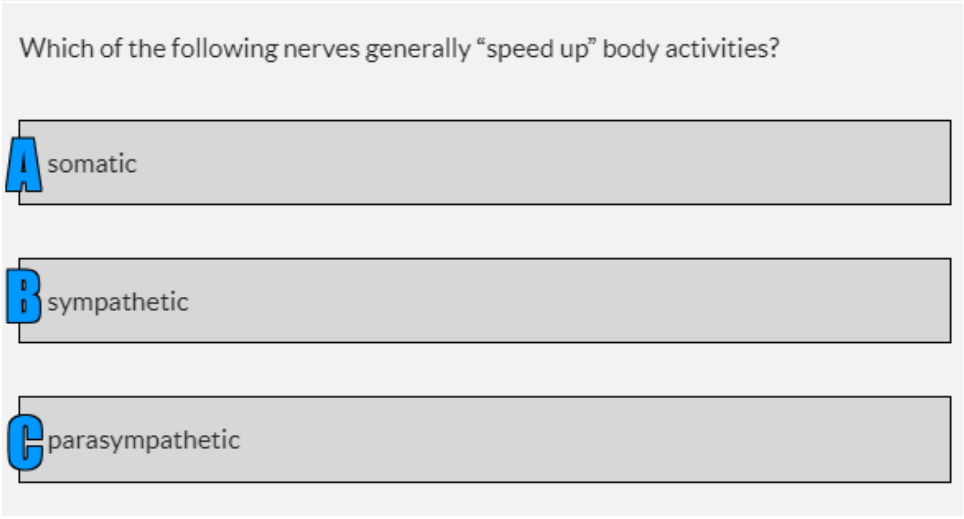
D) Beta-1

E) Beta-2

5-



6-



4	5	6
B	B	B

7- Cells of the adrenal medulla receive synaptic input from which type of neuron?

A) Preganglionic sympathetic

B) Postganglionic sympathetic

C) Preganglionic parasympathetic

D) Postsynaptic parasympathetic

E) Presynaptic parasympathetic

8- All the followings with regard to beta adrenergic receptors are true EXCEPT:

A) They are present in the heart

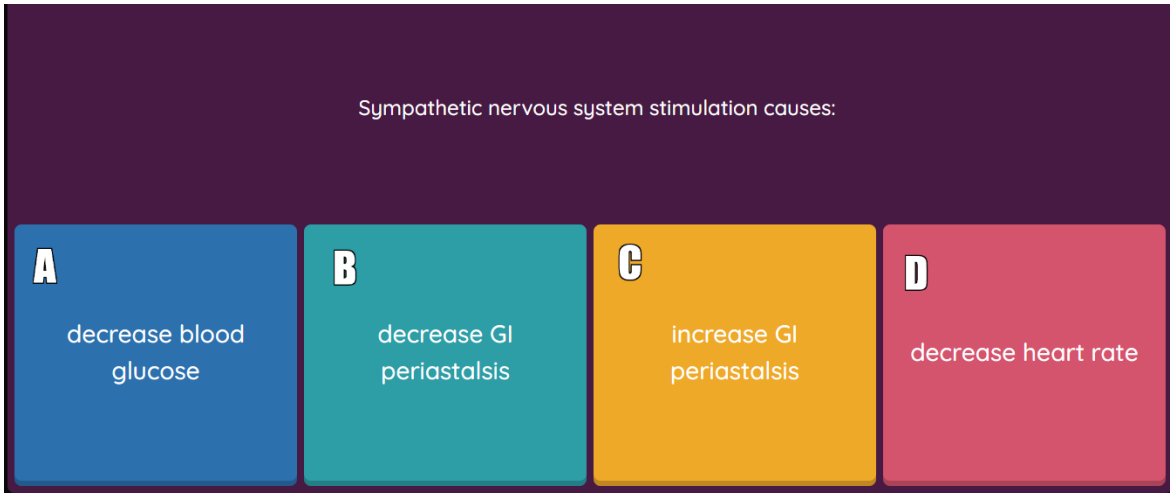
B) They are blocked by atropine

C) Their stimulation increases heart rate

D) Their stimulation increases the air flow to the lung

E) They are stimulated by a neurotransmitter released by sympathetic nervous system

9-



10- Which adrenergic receptor produces its stimulatory effects by the formation of inositol 1,4,5-triphosphate (IP3) and an increase in intracellular [Ca2+]?

(A) α1 Receptors

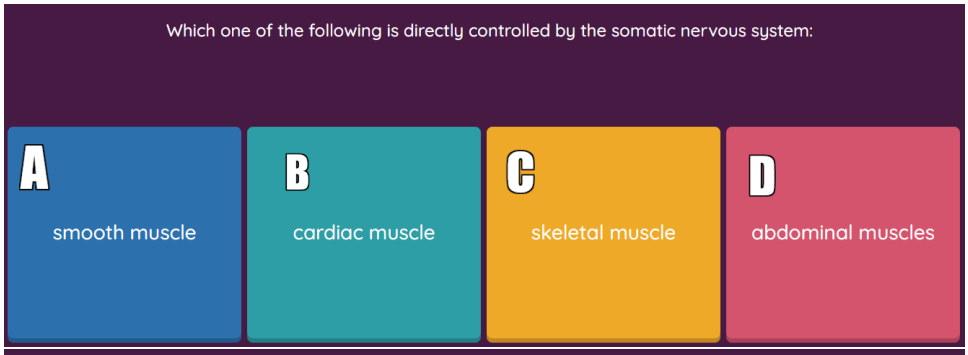
(B) α2 Receptors

(C) β1 Receptors

(D) β2 Receptors

7	8	9	10
A	B	B	A

11-



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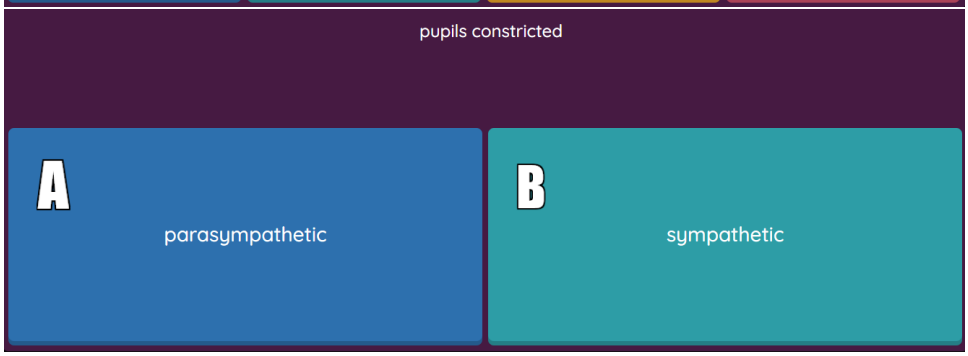


13- Regarding the autonomic nervous system, which o the following pairs are NOT related to each other :

a. Acetylcholine and Stimulation of muscarinic receptors

b. Sympathetic division and Release of norepinephrine

c. Atropine and Blocking o nicotinic receptors.

d. Medication with beta adrenergic blockers and Decreasing heart rate.

e. Sweating and Sympathetic stimulation

14- The excitatory or inhibitory effect of a postganglionic sympathetic fiber is determined by which feature or structure?

A) Function of the postsynaptic receptor to which it binds

B) Specific organ innervated

C) Ganglion where the postganglionic fiber originates

D) Ganglion containing the preganglionic fiber

E) Emotional state of the individual

11	12	13	14
C	A	C	A

15- Which substance activates adrenergic alpha and beta receptors equally well?

A) Acetylcholine

B) Norepinephrine

C) Epinephrine

D) Serotonin

E) Dopamine

16- Nasal, lacrimal, salivary, and gastrointestinal glands are stimulated by which substance?

A) Acetylcholine

B) Norepinephrine

C) Epinephrine

D) Serotonin

E) Dopamine

17- The function of which organ or system is dominated by the sympathetic nervous system?

A) Systemic blood vessels

B) Heart

C) Gastrointestinal gland secretion

D) Salivary glands

E) Gastrointestinal motility

18- What determines whether a cell is a target cell for a particular signal molecule?

A) phosphorylation cascade

B) cAMP

C) signal receptors

D) phosphatase

15	16	17	18
C	A	A	C

Body Fluids

1-

Which of the following will increase blood flow through an artery?

A Increased resistance along the artery

B Decrease in diameter of the artery

C Increased pressure at the end of the artery

D Increased pressure at the beginning of the artery

E Increased length of the artery

2- **After giving a person healthy intravenous saline solution (isotonic NaCl), the properties of extracellular fluid will be ?**

a. Hypertonic and hypervolemic

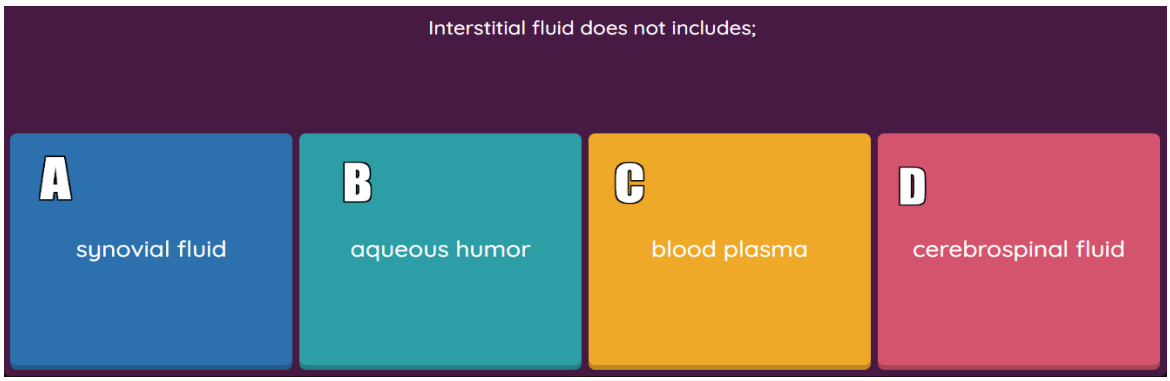
b. Isotonic and normovolemic

c. Isotonic and hypervolemic

d. Hypotonic and hypervolemic

e. Hypotonic and normovolemic

3-



1	2	3
D	C	C

4- Which of the following pairs are NOT having similar effects on Na+ level of body fluids:

a. Increased ADH secretion and drinking of high amounts of portable (normal) water.

b. High release of aldosterone and ingestion of high amounts of salts

c. Hypoaldosteronism (decreased aldosterone secretion) and deficiency of ADH

d. Loss of hypotonic fluids from the body and activation of reninangiotensinaldosterone system

e. High release of ANP (atrial natriuretic peptide) and intravenous infusion of hypotonic solution

5- Na+ homeostasis is important for controlling al of the followings EXCEPT:

A.BLOOD VOLUME

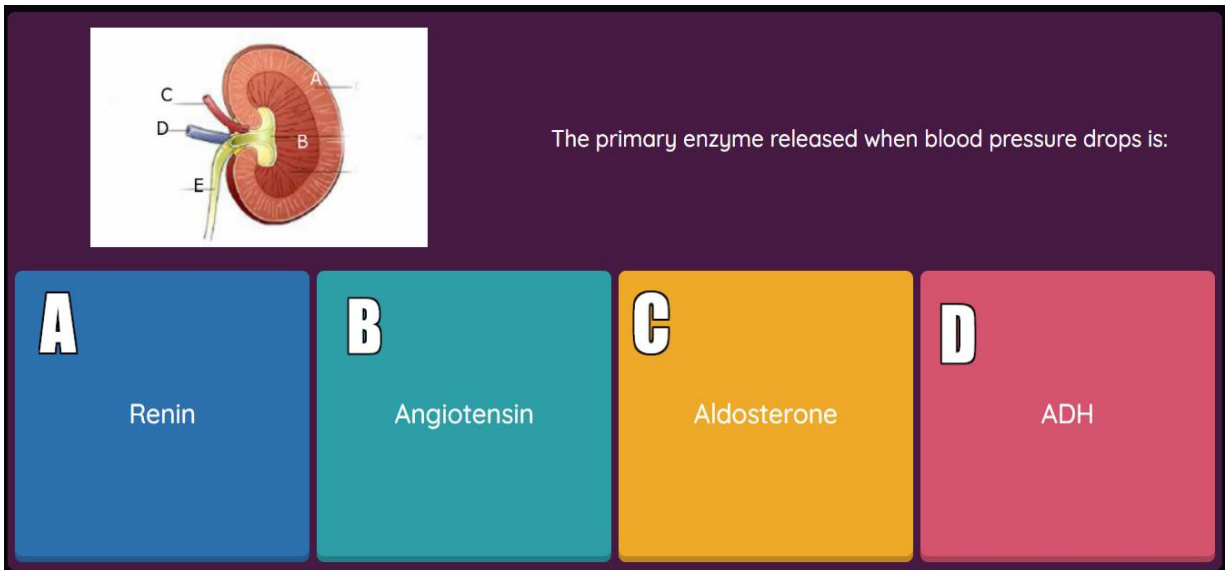
B.WATER HOMEOSTASIS

C.ONCOTIC PRESSURE

D. EXTRACELLULAR FLID VOLUME

E.OSMOLALITY

6-



4	5	6
C	C	A

7- In normal person plasma is forming about…….of the total blood volume:

A.55%

B.95%

C.90%

D.10%

E.40%

8- Which of the following substances or combinations of substances could be used to measure interstitial fluid volume?

(A) Mannitol

(B) D2O alone

(C) Evans blue

(D) Inulin and D2O

(E) Inulin and radioactive albumin

9-

Renin is released by the juxtaglomerular cells. The end result of its release helps to control which of following ion levels in the blood?

A Calcium

B Magnesium

C Chloride

D Hydrogen

E Sodium

7	8	9
A	E	E

10- Which of the following conditions results in increasing volume and decreasing osmolarity of extracellular body fluids?

a. High release of ANP (atrial natriuretic peptide)

b. High use of diuretics

c. High release of ADH

d. Activation of renin-angiotensin-aldosterone system

e. Drinking of salty water

11- Which of the following is NOT true with regard to body fluids ?

a. Higher Na+ concentration in extracellular than in intracellular fluid

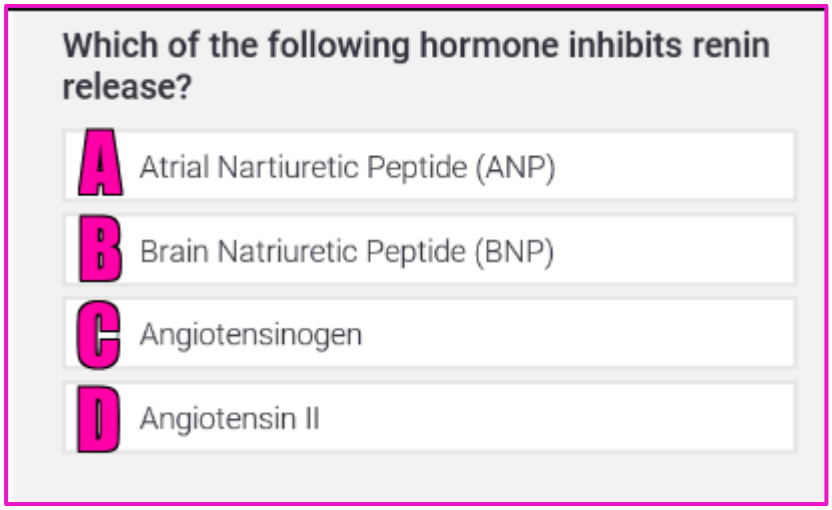
b. Higher oncotic pressure is in interstitial fluids than inside vessels.

c. Both extracellular and intracellular fluids are having isotonic environment

d. Higher protein content inside cells that in plasma

e. Almost the same concentration of Na+ is found in plasma and interstitial fluids

12-



10	11	12
C	B	A

13- Edema at interstitial fluids can be generated by all the following EXCEPT :

a. Increased hydrostatic pressure in capillaries.

b. Decreased lymph flow from interstitial fluids.

c. Decreased albumin concentration in plasma.

d. Increased wash down of protein from interstitial fluid

e. Increased venous pressure.

14- Use the following to answer the question below:

1. Diabetes insipidus (deficiency of ADH)

2. Increased antidiuretic hormone (ADH) secretion.

3. Intravenous infusion of hypotonic solution

4. Drinking of high amounts of potable (normal) water

5. Increased release of aldosterone

Which conditions are having highest potential to cause hypernatremia in extracellular fluids with dehydration of cells?

a. 2 and 3

b. 1 and 5

c. 2 and 5

d. 1 and 4

e. 3 and 5

15- What part of the brain is responsible as the control center for the thirst mechanism?

A. thalamus
B. hypothalamus
C. pituitary gland
D. renal cortex

13	14	15
D	B	B

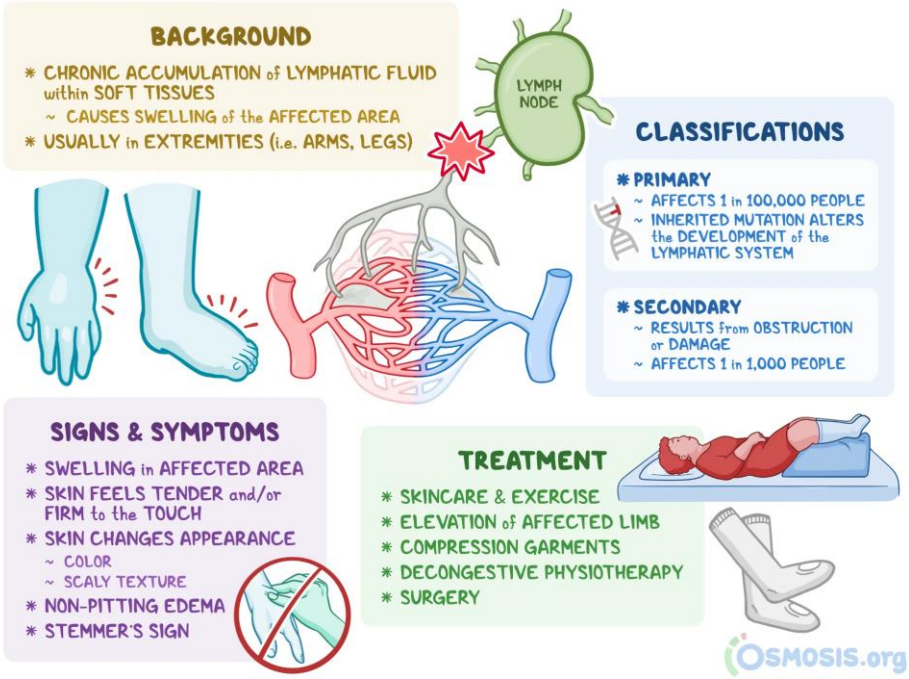
16- ALL ARE Properties of tracers used for calculation of volumes EXCEPT :

A. be nontoxic
B. be rapidly and evenly distribute throughout the nominated compartment not enter any other compartment.
C. be metabolized.
D. not be excreted during the equilibration period
E. easy to measure

17-

From which structure is ADH released in response to angiotensin 2?

A Anterior pituitary
B Hypothalamus
C Adrenal glands
D Posterior pituitary



16	17
C	D

18-

Which hormone is released from the adrenals following the binding of angiotensin II?

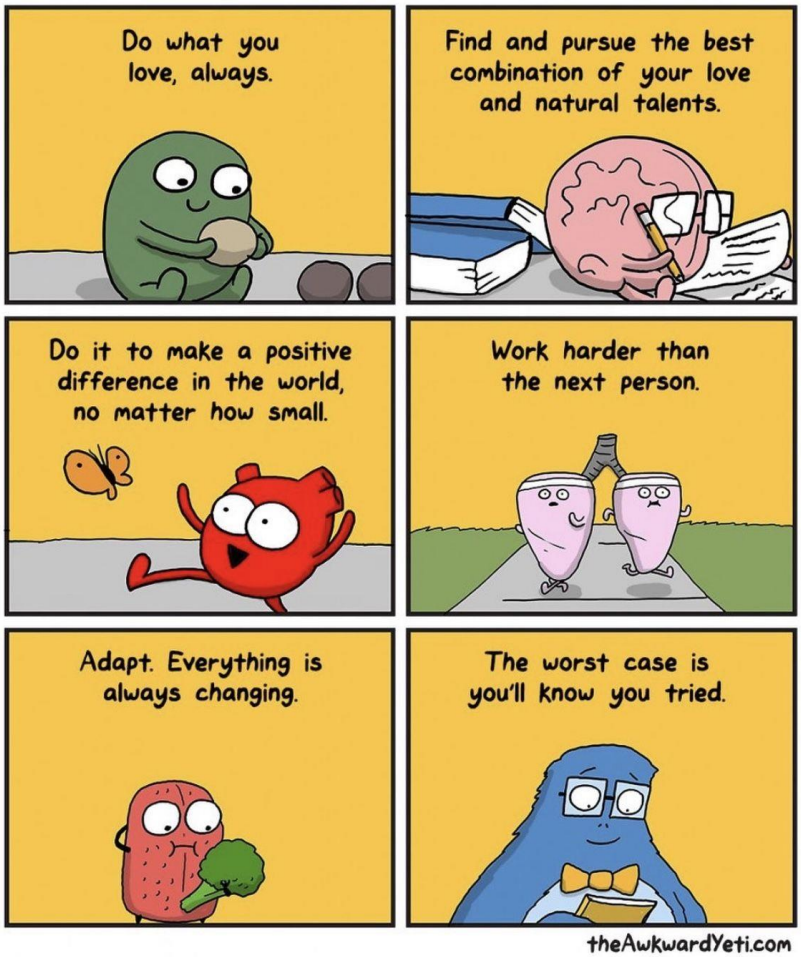
A Cortisol

B Aldosterone

C ADH

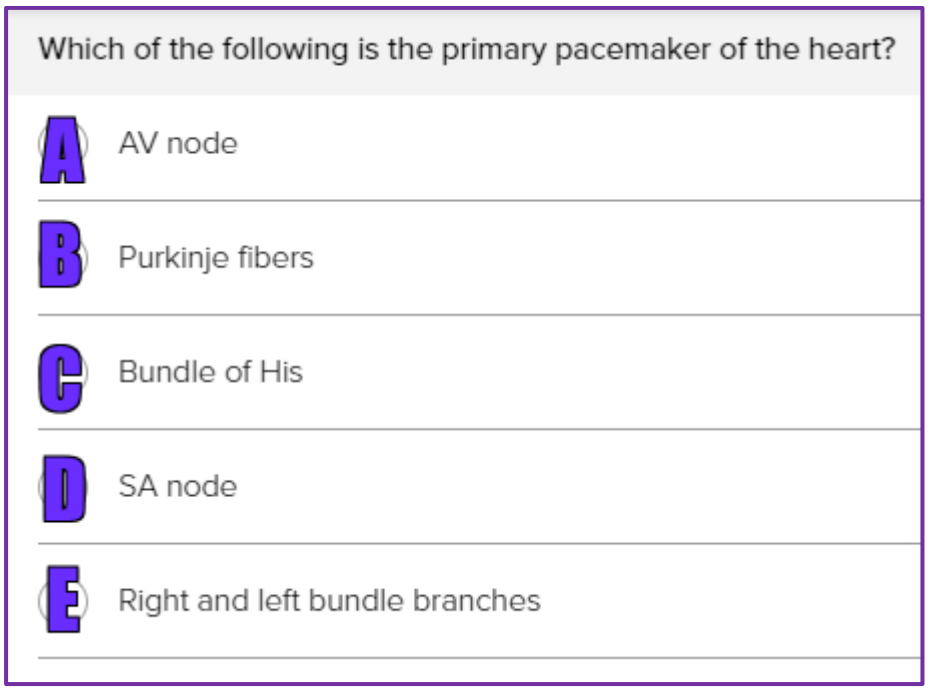
D ACTH

18
B



Conduction System of the Heart

1-



2- Listed below are the hydrostatic and oncotic pressures across a muscle capillary wall:

Mean capillary hydrostatic pressure = 25 mmHg.

Plasma colloid osmotic pressure = 28 mmHg.

Interstitial colloid osmotic pressure = 5 mmHg.

Interstitial hydrostatic pressure = 5 mmHg.

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

a. Cannot be calculated.

b. 7 mmHg toward reabsorption

c. 7 mmHg toward filtration

d. 3 mmHg toward filtration

e. 3 mmHg toward reabsorption

1	2
D	C X it is E

3- The net loss of fluid from capillaries to the interstitial fluid in the legs is decreased by:

a. Decrease plasma albumin.

b. Lymphatic obstruction and increased interstitial hydrostatic pressure.

c. Arteriolar dilation to increase capillary pressure.

d. Change from the recumbent to the standing position

e. Leg exercise and capillary hydrostatic pressure

4- Which of the following pairs are NOT related to each other ?

a. Negative pressure ranges in interstitial fluids and Low tissue compliance

b. Increased capillary permeability and Generation of edema.

c. Increased colloid pressure in capillaries and Development of edema.

d. Increased lymph drainage and Wash down of proteins in interstitial fluid.

e. Hydrostatic pressure in arterial end of capillaries and Filtration

Which of the following would most likely cause an increase in oncotic pressure in systemic capillaries?

A An increase in plasma protein concentration

B A decrease in plasma protein concentration

C A decreased glomerular filtration coefficient

D Efferent arteriolar dilation

5-

3	4	5
B	C	A

Given the following pressure values, what is the net filtration pressure? The hydrostatic pressure within the capillary = 37mmHg The hydrostatic pressure within the interstitial space = 2mmHg Oncotic pressure within the capillary = 25mmHg Oncotic pressure within the interstitial space = 1mmHg

A 17 mmHg

B 15 mmHg

C 21 mmHg

D 11 mmHg

E 12 mmHg

6-

In resting conditions, which of the following channels is most likely open in a cardiac myocyte?

A Sodium channels

B Chloride channels

C Calcium channels

D Potassium channels

7-

8- 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

6	7	8
D	D	A

In the equation for GFR, what does a negative Q indicate? NEGATIVE NET

A No movement of fluid is observed.

B Proteins are being filtered out of the capillary.

C Proteins are being pullled into the capillary.

D The fluid is being pulled into the capillary.

E The fluid is being pushed into Bowman's space.

9-

Which of the following adrenergic receptors does norepinephrine bind to in order to speed up the heart?

A β3 adrenergic receptors

B α1 adrenergic receptors

C β2 adrenergic receptors

D α2 adrenergic receptors

E β1 adrenergic receptors

10-

11- 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

9	10	11
D	E	D

12- 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

13- 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

14- 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

15- The SA node is the pacemaker of the heart because:

a. Leakier to K+ than other cells

b. It is the only cells leaky to Na+ in the heart.

c. Its membrane property (reach threshold faster than any other cell)

d. Its location in the right atrium between the venae cava

e. It is connected to autonomic nervous system.

12	13	14	15
B	D A	B	C

To which of the following muscarinic receptors on the SA node does acetylcholine bind to?

A M1 receptors

B M5 receptors

C M3 receptors

D M2 receptors

E M4 receptors

16-

17- In which phase of the ventricular muscle action potential is the potassium permeability the highest?

A) 0

B) 1

C) 2

D) 3

E) 4

Which of the following is the mechanism by which the sympathetic nervous system increases the heart rate?

A Lower or more negative shift in resting membrane potential

B Increasing the threshold potential to a less negative value

C Greater absolute amount of repolarization

D Increasing rate of phase 4 depolarization

18-

16	17	18
D	D	D

Which of the following is the depolarization phase of the action potential in pacemaker cells?

A Phase 1

B Phase 3

C Phase 0

D Phase 4

E Phase 2

19-

20- **Which condition at the A-V node will cause a decrease in heart rate?**

A) Increased sodium permeability

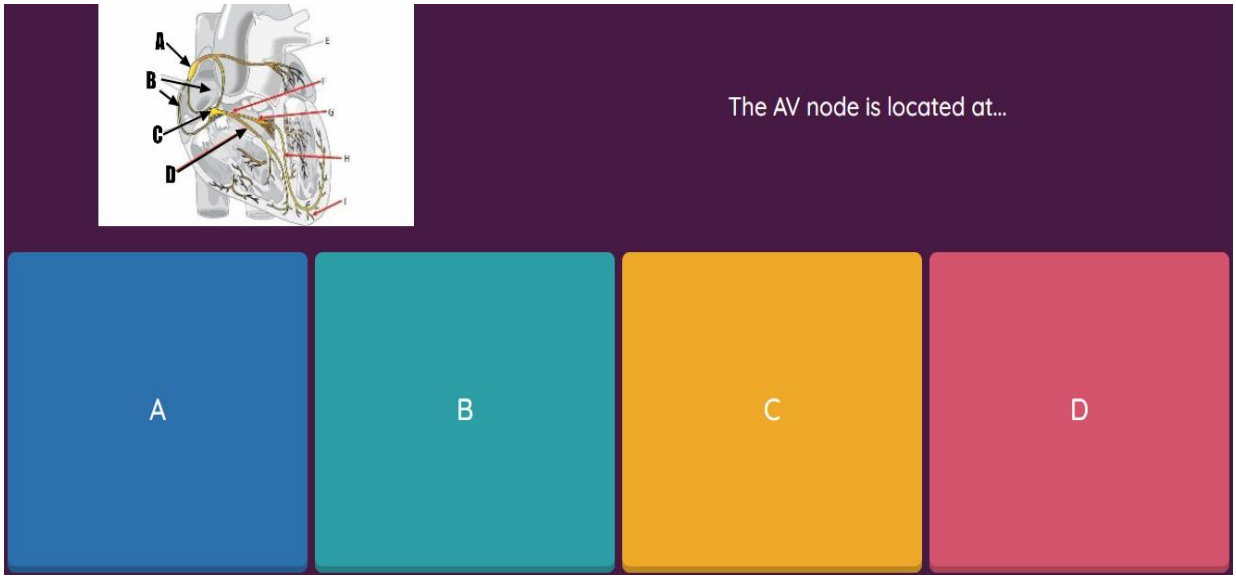
B) Decreased acetylcholine levels

C) Increased norepinephrine levels

D) Increased potassium permeability

E) Increased calcium permeability

21-



19	20	21
C	D	C

22- 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

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

A-Atrioventricular bundle cells

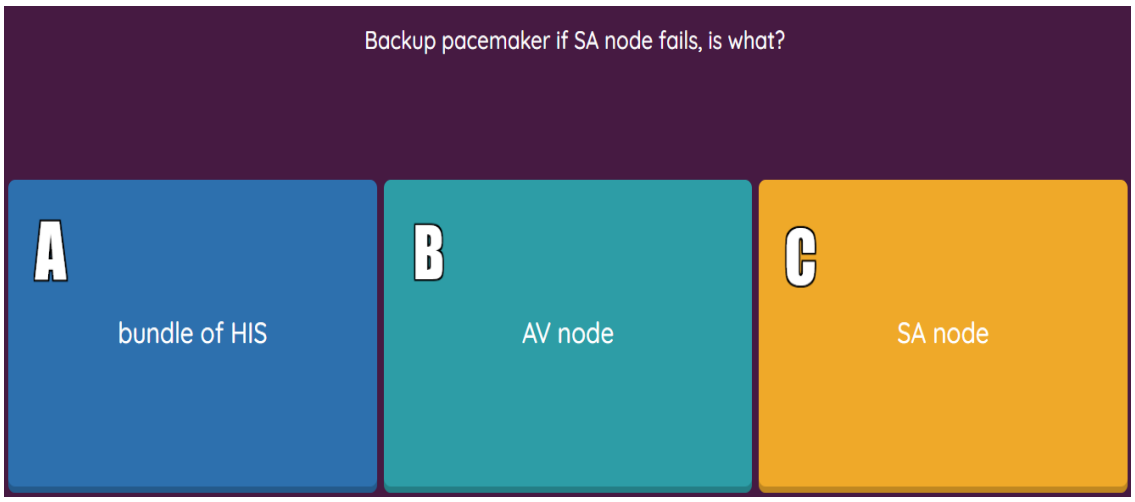
B-Sino-atrial node

C-Purkinje fibers

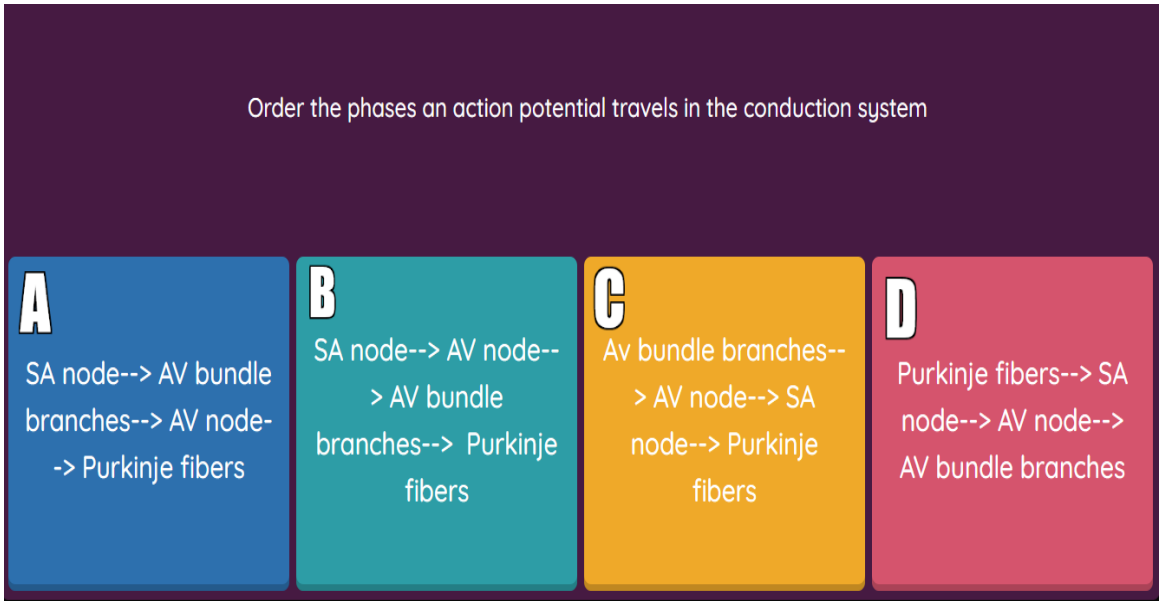
D-Bundle branches cell

E-Atrioventricular node

24-



22	23	24
D	C	B



25-

26- 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

27- About the absolute refractory (A.R.P) period in the heart, all the following is true EXCEPT:

a. It is longer than the A.R.P of neurons.

b. It lasts approximately as long as the cardiac contraction.

c. It is due mainly to phase 2 (plateau) of the contractile cardiac muscle action potential.

d. During it, the heart cannot be stimulated.

e. It corresponds in time with the whole duration of the action potential.

25	26	27
B	E	E

28- Sympathetic stimulation cause all of the following in the heart EXCEPT:

a. It has a positive inotropic action on the heart.

b. It decreases the conduction time in the atrioventricular (AV) node.

c. It decreases the permeability of sinoatrial (SA) node to K+

d. It decreases the slope of phase 4 of the slow response potential of the SA node.

e. It increases the heart rate

29- Myocardial contractility is best corrected with the intracellular concentration of :

a. HCO3-

b. Na+

c. Ca++

d. K+

e. Cl

30- The important function of cardiac Purkinje system is to :

a. Increase the conduction of impulses.

b. Has no function in conduction of the impulse.

c. Increase the force of ventricular contraction.

d. Amplify the cardiac impulses.

e. Slow the conduction of impulses.

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

A) During phase 4 the transmembrane potential is closer to Ca++ equilibrium

B) potential rather than to Na+ equilibrium potential

C) It has longer plateau phase than fast response potential of ventricular cells

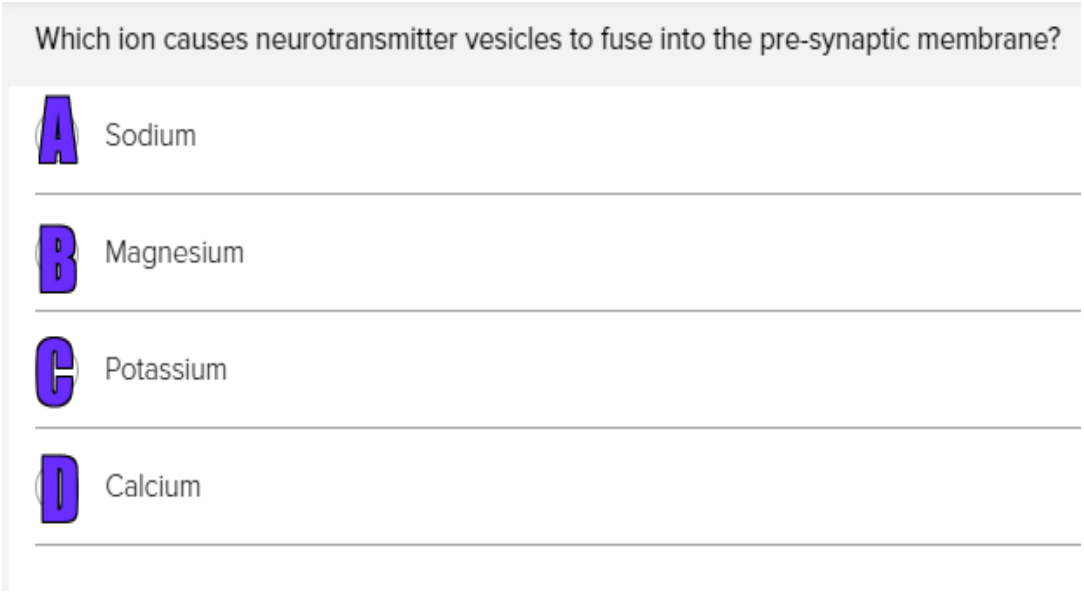
D) dV/dT (change in voltage per unit change in time)of phase 0 is much slower than ventricular cell potential phase 0

E) Ca++ ions is responsible for phase 2

F) It has more negative resting membrane potential than ventricular cell potential

28	29	30	31
D	C	A	X D

neurophysiology



1-

2- Pain receptors in the skin are typically classified as which of the following?

A) Encapsulated nerve endings

B) A single class of morphologically specialized receptors

C) The same type of receptor that detects position sense

D) Free nerve endings

3- Local anesthetic drugs like curare take effect by which of the following mechanisms:

A) Blocking nicotinic acetylcholine receptors at the synapse

B) Inhibiting the action of acetylcholinesterase in the synapse

C) Internal block of axonal voltagegated sodium channels

D) Blocking neurotransmitter uptake by axonal terminals

E) Inhibiting the propagation of the action potential through autonomic neurons

1	2	3
D	D	A

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

A) Convergence of neurons

B) Reverberatory circuits

C) Divergence of neurons

D) Lateral inhibitory circuits

E) Parallel circuits

5-

Which of the following would NOT be possible occurrences when signal build-up occurs?

A They can reach action potential as a result of EPSP.

B IPSP can hyperpolarize the membrane.

C They can reach action potential as a result of IPSP.

D An action potential will reach if a number of EPSP > IPSP.

6- In the back the two-points discrimination is larger than on the fingertips because?

A) The excitability of the receptors from back is greater

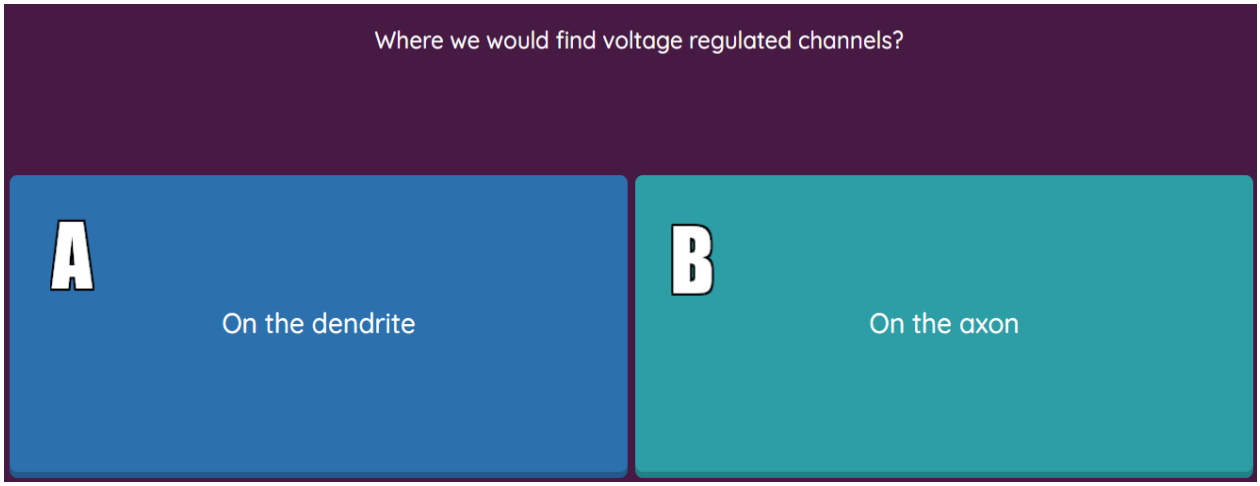
B) The cortical space specified for sensory reception from the back is smaller

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

4	5	6
D	C	B

7- 

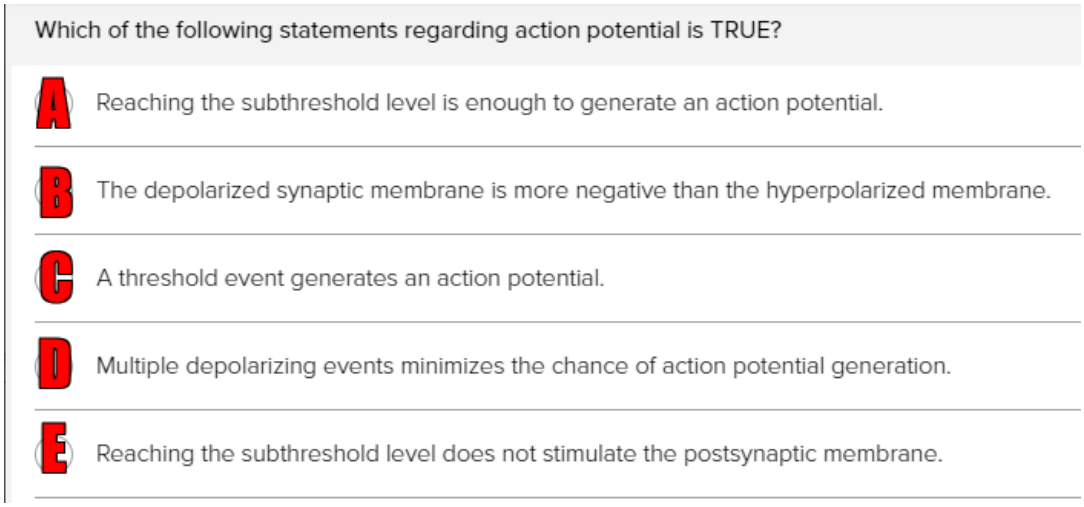
8- One of the following are false about B receptor?

A) They found in the heart

B) they increased the heart rate

C) they stimulated by ACH

D) they increase the amount of the air in bronchioles

9- 

10- Which of the following receptors do not exhibit adaptation:

A. pain receptors
B. pressure receptors
C. touch receptors
D. smell receptors

7	8	9	10
B	C	C	A

11-

Which of the following is a cholinergic neurotransmitter?

A Norepinephrine

B Dopamine

C Glutamate

D GABA

E Acetylcholine

12- **Muscranic recepoters activate by :**

A) ACH

B) dopamnine

C) glutamate

13-

What happens when an IPSP is generated after EPSP?

A Membrane is more depolarized

B Effect of subthreshold is enhanced

C Action potential is reached

D A threshold event takes place

E Membrane is hyperpolarized

11	12	13
E	A	E

What is the term used to describe an action potential that "jumps" from one node of Ranvier to another?

A IPSP conduction

B EPSP conduction

C Myelinated conduction

D Saltatory conduction

14-

15- A wide variety of neurotransmitters have been identified in the cell bodies and afferent synaptic terminals in the basal ganglia. A deficiency of which transmitter is typically associated with Parkinson's disease?

A) Norepinephrine

B) Dopamine

C) Serotonin

D) GABA

E) Substance P

16- In which type of receptor, does the receptor potential fall below threshold, even as the stimulus continues?

A) phasic

B) tonic

17- What's wrong about acetyl choline:

A) in skeletal muscles it causes contraction

B) in heart it causes relaxation

C) it affects mood

14	15	16	17
D	B	A	C

18- Prolonged changes in neuronal activity are usually achieved through the activation of which of the following?

A) Voltage-gated chloride channels

B) Transmitter-gated sodium channels

C) G-protein–coupled channels

D) Voltage-gated potassium channels

19- Each of the following numbered processes are involved in signal transduction pathways:

I. Response

II. Amplification

III. Reception

IV. Transduction

Which of the following represents the sequence of events in a typical signal transduction pathway?

A) I, II, III, IV

B) III, I, IV, II

C) III, IV, II, I

D) II, IV, I, III

20- A signal molecule that binds to a plasma-membrane protein is a :

A) ligand

B) second messenger

C) protein kinase

D) receptor protein

18	19	20
C	C	A

21- What determines whether a cell is a target cell for a particular signal molecule?

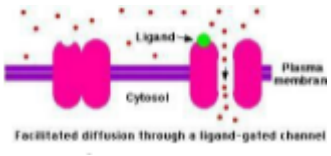
A) phosphorylation cascade

B) cAMP

C) signal receptors

D) phosphatase

22- What type of transmembrane receptor is being shown?



A) G-protein receptor

B) tyrosine kinase receptor

C) gated ion channel

23- The predominant ions inside axon of nerve fiber (at resting membrane potential) are:

a. K+ ions

b. Na+ ions

c. Ca+2 ions

24- One of the following is true about phasic receptor:

A) quickly adapt

B) on -off receptor

C) exhibit none or all principle

D) All of the above

21	22	23	24
C	C	A	D

25- Which of the following is an encapsulated receptor found deep in the skin throughout the body, as well as in fascial layers, where it detects indentation of the skin (pressure) and movement across the surface (vibration)?

A) Pacinian corpuscle

B) Meissner's corpuscle

C) Free nerve endings

D) Ruffini endings

26- Which of the following best describes the concept of specificity in sensory nerve fibers that transmit only one modality of sensation?

A) Frequency coding principle

B) Concept of specific nerve energy

C) Singularity principle

D) Labeled line principle

27- Which of the following is best described as an elongated, encapsulated receptor found in the dermal pegs of glabrous skin that is especially abundant on lips and fingertips?

A) Merkel disc

B) Free nerve endings

C) Meissner corpuscle

D) Ruffini endings

28- Which of the following best describes an expanded tip)tactile receptor found in the dermis of hairy skin that is specialized to detect continuously applied touch sensation?

A) Free nerve endings

B) Merkel disc

C) Pacinian corpuscle

D) Ruffini endings

25	26	27	28
A	D	C	B

GOOD LUCK

#دفعة- القدس

YOU GONNA BE HAPPY

21 - 22

22 - 23

Ebaa AL-ZUBI