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تجميع أسئلة الفسيولوجي
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دكتور: عابد ياسين

☐ Osmotic pressure is determined mainly by the mass of the particle (☒)

☒ K^+ leak channels play a major role in generating resting membrane potential (☒)

☒ Titin molecule act as a template for initial formation of tropomyosin (☒) myosin

☒ Skeletal muscle become less excitable when resting potential is decreased (☒)

☒ The selectivity of potassium channels depends mainly on their diameter (☒)

☒ Myosin head has 2 heavy chains and 2 light chain (☒)

☒ Calcium is actively pumped into endoplasmic reticulum by primary transport (☒)

8 Ryanodine receptors are calcium release channels in sarcoplasmic reticulum (✓)

9 In muscle each one of the cross-bridges is believed to operate independently (✓)

10 Acetylcholine acts through voltage gated ion channels (X)
voltage gated channels (X)

11 Plateau in cardiac muscle is a safety factor because it coincides with relative refractory period (X)

12 Osmotic pressure is the amount of pressure required to facilitate osmosis (X) to stop osmosis

13 The +Acl-walk-along+Acl-(or +Acl-ratchet+Acl) theory of skeletal muscle contraction describes mainly the power stroke (✓)

mid term islamic university

* facilitated diffusion is the way by which lipid-soluble substance can cross cell membrane (X)

14) The relative refractory period coincides with plateau in cardiac muscle (X) ARP

15) Control of breathing is a good example of rhythmical activity (✓)

16) Plateau in cardiac muscle is caused by opening of voltage gated Na channels (X)

17) Osmotic pressure is determined mainly by molecular weight of particle (X)

18) Muscle tone is normally controlled by signals from brain and muscle itself (✓)

19) The whole muscle does not obey all or non-law (✓)

20) Calcium is actively pumped into endoplasmic reticulum by secondary transport (X)

[21] Glucose can be transported through cell membrane by both active and passive transport (✓)

[22] Skeletal muscle becomes less excitable when its resting potential is increased (✓)

[23] Long lasting calcium channels are the main contributor to hyperpolarization in sinoatrial node potential (X)

* [24] Fast fibers have a lower levels of oxidative metabolism than slow fibers (✓)

* [25] The walk along theory of skeletal muscle describes mainly the power stroke (✓)

[26] Calcium ions are released from sarcoplasmic reticulum through voltage sensitive dihydropyridine channels (X)
 (X)
 (X)

[27] In renal tubules, intercalated cells participate in regulating blood pH (✓)

Depolarization

~~32~~ The depolarization stage coincides with plateau in cardiac muscle (✓)

~~34~~ Local potential is all or non-low potential (X)

~~36~~ Action potential spreads in both directions across the nerve fiber (✓)

~~37~~ Neuronal excitability is decreased if intracellular chloride is increased (✓)

~~38~~ Lack of intracellular calcium increase excitability in neurons (X)

~~39~~ Voltage gated potassium channels have a major contribution in maintaining resting membrane potential (X)

~~35~~ Regeneration of contractile proteins occurs through ATP-dependent ubiquitin-proteasome pathway (X)

35 Plateau in cardiac muscle coincides with depolarization stage (✓)

36 The greater number of cross-bridges in contact with actin filament, the greater ^{the} ~~number~~ force of contraction (✓)

37 The selectivity of potassium channels depends mainly on their negative charge (X)

38 Alkalosis increase neuronal excitability (✓)

acidosis → increase inhibitory

→ decrease excitability

Alkalosis → increase excitability

شاذتر 3 + 3 + 0 + 6 + 7 + 8 + 9 + 1

لحق الرسه هنالي دخل بالنض

90 potential

9 GABA receptors make their inhibitory action through Cl^- efflux (X) Cl^- influx

10 GABA receptor make their inhibitory action through K^+ influx (X) K^+ efflux

11 GABA is synthesized in cell bodies and then transported to axon terminals (X)

12 Walking reflexes occur at the level of spinal cord (✓)

13 Walking reflexes occur at the level of ~~spinal cord~~ medulla oblongata (X)

14 EPSP Excitatory postsynaptic potential is all or none potential (X)

15 Dendrites convey impulses toward cell body (✓)

16 Presynaptic inhibition occurs mainly in sensory pathways (✓)

17 Presynaptic inhibition occurs mainly in motor pathway (X)

* Lack of calcium increase excitatory postsynaptic potential in response to stimulation (X)

* 48 Nitric oxide is synthesized and stored in vesicles in presynaptic terminals (X) ~~release to~~

* 49 ^{strychnine} Strychnine increases neuronal excitability by its inhibitory effect on glycine (✓)

* 50 Strychnine increase excitability of neurons (✓)

* 51 Atropine blocks the action of acetylcholine on muscarinic receptors (✓)

* 52 Atropine block the action of acetylcholine on nicotinic receptors (X)

* 53 Temporal summation means summation of ^{single} many presynaptic terminals EPSPs simultaneously to generate action potential (X)

plasma $\xrightarrow{\text{iron}}$ apo transferrin to form transferrin
 cell cytoplasm $\xrightarrow{\text{iron}}$ apo ferritin to form ferritin
 * tissue $\xrightarrow{\text{RBC}}$ $\xrightarrow{\text{Heme}}$ Hemoglobin and hemosiderin

[55] Iron is transported in plasma in the form of transferrin (✓)

[56] Iron is stored in tissues mainly in the form of transferrin (X)

* [57] Polycythemia Vera is a genetic disorder characterized by high blood viscosity (✓)

[58] Lymphocytes are manufactured only in bone marrow (X)

* [59] Lymphocytes are produced only in lymphogenous tissues (X)

~~[60]~~ Metabotropic receptors are postsynaptic ionotropic receptors (X)

[61] Erythrocytes growth in bone marrow is controlled by interleukin-3 (✓)

[62] Erythrocytes carry iron in the form of transferrin (X)

* [63] Bilirubin is the product of hemoglobin destruction by macrophages (✓)

* [64] Binding of immunoglobulin E to eosinophils
causes histaminic allergy (X)

* [65] Opsonization means release of free radical from
neutrophils (X)

* [66] Eosinophils are expected to increase in parasitic
infection (✓) Eosinophils are produced in
large quantities in people with
parasitic infection (✓)

* [67] Basophils are expected to be increased in parasitic
infection (X)

* [68] Opsonization means release of bactericidal agents
from macrophages (X)

* [69] All blood cells are derived from pluripotential stem
cell in bone marrow (✓)

* [70] Leukemic patients have a bleeding tendency
caused by thrombocytopenia (✓)

[71] Unlike red blood cell, reticulocyte contains ^{nucleus} ~~heter~~ (X)

[72] RBC appear biconcave rather than spherical in hereditary spherocytosis (X)

* [73] Second macrophage invasion into ~~the~~ inflamed tissue provides a second line of defence (X)

* [74] Superoxide (O_2^-) radicals are bactericidal agents released from both neutrophils and macrophages (✓)

* [75] Stick of neutrophils to adhesion molecules of endothelium is called diapedesis (X)

* [76] Propranolol blocks sympathetic ^{beta} ~~alpha~~ receptor (X)

[77] Cytokines cause invasion of neutrophils to the inflamed area (✓)

↑
نورإبينفرين

[78] Norepinephrine is removed mainly by active reuptake (✓)
↙
↘

[79] ^{Parasympathetic} sympathetic nervous system constricts bronchi of lung (X)
↙
↘

[80] Alkalosis increase neuronal excitability (✓)

[81] ^{isometric} During isometric contraction the muscle become shorter (X)
↙
↘

[82] ^{sympathetic} Parasympathetic nervous system reflexes Pilorector muscle (X)
↙
↘
not affect

[83] Glutamate is the main excitatory neurotransmitter in the central nervous system (✓)
↙
↘

[84] ^{sympathetic} Parasympathetic nervous system increase force of heart contraction (X)
↙
↘

[85] Voltage-gated channel open in response to binding of signaling molecules (X)

[86] Nicotinic acetylcholine receptors are G protein receptor (X)
↙
↘
ligand gated ion channel

87 Depolarization mean Na^+ influx and hyperpolarization means K^+ efflux across cell membrane (✓)

88 In contrast to glutamate, ^{التي} γ -aminobutyric acid (GABA) is the main inhibitory neurotransmitter in the central nervous system (✓)

89 Motor protein of muscles are actin filaments (X)

90 Calcium pump in the membrane of sarcoplasmic reticulum pump calcium to the outside (X)
inside

91 Osmosis pressure is determined by particle mass/unit volume of fluid (X)

92 Facilitated diffusion differs from simple diffusion in being require energy (X)

93 The interaction of G-protein linked receptor with signaling molecule result in activation or inhibition of cyclic AMP (X)

94 like facilitated diffusion, Primary and secondary active transport depend on carrier protein (✓)

95 Norepinephrine is secreted at postganglionic neurons of sympathetic nervous system (✓)

96 Glutamate is the major excitatory neurotransmitter in the CNS (✓)

97 ^{epinephrine} Adrenaline is secreted at postganglionic neurons of sympathetic nervous system (✓)

98 IgE can cause allergy to the foetus (✓)

99 Gamma aminobutyric acid (GABA) is the ~~may~~ major inhibitory neurotransmitter in the CNS (✓)

100 Erythropoietin increase the average half-life of red blood cells (X)

101 Na^+/K^+ pump plays a minor role in generating resting membrane potential (✓)

102 Depolarization of cardiac muscle is achieved mainly by calcium ion influx (X)

103 Tropomyosin is a thick filament protein ^{covers} the active sites of actin in skeletal muscle (X)

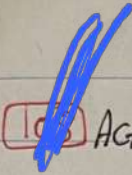
104 In sickle cell anemia, RBC have abnormal Hb called hemoglobin S with faulty α -chain (X)
beta 201

105 Brain macrophages are called microglia (✓)

106 Blood Platelets are formed from giant cells in the bone marrow called megakaryocytes (✓)

107 the cells that attack parasites are name Eosinophils (✓)

lol Na^+/K^+

 Action potential spreads in both direction across the nerve fiber.

جميع أسئلة MCQ

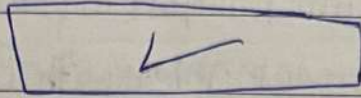
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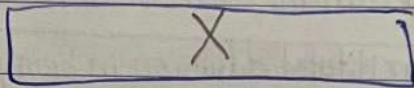
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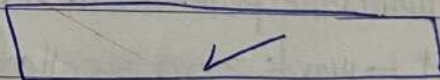
60 Eosinophils are expected to increase in parasitic infection



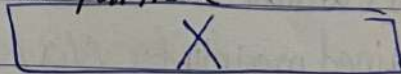
61 Opsonization means release of free radicals from neutrophils



62 Control of breathing is a good example of rhythmic activity



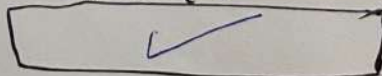
63 Osmosis pressure is determined mainly by molecular weight of the particle



64 Action potential spreads in both directions across the nerve fiber



65 In renal tubule, intercalated cells participate in regulating blood pH



1 Facilitated diffusion

- A - Similar to simple diffusion in being need no energy
- B - differs from active transport in being has carrier protein
- C - occurs through receptor protein with a strong binding force
- D - is the way by which sodium can cross the cell membrane

2 One statement about Na^+/K^+ -pump is incorrect

- A - Plays a role in transmission of nerve signal
- B - differs from facilitated diffusion in being depend on carrier protein
- C - acts as an electrogenic pump
- D - Controls cell volume through controlling water osmosis

3 The resting membrane potential of a neuron

- A - its movement towards zero is called repolarization
- B - Similar to that in skeletal muscle
- C - increased in cardiac sinoatrial node (SAN)
- D - is maintained mainly by Na/K pump

☒ Skeletal muscle myofilaments has the following features **except**

- A- myosin and tropomyosin combine to form the thick filaments
- B- tropomyosin prevents the interaction of actin and myosin in resting state
- C- troponin C has the calcium binding site
- D- F-actin represents of the thin filaments.

☒ In skeletal muscle one statement is **incorrect**

- A- on contraction the length of the sarcomere is shortened and actin overlap myosin
- B- Action potential spreads through T tubule - sarcoplasmic reticulum system to release calcium
- C- Sarcoplasmic reticulum has a ligand-gated dihydropyridine receptors
- D- both relaxation and contraction are active processes

☒ The action potential

- A- its conduction is slower in myelinated fibers than unmyelinated ones
- B- its duration is shorter in cardiac than skeletal muscles
- C- is associated with a transient increase in membrane permeability to sodium
- D- it has an amplitude which varies with the stimulus strength. + AKA-

Facilitated diffusion :-

similar to active transport in being has carrier protein

* 7 Facilitated diffusion

- A. occurs through integral proteins in the cell membrane
- B. differs from simple diffusion in being need no energy
- C. differs from active transport in being has carrier protein
- D. is the way by which sodium can cross the cell membrane

8 Facilitated diffusion

- A. is the way by which sodium can cross cell membrane
- B. Similar to simple diffusion in being need no energy
- C. occur through receptor channel proteins in the cell membrane
- D. differs from active transport in being has carrier protein

*

9 Parasympathetic nervous system

A. dilates bronchi of lungs

B. releases acetylcholine at both pre- and postganglionic axons

C. tend to have longer postganglionic than preganglionic axons

D. inhibits the secretion of adrenal medulla

* The action potential:

- A - its magnitude does not varies with the stimulus strength
- B - its duration is shorter in cardiac than skeletal muscle
- C - is associated with a transient decrease in membrane permeability to sodium
- D - its conduction is faster in unmyelinated fiber than myelinated one

The action potential:

- A - is generated in postsynaptic neuron at a high threshold initial segment
- B - is associated with a transient decrease in membrane permeability to sodium
- C - its duration is shorter in nerves than sinoatrial node
- D - it has a magnitude which varies with the stimulus strength

One statement about acetylcholine is incorrect

- A - is inactivated at postsynaptic membranes mainly by active reuptake
- B - its nicotinic receptor acts through ligand-gated ion channels
- C - has a stimulatory effect on the intestine
- D - is synthesized in presynaptic nerve terminal by choline acetyltransferase enzyme

13 Erythrocyte

- A - in chronic blood loss they give rise to microcytic hypochromic anemia
- B - their number tends to be increased in kidney disease
- C - Contain nucleus *decreased number*
- D - Carry iron in plasma in the form of transferrin *hypo*

14 One statement about Na^+/K^+ pump is incorrect

- A - act as an active electrogenic pump
- B - Similar to facilitated diffusion in being needs energy
- C - Plays a major role in re-establishing the resting membrane potential
- D - has minor role in maintaining resting membrane potential

15 Red Blood cells

- A - In chronic blood loss they give rise to microcytic hyperchromic anemia
- B - their number tends to be decreased in kidney disease
- C - have a life span of 180 day in the circulation
- D - contain nucleus

* [16] Neutrophils:

A- Part of them are formed in the thymus

B- are found only in the circulation

C - their movement towards the inflamed tissue is called chemotaxis

D- do not show phagocytic activity

* [17] In a nerve cell:

✓ A- excitability is increased if extracellular potassium decreased

✗ B- Acidosis increases neuronal excitability

✗ C- excitability is increased if intracellular chloride is increased

✗ D- there is an active efflux of K^+ during hyperpolarization

* [18] Neutrophils differ from macrophages in being

A- have more powerful phagocyte activity

B- their lysosome do not contain lipase enzymes

C- have the ability to engulf much larger particles

D- Phagocytize larger number of bacteria

19] Isometric muscle contraction differs from isotonic contraction in being

A - its duration increases in muscles with fast contraction

B - has constant muscle tension decrease

C - has decreasing muscle tension

D - occurs when the force of muscle contraction is lesser than the load

20] One statement about acetylcholine is **incorrect**

A - is synthesized in presynaptic nerve terminal by choline acetyltransferase enzyme

B - has an inhibitory effect on the heart

C - its muscarinic ^{receptor} act through ligand-gated ion channel ~~at postsynaptic membrane mainly by cholinesterase enzyme~~

D - is inactivated at postsynaptic membranes mainly by ^{cholinesterase enzyme}

21] The most numerous cells in normal human blood are

A - monocytes

B - red blood cells

C - neutrophils

D - lymphocytes

* [22] One statement about vitamin B12 is incorrect

- A - its deficiency as a result of gastrectomy causes microcytic anemia
- ✓ B - its absorption needs intrinsic factor secreted by parietal cell of stomach
- ✓ C - its absorption is difficult in people with sprue
- ✓ D - Cannot be manufactured in liver

* [23] Metabotropic receptor

- A - acts through G-protein second messenger system
- B - acts through ligand-gated ion channels
- C - is not a glutamate receptor
- D - Unlike N-methyl D-aspartate (NMDA) receptor is believed to be involved in memory

* [24] Hemoglobin

- A - has abnormal α chains in sickle cell anemia
- B - its affinity to oxygen decreased with increased CO_2 in tissue
- C - its affinity to oxygen is increased in a person living at high altitude
- D - its affinity to oxygen is lesser in fetus than in mother

25 Regarding skeletal muscle myofilament

A - myosin is the only thick filament

B - tropomyosin is a single helical strand protein

C - troponin prevents the interaction of actin and myosin in resting state

D - F-actin represents one of the thick filament

26 One statement about Na^+/K^+ pump is incorrect

✓ A - has a minor role in maintaining resting membrane potential

✓ B - acts as an electrogenic active pump

✓ C - differs from facilitated diffusion in being dependent on carrier protein

✓ D - differs from facilitated in being needs energy

* 27 In skeletal muscle one statement is incorrect

A - muscle tetanization means rapid successive contraction with partial relaxation

B - Motor unit is all the muscle - fibers innervated by a single nerve fiber

C - Gastrocnemius muscle has isometric duration more than ocular muscle

D - sarcoplasmic reticulum has a voltage gated dihydropyridine receptor

24 The nerve impulse:

- A- its duration is longer in skeletal cardiac muscle
- B- it has a magnitude which varies with the stimulus strength
- C- is associated with a transient increase in membrane permeability to sodium
- D- its conduction is slower in myelinated fibers than unmyelinated one

* 25 Skeletal muscle myofilament has the following feature except

- A- F-actin represent one of the thin filament
- B- troponin prevent the interaction of ~~action potential~~ actin & myosin in resting state
- C- myosin is the only thick filament
- D- tropomyosin is a double helical strand protein

26 The resting membrane potential of a neuron

- A- increased in sinoatrial node
- B- its movement towards zero is called hyperpolarization
- C- increased in facilitated neurons than normal one
- D- decreased with increasing neuronal excitability

[31] Hemoglobin

- A- its affinity to oxygen increased with increased CO_2 in tissue
- B- its affinity to oxygen is lesser in mother than that in Fetus
- C- has abnormal α chains in sickle cell anemia
- D- its affinity to oxygen is increased in a person living at high altitude

* [32] In skeletal muscle

- A- fast fibers have large number of mitochondria to supply energy for contraction
- B- ~~Fast~~ Force of contraction is proportional to number of cross-bridge in contact with actin
- C- All cross-bridge work simultaneously to give strong contraction
- D- The major source of energy is glycolysis

* [33] One statement about erythropoietin is incorrect

- A- enhances erythrocytes production under hypoxic condition
- B- its rate of production increase when a person is placed at high altitude
- C- tends to be decreased in pulmonary disease
- D- its administration is helpful in treatment of anemia associated with renal failure

The nerve impulse

A - is elicited by a subthreshold stimulus applied to a nerve fiber

B - spreads in both directions across the nerve fiber

C - is terminated by increasing active K^+ efflux

D - its conduction is faster in unmyelinated fibers than myelinated one

Isometric muscle contraction differs from isotonic contraction in being

A - has decreasing muscle tension

B - its duration decreases in muscle with fast contraction

C - has constant muscle tension

D - occurs when the load is ^{great} lesser than force of muscle contraction

In skeletal muscle

A - Fast muscle fiber are innervated by smaller nerve fiber than slow fibers

B - Relaxation is a passive process

C - The resting membrane potential is similar to that in neuron

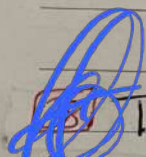
D - Soleus muscle has isometric duration less than gastrocnemius

خبر تاني

the resting membrane potential is similar to that in cardiac muscle

* 37. Norepinephrine

- A - is a stronger blood vessels vasoconstrictor than epinephrine
- B - decreases peristalsis and sphincter tone of the gut
- C - is inactivated mainly by monoamine oxidase and catechol-O-methyl transferase enzyme
- D - excites G-proteins-linked beta receptor rather than alpha receptors



38. The resting membrane potential of neuron

- A - is maintained to a low extent by K leak channels
- B - its movement toward zero is called hyperpolarization
- C - differs from that in skeletal muscle fibers
- D - decreased in cardiac sinoatrial node (SA node)



39. In a neuron

- A - Alkalosis decrease neuronal excitability
- B - excitability is increased if intracellular chloride is decreased
- C - excitability is increased if ~~the~~ extracellular potassium is increased
- D - there is an active efflux of K^+ during hyperpolarization

* 39 N-methyl D - aspartate (NMDA) receptor

A - acts through ligand-gated ion channel

B - is inhibited by the presence of glycine

C - Unlike metabotropic receptor is believed to be involved in memory

D - is not a glutamate receptor

41 One statement about bilirubin is incorrect

A - is produced by red blood cell burst

B - Contains iron

C - is excreted in bile

D - is a porphyrin pigment derived from hem

* In skeletal muscle one statement is incorrect

A - The duration of action potential is similar to the neuron

B - on contraction the length of the sarcomere is shorten

C - both relaxation and contraction are active process

D - sarcoplasmic reticulum have a voltage gated dihydropyridine receptor

toward zero depolarization
away from zero hyperpolarization

* 44 The resting membrane potential

- A - decreased in facilitated neuron than normal ones
- α B - its movement toward zero is called repolarization
- α C - increased with increasing neuronal excitability
- α D - increased in cardiac sinoatrial node

* 45 The nerve impulse

- A - its conduction is faster in unmyelinated fibers than myelinated one
- B - is terminated by increasing passive K^+ efflux
- α C - spreads in one direction across the nerve fibers
- D - is elicited by a subthreshold stimulus applied to a nerve fiber

* 46 Blood platelets

- A - increased their number in leukemic patients
- B - derived from lymphoid tissues in bone marrow
- C - unlike leukocytes, they derived from pluripotential stem cell in bone marrow
- D - decreased their number in leukemic patients

43 In the neurons:

✓ A - the excitability is increased if the extracellular calcium concentration is decreased

B - there is an influx of Na^+ and efflux K^+ during depolarization

C - GABA is synthesized in cell body and then transported to axons

✗ D - the axons convey impulse away from the cell body

47 One of the following factors does not affect the net rate of diffusion

A - Concentration difference across membrane

B - pressure difference across the membrane

C - membrane electrical potential

D - rate of activity of membrane carrier proteins

48 Cell membrane:-

A - Consist of layer of protein sandwiched between two layer of lipid

B - is permeable to water and water-soluble substance

C - its selectivity is largely determined by its ion channels

D - is impermeable to fat-soluble substance

- 19 The resting membrane potential of a neuron
- A - increased in cardiac sinoatrial node
 - B - Decreased with increasing intracellular chloride ions
 - C - decreased in excitable neurons than normal ones
 - D - is maintained mainly by Na/K pump

- 20 The nerve impulse:-
- A - its duration shorter in nerves than sinoatrial node
 - B - its duration is shorter in skeletal muscle than nerve
 - C - is terminated by increasing active K^+ efflux
 - D - Spreads in one direction across the nerve fiber

- * 21 In a nerve impulses
- A - excitability is increased if extracellular potassium is increased

B - Acidosis increases neuronal excitability

C - excitability is increased if intracellular chloride is decreased

D - there is an active efflux K^+ during hyperpolarization

All the following are true Except one

1] Facilitated diffusion :-

- ✓ a - differs from active transport in being has carrier protein
- ✓ b - occurs through receptor protein with a weak binding force
- ✓ c - similar to simple diffusion in being no energy
- ✓ d - is the way by which glucose and ~~amino~~ acid cross the cell membrane

2] In the skeletal muscle :-

- ✓ a - both relaxation and contraction are active process
- ✓ b - Sarcoplasmic reticulum has a ligand gated dihydropyridine receptor
- ✓ c - its contraction is triggered by binding of calcium to troponin
- ✓ d - its resting membrane potential is about -90 mV

3 Erythropoietin

- ✓ A - the main stimulus of its production is hypoxia
- ✓ B - Stimulate production of proerythroblast from ~~the~~ hematopoietic stem cell in the bone marrow
- ✓ C - increase the average half-life of erythrocyte
- ✓ D - its administration is helpful in treatment of anemia associated with renal failure

4 The resting membrane potential of a neuron:

- ✓ A - is maintained mainly by potassium leak channel
- ✓ B - its movement toward zero is called depolarization
- ✓ C - increased in positive direction in facilitated neurons than normal one
- ✓ D - generated mainly by active efflux of potassium ions out the neuron.

5 With reference to the skeletal muscle myofilament:-

- ✓ A - troponin prevents the interaction of actin & myosin in resting state
- ✓ B - myosin is the thick filament
- ✓ C - troponin C has the calcium binding site
- ✓ D - actin and tropomyosin are thin filament

6] The nerve impulse:

- ✓ A - Causes Propagation of electrical current along the nerve fiber
- ✗ B - is associated with a transient decrease in membrane permeability to Na^+
- ✓ C - is generated in the postsynaptic neuron at a low threshold
- ✓ D - is terminated by increasing K^+ efflux in initial segment

7] Sympathetic nervous system.

- ✗ A - generally has opposite effects to those of parasympathetic system
- ✓ B - release acetylcholine at preganglionic axons and noradrenaline at postganglionic axons
- ✓ C - stimulates skeletal muscle contraction during exercise
- ✓ D - tend to have shorter preganglionic than postganglionic axon

8] Vitamin B₁₂:

- ✓ A - its absorption needs intrinsic factor secreted by parietal cells of stomach
- ✓ B - its absorption is difficult in people with sprue
- ✓ C - transported into blood by pinocytosis and stored in liver
- ✗ D - its deficiency causes microcytic anemia

II Point to point conduction:-

- ✓ A - takes place in myelinated nerve fibers
- ✓ B - Travels in both directions from the stimulus and cancelled by soma
- ✓ C - is slower than saltatory conduction
- ✓ D - depends on the local current circuits

III The action potential

- ✓ A - is elicited by a threshold stimulus applied to the nerve fiber
- ✓ B - its duration is shorter in cardiac muscle than nerves
- ✓ C - it has an amplitude which does not vary with the stimulus strength
- ✓ d - obeys all or none rule

III Norepinephrine:-

- ✓ A - Cause stronger constriction of blood vessel than epinephrine
- ✓ B - has less metabolic effect than epinephrine
- ✓ C - has weaker effect on cardiac stimulation than epinephrine
- ✓ D - has stimulatory effect on the intestine

IV Na^+/K^+ pump

- ✓ A - is an active pump with large α and small β subunit
- ✓ B - controls cell volume through controlling water osmosis
- ✓ C - Plays a major role in maintenance of a potential difference across the cell membrane
- ✓ D - acts as an electrogenic pump

minor (✓)

14 the resting membrane potential of a neuron:

- ✓ A - is the potential maintained by a non conducting neurons plasma membrane
- ✓ B - is maintained at about -70 mV
- 2 C - is establishment does not need energy
- ✓ D - is mainly produced by K^+ ions

15 Erythropoietin:

- A - increase the average half-life of erythrocytes
- B - is a hormone secreted mainly by Kidney
- C - the main stimulus of production is hypoxia
- D - the main site of action is the bone marrow.

16 Facilitated diffusion

- A - is faster than simple diffusion
- B - exhibits specificity for transported molecules
- C - required no energy to facilitate transport of molecule
- D - not permit polar molecule to traverse plasma membrane

17 Na^+/K^+ Pump

A - is an antiport transport system

B - Play a major role in maintenance potential difference across cell membrane

C - Mediated by the peripheral protein Na^+/K^+ ATPase

D - decrease water flow into the cell

18 Sympathetic nervous system

A - Stimulates skeletal muscle contraction during exercise.

B - generally has antagonistic effects to those of parasympathetic system

C - release acetylcholine at preganglionic axons and noradrenaline at postsynaptic axons

D - tend to have shorter preganglionic than parasympathetic axon.

19 Action potential

A - is initiated an increase in membrane potential to a critical value

B - is conducted fast in myelinated fiber than unmyelinated one

C - obey all or non law

D - travels in one direction across the synapse

20 Example of passive feedback include:

A- regulation of blood CO_2

B- blood clotting

C- childbirth

D- generation of nerve signals ^{negative feedback}

21 Nervous system

A- has integration portion that include brain and spinal cord

B- its autonomic portion controls function of skeletal muscle

C- has sensory input portion that detect state of surrounding

D- has motor output portion that transmit appropriate signals to muscle

22 Extracellular fluid differs from intracellular fluid that

A- it has lesser volume

B it has lower tonicity the same

C- its anions are mainly inorganic

D- it has higher sodium : Potassium ratio

23 Na^+/K^+ Pump

A- prevent cell lysis by continuous Na^+ influx

B- like facilitated diffusion it depend on carrier protein

C- unlike facilitated diffusion it requires energy that derived from ATP

D- Participate in genesis of resting membrane potential

(24) integral proteins

- ✓ A - differ from peripheral in being protrude all the way through cell membrane
- ✓ B - differ from peripheral protein in being act enzyme
- ✓ C - differ from peripheral protein in being act receptor
- ✓ d - bind membrane carbohydrate form glycoprotein

the carotid sheath and the contents

; internal carotid artery

The End

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