

بسم الله الرحمن الرحيم

The Islamic University of Gaza

Faculty of Medicine

Medical Biology Mid Term Exam I

Time allowed: One hour

Date: 10/10/2006

Name -----Student No. -----
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Answer the following questions.

I. All the followings are true except (6 marks)

1. The Plasma membrane

- a. has energy dependent channel proteins
- b. is impermeable to charged ions
- c. permits the cell to recognize macromolecules
- d. its fluidity decreases with increase its cholesterol content

2. Integral membrane proteins

- a. attached to the inner leaflet
- b. function in both passive and active transport
- c. not attached to the inner leaflet
- d. include amphipathic transmembrane proteins

3. Glyocalyx

- a. is a fuzzy sugar coat on the outer leaflet of the plasmalemma
- b. it binds antigens to the cell surface
- c. aids in attachment of epithelial cells to extracellular matrix.
- d. it facilitates cell-cell recognition

4. G-proteins-linked receptors

- a. associated with ion channel or enzyme
- b. their interaction with signaling molecule results in activation or inhibition of cyclic AMP
- c. are the main target sites of snake venom
- d. examples are β - and α_2 -adrenergic receptors

5. In nuclear import

- a. nuclear localization segment of transported protein binds α subunit of importin
- b. β subunit of importin docks with the nuclear pore complex
- d. The whole importin molecule along with transport protein enter the nucleus
- c. the transport required energy derived from ATP

6. Nucleolus

- a. involved in the synthesis of ribosomes
- b. is not membrane-bound
- c. it contains nucleolar organizers of some chromosomes
- d. its fibrillar centers composed of active rDNA

7. Chromatin

- a. is DNA complexed with histones and acidic proteins
- b. its presents in the nucleus as heterochromatin and euchromatin
- c. responsible for DNA synthesis
- d. euchromatin/heterochromatin ratio is higher in malignant cells than in normals

8. Chromosomes

- a. is chromatin loops maintained by proteins
- b. are only visible during mitosis and meiosis when their chromatin condenses
- c. its structural units are nucleosomes
- d. its condensation involves additional histone H1.

9. DNA molecule

- a. acts as a template for the synthesis of RNA
- b. its nitrogenous bases arranged as A-G and C-T
- c. its structural units are nucleotides
- d. its two strands are held together by hydrogen bonds

10. DNA is not duplicated in the cell cycle during

- a. G1 phase
- b. G2 phase
- c. S phase
- d. M phase

II. Define (6 marks)

1. Autoimmune disease

2. A codon

3. Karyotype

4. Cystinurea

5. Down syndrome

II. True or false and correct the false (6 marks)

1. Glucose transport usually involves the antiport movement of glucose across epithelium ().
2. Voltage-gated channels open in response to the binding of signaling molecules ().
3. Lipid-soluble signaling molecules bind to receptors in the nucleus ()
4. Nicotinic acetylcholine receptors are G-protein receptors ()
5. Cholera toxin acts G_s protein ().

6. Inner nuclear membrane is supported by nuclear lamina ().
7. Heterochromatin is transcriptionally active ().
8. RNA polymerase I catalyzes the synthesis of mRNA ().
9. mRNA has anticodon ().
10. During mitosis, sister chromatids begin their migration to opposite poles during metaphase ().

بسم الله الرحمن الرحيم

The Islamic University of Gaza
Faculty of Medicine
Medical Biology Mid Term Exam II
Time allowed: One hour
Date: 28/11/2006

Name -----Student No. -----
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Answer the following questions.

I. All the followings are true except (6 marks)

1. Microvilli

- a. contain a core of actin filaments.
- b. facilitate absorption.
- c. form the brush border in the distal convoluted tubules of the nephron.
- d. include stereocilia.

2. Epithelia

- a. are separated from underlying connective tissue by a basal lamina.
- b. are polarized.
- c. contain intercellular substances.
- d. are avascular.

3. All of the following terms refer to the mechanism of gland secretion

- a. apocrine
- b. holocrine
- c. paracrine
- d. merocrine

4. Basal lamina

- a. contains type IV collagen.
- b. includes the reticular lamina.
- c. contains proteoglycans.
- d. consists of lamina densa and lamina lucida.

5. Mitochondria

- a. contain ATP synthase which is involved in coupling oxidation to phosphorylation of ATP to ADP.
- b. can be divided.
- c. All of their enzymes are present in the matrix.
- d. present in brown fat cells as condensed mitochondria which produce heat rather than ATP.

6. In the cytoskeleton

- a. microtubules are associated with a motor protein called kinesin.
- b. Actin microfilaments are associated with hemidesmosome plaques.
- c. desmin filaments are present in all three types of muscle cells.
- d. keratin filaments are associated with the plaques of desmosomes.

II. Define

(6 marks)

1. Autophagy

2. Immotile cilia syndrome

3. Triskelion

4. Connexons

5. Receptor-mediated endocytosis

6. Tay-Sachs disease

III. True or false and correct the false (5 marks)

1. Gap junctions permit passage of large molecules ().
2. Plasma membrane proteins are sorted into coatamer-coated vesicles ().
3. Endocrine glands lack duct system ()
4. Familial hypercholesterolemia is due to lack of low density lipoprotein receptors ()
5. Clathrin-coated vesicles are involved in retrograde transport ().

III. Fill in the blanks

(11 marks)

1. The oxidative enzymes of peroxisomes include -----
---- and -----
2. transitional epithelium lines -----
3. Protein processing in Golgi apparatus includes the following events:
 - a)
 - b)
 - c)
4. Functions of smooth endoplasmic reticulum are:
 - a)
 - b)
 - c)
5. Simple squamous epithelium lines -----
6. The part of Golgi apparatus that face the rough endoplasmic reticulum is called -----

بسم الله الرحمن الرحيم

The Islamic University of Gaza

Faculty of Medicine

Medical Biology Final Exam

Time allowed: Two hours

13/01/2007

Name -----

Answer the following questions.

I. All the followings are true except. (15 marks)

1. Loose Connective tissue:

- a. is flexible and very resistant to stress.
- b. acts as a medium for exchange of nutrients and wastes between blood and tissues.
- c. more abundant than dense connective tissue.
- d. has a higher proportion of cells to fibers.

2. Plasma proteins:

- a. exert an osmotic pressure of about 25 mmHg across the capillary wall.
- b. include certain clotting factors like albumin
- c. of the immunoglobulin variety that combat viruses.
- d. are responsible for some buffering capacity of the blood.

3. The resting membrane potential of a neuron:

- a. is the potential maintained by a non conducting neuron's plasma membrane.
- b. is maintained at about -70 mV.
- c. its establishment does not need energy
- d. is mainly produced by K⁺ ions.

4. In interphase:

- a. only cells reach the restriction point will proceed to the S-phase.
- b. centrioles are replicated.
- c. M-phase delay factor prevents the cell from entering the M-phase.
- d. S-phase activator induces the cell to enter the M-phase.

5. Smooth endoplasmic reticulum:

- a. becomes active in familial hypercholesterolemia.
- b. does not contain ribophorins.
- c. an important site of drug detoxification.
- d. involves in muscle relaxation.

6. In the heart:

- a. the sino-atrial node is the normal cardiac pacemaker.
- b. the sino-atrial node stops its discharge when atrioventricular node works
- c. conduction of the electrical impulse is slowed through the atrio-ventricular node.
- d. cardiac rhythmicity is myogenic in its origin.

7. Nuclear pore complex:

- a. permits both passive and active transport.
- b. import through it is carried out by importin receptor.
- c. its basket is thought to function in DNA transport.
- d. its thick filaments serve as a staging area prior to protein transport

8. Ribosomes:

- a. free and bound types are interchangeable.
- b. composed of several types of rRNA and numerous proteins.
- c. their dissociation from mRNA is caused by a chain-terminating codon.
- d. the codons of the mRNA base-pair with the corresponding anticodons of the tRNA on their large subunits.

9. Erythropoietin:

- a. increases the average half-life of erythrocytes.
- b. is a hormone secreted mainly by kidney.
- c. the main stimulus of its production is hypoxia.
- d. its main site of action is the bone marrow.

10. The regulatory hormones involved in digestive secretion are:

- a. enterogastrone.
- b. cholestrin.
- c. secretin.
- d. gastrin.

11. Glands:

- a. their serous secretion is watery.
- b. endocrine ones secrete directly into blood.
- c. holocrine ones release their contents by exocytosis.
- d. exocrine ones secrete into ducts.

12. Facilitated diffusion:

- a. is faster than simple diffusion.
- b. exhibits specificity for transported molecules.
- c. required no energy to facilitate transport of molecules.
- d. not permit large polar molecules to traverse plasma membrane.

13. G-protein linked receptors:

- a. are the target site of snake venom.
- b. named so because they linked GTP-binding regulatory protein.
- c. are the target site of cholera toxin.
- d. their activation involved intracellular second messenger system.

14. Heterochromatin:

- a. present everywhere in the nucleus.
- b. present in higher amount in malignant cells.
- c. responsible for RNA synthesis.
- d. present in nearly all somatic cells of female mammals.

15. Microfilaments:

- a. like microtubules they are polar with polymerization and depolymerization occurring at the plus end.
- b. abundant at the cell periphery where they are anchored to the plasma membrane via intermediary proteins like vinculin.
- c. supported the inner nuclear membrane by forming nuclear lamina.
- d. are named actin filaments involved in muscle contraction.

II. True or False and correct the false (10 marks)

- 1. Enterogastrone is a hormone secreted by duodenum to stimulate stomach peristalsis ().
- 2. B cells are involved in cell-mediated immune response ().
- 3. *E. Coli* is used as an indicator of water contamination by sewage ().
- 4. Nucleotides are the structural units of DNA whereas nucleosomes are the structural units of chromatin ().
- 5. Adenocarcinomas are malignant tumors that arise from glands ().
- 6. Free ribosomes are responsible for secretory protein synthesis ().
- 7. Red blood cells have integrins called band 4.1 protein ().
- 8. Stroke volume is defined as the amount of blood pumped by ventricles per beat ().

9. Clathrin-coated vesicles are usually function in signal-directed transport ()
10. Nicotonic acetylcholine receptors are G-protein linked receptors ().

III. Complete the following sentences (12 marks)

1. Gap junction is common in ----- and -----
2. Reticular fibers are composed primarily of -----
3. The junction where one neuron communicates with another neuron in a neural pathway is called -----
4. Fibroblasts are classified into ----- and -----
5. The cells that attack parasites are named -----
6. A clot inside blood vessel is called -----
7. The motor proteins of cilia and flagella are called -----
whereas those of muscles are called -----
8. The functions of coatomer-coated vesicles include:
- a) -----
- b) -----

IV. Define (8 marks)

1. Stroke

2. Chylomicrons

3. Reflex arc

4. Exons

5. Vimentin

6. Blood Brain Barrier

7. Karyotype

8. Embolus

V. Write very briefly on

(6 marks)

1. Movement of fluid in capillaries and its disorder

2. Feed back mechanism

3. mast cell

VI. Named and labeled the following diagram

بسم الله الرحمن الرحيم

The Islamic University of Gaza
Faculty of Medicine
Medical Biology Mid Term Exam I
Time allowed: One hour
Date: 04/11/2007

Name -----Student No. -----

Answer the following questions.

I. All the followings are true except (10 marks)

1. G-proteins-linked receptors

- a. associated with ion channel or enzyme
- b. their interaction with signaling molecule results in activation or inhibition of cyclic AMP
- c. are the main target sites of snake venom
- d. examples are β - and α_2 -adrenergic receptors

2. Chromatin

- a. is DNA complexed with histones and acidic proteins
- b. its presents in the nucleus as heterochromatin and euchromatin
- c. responsible for DNA synthesis
- d. euchromatin/heterochromatin ratio is higher in malignant cells than in normals

3. Integral membrane proteins

- a. attached to the inner leaflet
- b. function in both passive and active transport
- c. not attached to the outer leaflet
- d. include amphipathic transmembrane proteins

4. In nuclear import

- a. nuclear localization segment of transported protein binds α subunit of importin
- b. β subunit of importin docks with the nuclear pore complex
- d. The whole importin molecule along with transport protein enter the nucleus
- c. the transport required energy derived from ATP

5. Chromosomes

- a. is chromatin loops maintained by proteins
- b. are only visible during mitosis and meiosis when their chromatin condenses
- c. its structural units are nucleosomes
- d. its condensation involves additional histone H1.

6. Na⁺/K⁺ Pump

- a. is an antiport transport system
- b. Plays a major role in maintenance potential difference across cell membrane
- c. Mediated by the peripheral protein Na⁺/K⁺ ATPase
- d. decreases water flow into the cell

7. Nucleolus

- a. involved in the synthesis of ribosomes
- b. is not membrane-bound
- c. it contains nucleolar organizers of some chromosomes
- d. its fibrillar centers composed of active rDNA

8. The Plasma membrane

- a. has energy dependent channel proteins
- b. is impermeable to charged ions
- c. permits the cell to recognize macromolecules
- d. its fluidity decreases with increase its cholesterol content

9. DNA is not duplicated in the cell cycle during

- a. G1 phase
- b. G2 phase
- c. S phase
- d. M phase

10. Glyocalyx

- a. is a fuzzy sugar coat on the outer leaflet of the plasmalemma
- b. it binds antigens to the cell surface
- c. aids in attachment of epithelial cells to extracellular matrix.
- d. it facilitates cell-cell recognition

II. Define

(5 marks)

1. Karyotype

2. Catalytic receptors

3 Down syndrome

4. Autoimmune disease

5. A codon

III. True or false and correct the false

(8 marks)

1. Thyroid stimulating hormone binds to receptors in the nucleus ().
2. RNA polymerase I catalyzes the synthesis of mRNA ().
3. Glucose transport usually involves the antiport movement of glucose across epithelium ().
4. Nicotinic acetylcholine receptors are G-protein receptors ().
5. During mitosis, sister chromatids begin their migration to opposite poles during metaphase ().
6. Binding of epinephrine to α 2-adrenergic receptors activates adenylyl cyclase system ().
7. Inner nuclear membrane is supported by nuclear lamina ().

8. Voltage-gated channels open in response to the binding of signaling molecules ().

VI. Name and label the following diagrams

(7 marks)

بسم الله الرحمن الرحيم

The Islamic University of Gaza
Faculty of Medicine
Medical Biology Mid Term Exam II
Time allowed: One hour
Date: 02/12/2007

Name -----Student No. -----

Answer the following questions

I. All the followings are true except (6 marks)

1. Basal lamina

- a. contains type IV collagen.
- b. includes the reticular lamina.
- c. contains proteoglycans.
- d. consists of lamina densa and lamina lucida.

2. Mitochondria

- a. contain ATP synthase which is involved in coupling oxidation to phosphorylation of ATP to ADP.
- b. can be divided.
- c. All of their enzymes except succinate dehydrogenase are present in the matrix.
- d. present in brown fat cells as condensed mitochondria which produce heat rather than ATP.

3. All of the following terms refer to the mechanism of gland secretion

- a. apocrine
- b. holocrine
- c. paracrine
- d. merocrine

4. In the cytoskeleton

- a. microtubules are associated with a motor protein called kinesin.
- b. Actin microfilaments are associated with hemidesmosome plaques.
- c. desmin filaments are present in all three types of muscle cells.
- d. keratin filaments are associated with the plaques of desmosomes.

5. Microvilli

- a. contain a core of actin filaments.
- b. facilitate absorption.
- c. form the brush border in the distal convoluted tubules of the nephron.
- d. include stereocilia.

6. Epithelia

- a. are separated from underlying connective tissue by a basal lamina.
- b. are polarized.
- c. contain intercellular substances.
- d. are avascular.

II. Define

(9 marks)

1. Triskelion

2. Autophagy

3. Tay-Sachs disease

4. Immotile cilia syndrome

5. Connexons

6. Receptor-mediated endocytosis

III. True or false and correct the false

(5 marks)

1. Clathrin-coated vesicles are involved in retrograde transport ().
2. Endocrine glands lack duct system ()
3. Plasma membrane proteins are sorted in coatomer-coated vesicles ().
4. Gap junctions permit passage of large molecules ().
5. Familial hypercholesterolemia is due to lack of low density lipoprotein receptors ()

IV. Fill in the blanks

(11 marks)

1. The part of Golgi apparatus that face the rough endoplasmic reticulum is called -----
2. Functions of smooth endoplasmic reticulum are:
 - a)
 - b)
 - c)
3. Transitional epithelium lines -----
4. The oxidative enzymes of peroxisomes include -----
---- and -----
5. Protein processing in Golgi apparatus includes the following events:
 - a)
 - b)
 - c)

6. Simple squamous epithelium lines -----

V. Name and label the following diagrams

(9 marks)

Best Wishes
Prof. Dr. Maged Yassin

بسم الله الرحمن الرحيم

The Islamic University of Gaza

Faculty of Medicine

Medical Biology Final Exam

Time allowed: Two hours

05/01/2008

Name -----Student's No. -----

Answer the following questions.

I. All the followings are true except. (15 marks)

1. 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 postganglionic axons.
- d. tends to have shorter preganglionic than posganglionic axons.

2. Plasma proteins:

- a. exert an osmotic pressure of about 25 mmHg across the capillary wall.
- b. include certain clotting factors like albumin
- c. of the immunoglobulin variety that combat viruses.
- d. are responsible for some buffering capacity of the blood.

3. The resting membrane potential of a neuron:

- a. is the potential maintained by a non conducting neuron's plasma membrane.
- b. is maintained at about -70 mV.
- c. its establishment does not need energy
- d. is mainly produced by K⁺ ions.

4. In interphase:

- a. only cells reach the restriction point will proceed to the S-phase.
- b. centrioles are replicated.
- c. M-phase delay factor prevents the cell from entering the M-phase.
- d. S-phase activator induces the cell to enter the M-phase.

5. Smooth endoplasamic reticulum:

- a. becomes active in familial hypercholesterolemia.
- b. does not contain ribophorins.
- c. an important site of drug detoxification.
- d. involves in muscle relaxation.

6. Action potential:

- a. is initiated by an increase in membrane potential to a critical value
- b. is conducted faster in myelinated fibers than unmyelinated ones
- c. obeys all or non law
- d. travels in one direction across the synapse.

7. Nuclear pore complex:

- a. permits both passive and active transport.
- b. import through it is carried out by importin receptor.
- c. its basket is thought to function in DNA transport.
- d. its thick filaments serve as a staging area prior to protein transport

8. Ribosomes:

- a. free and bound types are interchangeable.
- b. composed of several types of rRNA and numerous proteins.
- c. their dissociation from mRNA is caused by a chain-terminating codon.
- d. the codons of the mRNA base-pair with the corresponding anticodons of the tRNA on their large subunits.

9. Erythropoietin:

- a. increases the average half-life of erythrocytes.
- b. is a hormone secreted mainly by kidney.
- c. the main stimulus of its production is hypoxia.
- d. its main site of action is the bone marrow.

10. The regulatory hormones involved in digestive secretion are:

- a. enterogastrone.
- b. cholestrin.
- c. secretin.
- d. gastrin.

11. Glands:

- a. their serous secretion is watery.
- b. endocrine ones secrete directly into blood.
- c. holocrine ones release their contents by exocytosis.
- d. exocrine ones secrete into ducts.

12. Facilitated diffusion:

- a. is faster than simple diffusion.
- b. exhibits specificity for transported molecules.
- c. required no energy to facilitate transport of molecules.
- d. not permit large polar molecules to traverse plasma membrane.

13. G-protein linked receptors:

- a. are the target site of snake venom.

- b. named so because they linked GTP-binding regulatory protein.
- c. are the target site of cholera toxin.
- d. their activation involved intracellular second messenger system.

14. Heterochromatin:

- a. present everywhere in the nucleus.
- b. present in higher amount in malignant cells.
- c. responsible for RNA synthesis.
- d. present in nearly all somatic cells of female mammals.

15. Microfilaments:

- a. like microtubules they are polar with polymerization and depolymerization occurring at the plus end.
- b. abundant at the cell periphery where they are anchored to the plasma membrane via intermediary proteins like vinculin.
- c. supported the inner nuclear membrane by forming nuclear lamina.
- d. are named actin filaments involved in muscle contraction.

II. True or False and correct the false

(10 marks)

1. Nucleotides are the structural units of DNA whereas nucleosomes are the structural units of chromatin ().
2. *E. Coli* is used as an indicator of water contamination by sewage ().
3. Depolarization means Na^+ influx and hyperpolarization means K^+ efflux across cell membrane ().
4. Enterogastrone is a hormone secreted by duodenum to stimulate stomach peristalsis ().
5. Adenocarcinomas are malignant tumors that arise from glands ().
6. Free ribosomes are responsible for secretory protein synthesis ().
7. Clathrin-coated vesicles are usually function in signal-directed transport ()
8. In contrast to glutamate, γ -aminobutyric acid (GABA) is the main inhibitory neurotransmitter in the central nervous system ().
9. Nicotonic acetylcholine receptors are G-protein linked receptors ().
10. Red blood cells have integrins called band 4.1 protein ().

III. Complete the following sentences

(10 marks)

1. Blood brain barrier is composed of ----- and -----
2. The cells that attack parasites are named -----
3. The junction where one neuron communicates with another neuron in a neural pathway is called -----
4. The function of brain microglia is -----
5. The functions of coatomer-coated vesicles include:
 - a) -----
 - b) -----
6. A clot inside blood vessel is called -----
7. The motor proteins of cilia and flagella are called -----
whereas those of muscles are called -----

IV. Define

(5 marks)

1. Absolute refractory period

2. Embolus

3. Chylomicrons

4. Reflex arc

5. Stroke

V. Write very briefly on

(6 marks)

1. Negative feedback mechanism (give example)

3. Movement of fluid in capillaries and its disorder

VI. Named and labeled the following diagrams

(14 marks)

Best regards
Prof. Dr. Maged Yassin

New course 2008, Guyton & Hall

بسم الله الرحمن الرحيم

The Islamic University of Gaza
Faculty of Medicine
Medical Biology Mid Term Exam 1
Time allowed: One hour
Date: 25/10/2008

Name ----- **Student No.** -----

Answer the following questions

I. All the followings are true except (10 marks)

1. Microtubules

- a. constitute part of cytoskeleton.
- b. composed of tubulin protein molecules.
- c. responsible for support and muscle contraction.
- d. present in cilia and flagella.

2. Examples of positive feedback include

- a. regulation of blood CO₂.
- b. blood clotting.
- c. childbirth.
- d. generation of nerve signals.

3. The most common cells to exhibit amoeboid locomotion in the human body are

- a. neutrophils
- b. red blood cells
- c. fibroblasts
- d. macrophages

4. Nervous system

- a. has integrative portion that include brain and spinal cord.
- b. its autonomic portion controls function of skeletal muscles.
- c. has sensory input portion that detect state of surroundings..
- d. has motor output portion that transmit appropriate signals to muscles.

5. Ciliary movement

- a. differs from sperm movement in being quasi-sinusoidal waves
- b. occurs in respiratory airways and fallopian tube
- c. caused by a motor protein called dynein
- d. contains only with availability of ATP and appropriate concentration of Mg^{2+} and Ca^{2+} .

6. Steps involved in the regulation of arterial blood pressure include

- a. stimulation or inhibition of baroreceptors.
- b. transmission of signals to vasomotor area in the medulla oblongata.
- c. increase or decrease parasympathetic activity.
- d. increase or decrease of vasoconstrictor tone of blood vessels.

7. Extracellular fluid differs from intracellular fluid in that

- a. it has a lesser volume.
- b. it has a lower tonicity.
- c. its anions are mainly inorganic.
- d. it has a higher sodium:potassium ratio.

8. Na^+/K^+ pump

- a. prevents cell lysis by continuous Na^+ influx.
- b. like facilitated diffusion it depends on carrier protein.
- c. unlike facilitated diffusion it requires energy that derived directly from ATP .
- d. participates in genesis of resting membrane potential.

9. Cell membrane

- a. is permeable to fat-soluble substances.
- b. consists of a layer of protein sandwiched between two layers of lipid.
- c. normally contains enzymes
- d. has cholesterol molecules that help in determining the degree of its permeability

10. Lysosomes

- a. are membrane-bound organelles in the cytoplasm of most cells.
- b. contain lysozymes.
- c. originated from Golgi apparatus.
- d. responsible for tissue regression.

II. Define three of the followings:

(6 marks)

1. Gain of a control system

2. Osmosis

3. Homeostasis

4. Glycocalyx

III. True or false and correct the false (8 marks)

1. Phospholipids and cholesterol of the cell membrane are synthesized by the smooth endoplasmic reticulum ().
2. Motor proteins of muscles are actin filaments ().
3. Ribosomes are formed by rough endoplasmic reticulum ().
4. Acetylcholine acts through voltage gated channels ()

5. Calcium pump in the membrane of sarcoplasmic reticulum pumps calcium to the outside ().
6. Osmotic pressure is determined by particle mass/unit volume of fluid ()
7. Peroxisomes arise from Golgi apparatus ().
8. Facilitated diffusion differs from simple diffusion in being requires energy ().

VI. Explain the mechanism of

(6 marks)

1. Co-transport of glucose along with Na^+

2. Regulation of extracellular carbon dioxide (CO_2)

V. Name and label the following diagrams

(10 marks)

Fig. 2.3

Fig. 2.7

All the Best
Prof. Maged Yassin

بسم الله الرحمن الرحيم

The Islamic University of Gaza
Faculty of Medicine
Medical Biology Mid Term Exam 2
Time allowed: One hour
Date: 16/12/2008

Name -----Student No. -----

Answer the following questions

I. All the followings are true except (6 marks)

1. Red blood cells

- a. their number tends to be greater in person living at high altitude
- b. do not contain mitochondria
- c. have a life span of 120 days in the circulation
- d. are released from the bone marrow as mature erythrocytes

2. Vitamin B12

- a. its daily requirements is 1-3 µgm
- b. can not be manufactured in liver
- c. its absorption needs intrinsic factor secreted by stomach
- d. its deficiency causes microcytic anaemia

3. Erythropoietin

- a. is a glycoprotein hormone secreted into blood mainly by the kidney
- b. the main stimulus of its production is hypoxia
- c. its administration is helpful in the treatment of the anemia associated with renal failure
- d. increases the average half-life of erythrocytes

4. Hemoglobin

- a. its affinity to oxygen is increased in a person living at high altitude
- b. carried oxygen in a molecular form to tissues
- c. its affinity to oxygen is greater in fetus than that in the mother.

- d. its destruction increases bilirubin level in blood..

5. Neutrophils

- a. show phagocytic activity.
- b. are the most numerous leukocytes in blood.
- c. are confined to the circulation.
- d. are formed in the bone marrow.

6. Lymphocytes

- a. all originate from bone marrow
- b. are affected by interleukines
- c. most of them are mobile
- d. are part of the body's defense against cancer

II. Define

(4 marks)

1. Polycythemia Vera (Erythremia)

2. Chemotaxis

3. Sprue

4. Diapedesis

III. True and false and correct the false

(5 marks)

1. Rough tissue surface resists phagocytosis ().
2. Blood platelets are formed from giant cells in the bone marrow called megakaryocytes ().
3. Brain macrophages are called microglia ().
4. In Sickle cell anemia, RBCs have abnormal Hb called hemoglobin S with faulty α -chains ().
5. Eosinophils are produced in large quantities in people with parasitic infection ().

IV. How basophils are involved in allergy?

(2 marks)

V. Name and label the following diagram

(3 marks)

Fig. 32.7

All the Best

Prof. Maged Yassin

بسم الله الرحمن الرحيم

The Islamic University of Gaza

Faculty of Medicine

Medical Biology Final Exam

Time allowed: Two hours

Date: 08/02/2009

Name -----Student No. -----

I. All the followings are true except (14 marks)

1. Acetylcholine

- a. synthesized in presynaptic nerve terminals by the enzyme cholineacetyltransferase
- b. secreted at preganglionic neurons of autonomic nervous system
- c. has excitatory effect on the heart
- d. degraded by the enzyme cholinesterase at postsynaptic neurones

2. The following are true about the ABO and Rh systems

- a. a person who is group AB has no anti-A and anti-B antibodies
- b. the presence of the D antigen means that the subject is Rh positive
- c. rhesus antibodies occur naturally
- d. the second rhesus positive baby of a Rh negative mother is at a greater risk than the first

3. Na⁺/K⁺ Pump

- a. is an active pump with large α and small β -subunits
- d. plays a major role in the maintenance of a potential difference across the cell membrane.
- b. controls cell volume through controlling water osmosis
- c. acts as an electrogenic pump.

4. In normal human blood

- a. the neutrophils is the most common type of white blood cell
- b. the iron is mostly in hemoglobin
- c. there are more white blood cells than red blood cells.
- d. there are more red blood cells than platelets

5. Bilirubin

- a. is produced by RBC burst
- b. is a porphyrin pigment derived from hem
- c. contains iron
- d. is excreted in bile

6. The action potential:

- a. it has an amplitude which varies directly to the strength of stimulus
- b. is initiated by a decrease in the membrane potential to a critical value.
- c. travels in one direction across the synapse.
- d. can release neurotransmitter from synaptic knob by the opening of voltage-sensitive Ca²⁺ channels.

7. Neutrophils

- a. are not confined to the circulation.
- b. show phagocytic activity.
- c. are the most numerous leukocytes in blood.
- d. Part of them are formed in the thymus.

8. The following are true about blood platelets

- a. they are formed in the bone marrow.
- b. their normal concentration in circulation is about quarter a million/ μ l
- c. releases phospholipids which have a role in the clotting process
- d. they have nuclei to be reproduced

9. The resting membrane potential of a neuron:

- a. is the potential maintained by a nonconducting neuron's plasma membrane.
- b. its movement away from zero is called hyperpolarization.
- c. is achieved by active extrusion of potassium ions out of the neuron.
- d. its movement towards zero is called depolarization.

10. Hemoglobin

- a. carried oxygen in a molecular form to tissues
- b. its affinity to oxygen is decreased in a person living at high altitude
- c. its affinity to oxygen is greater in mother than that in fetus.
- d. its destruction increases bilirubin level in blood..

11. Facilitated diffusion

- a. occurs through receptor protein with a weak binding force.
- b. differs from simple diffusion in being needs energy.
- c. is the way by which glucose can cross the cell membrane.
- d. differs from simple diffusion in that its rate approaches a maximum as the concentration of diffusing substance increases.

12. The nerve impulse

- a. is associated with a transient increase in membrane permeability to sodium
- b. causes propagation of electrical current along the nerve fibre
- c. is generated in the postsynaptic neuron at a high threshold initial segment.
- d. is terminated by increasing K^+ efflux.

13. In terms of ABO blood groups, the transfused cells are likely to be affected by antigen-antibody reaction when

- a. group A blood is transfused to a group B person.
- b. group AB blood is transfused to a group A person.
- c. group B blood is transfused to a group O person.
- d. group O blood is transfused to a group AB person.

14. In the neurons

- a. the axons convey impulse away from the cell body
- b. neurotransmitters are synthesized in cell bodies and then transported to axons
- c. there is an influx of Na^+ and efflux of K^+ during depolarization
- d. the excitability is increased if the extracellular calcium concentration is decreased

II. Define

(14 marks)

1. Allograft

2. Kernicterus

3. Ligand gated ion channels (give one example)

4. Perforins

5. Thrombomodulin

6. Excitatory postsynaptic potential (EPSP)

7. Co-transport (give one example)

III. True and false and correct the false

(10 marks)

1. Glutamate is the major excitatory neurotransmitter in the CNS ().
2. IgE can cause allergy to the foetus ().
3. Osmotic pressure is the amount of pressure required to facilitate osmosis ().
4. Administration of antihistaminics is useful in treatment of asthma ().
5. Norepinephrine is secreted at postganglionic neurons of sympathetic nervous system ().
6. The variable region of antibody is the site of complement attachment ().
7. Like facilitated diffusion, primary and secondary active transport depends on carrier protein ().
8. Plasmin is a fibrolytic protein in blood vessels ().
9. plasma proteins include certain clotting factors ().
10. The interaction of G-proteins-linked receptors with signaling molecule results in activation or inhibition of cyclic AMP ().

IV. Write on

(8 marks)

1. Intrinsic pathway for blood clotting

2. Regulation of the immune system emphasizing a pivotal role of the helper T cells

V. Name and label the following diagram

(14 marks)

Fig. 32-4

Fig. 45-6

***With Best Wishes
Prof. Dr. Maged Yassin***

بسم الله الرحمن الرحيم

The Islamic University of Gaza

Faculty of Medicine

Medical Biology Mid Term Exam

Time allowed: One hour

Date: 05/12/2009

Name -----Student No. -----

Answer the following questions

I. All the followings are true except (15 marks)

1. Lysosomes

- a. are membrane-bound organelles in the cytoplasm of most cells.
- b. contain lysozymes.
- c. originated from Golgi apparatus.
- d. responsible for tissue regression.

2. Cell membrane

- a. is permeable to fat-soluble substances.
- b. consists of a layer of protein sandwiched between two layers of lipid.
- c. normally contains enzymes
- d. has cholesterol molecules that help in determining the degree of its permeability

3. Ciliary movement

- a. differs from sperm movement in being quasi-sinusoidal waves
- b. occurs in respiratory airways and fallopian tube
- c. caused by a motor protein called dynein
- d. continues only with availability of ATP and appropriate concentration of Mg^{2+} and Ca^{2+} .

4. Extracellular fluid differs from intracellular fluid in that

- a. it has a lesser volume.
- b. it has a lower tonicity.
- c. its anions are mainly inorganic.
- d. it has a higher sodium:potassium ratio.

5. Nervous system

- a. has integrative portion that include brain and spinal cord.
- b. has motor output portion that transmit appropriate signals to muscles.
- c. its autonomic portion controls function of skeletal muscles.
- d. has sensory input portion that detect state of surroundings.

6. Microtubules

- a. constitute part of cytoskeleton.
- b. composed of tubulin protein molecules.
- c. responsible for support and muscle contraction.
- d. present in cilia and flagella.

7. Examples of positive feedback include

- a. regulation of blood CO₂ .
- b. blood clotting.
- c. childbirth.
- d. generation of nerve signals.

8. The most common cells to exhibit amoeboid locomotion in the human body are

- a. neutrophils
- b. red blood cells
- c. fibroblasts
- d. macrophages

9. Steps involved in the regulation of arterial blood pressure include

- a. stimulation or inhibition of baroreceptors.
- b. transmission of signals to vasomotor area in the medulla oblongata.
- c. increase or decrease parasympathetic activity.
- d. increase or decrease of vasoconstrictor tone of blood vessels.

10. Na⁺/K⁺ pump

- a. prevents cell lysis by continuous Na⁺ influx.
- b. like facilitated diffusion it depends on carrier protein.
- c. unlike facilitated diffusion it requires energy that derived directly from ATP .
- d. participates in genesis of resting membrane potential.

II. Define the followings:

(7 marks)

1. Osmosis

2. Gain of a control system

3. Homeostasis

4. Glycocalyx

III. True or false and correct the false (12 marks)

1. Peroxisomes arise from Golgi apparatus ().
2. Clathrin is a protein involved in the formation of pinocytic vesicle ().
3. Acetylcholine acts through voltage gated channels ().
4. Facilitated diffusion differs from simple diffusion in being requires energy ().
5. Phospholipids and cholesterol of the cell membrane are synthesized by the smooth endoplasmic reticulum ().

6. Ribosomes are formed by rough endoplasmic reticulum ().
7. Calcium pump in the membrane of sarcoplasmic reticulum pumps calcium actively to the inside ().
8. Osmotic pressure is determined by particle mass/unit volume of fluid ()

VI. Explain the mechanism of (6 marks)

1. Regulation of extracellular carbon dioxide (CO₂)

2. Co-transport of glucose along with Na⁺

With Best Wishes
Prof. Dr. Maged Yassin

بسم الله الرحمن الرحيم

The Islamic University of Gaza

Faculty of Medicine

Medical Biology Final Exam

Time allowed: Two hours

Date: 30/01/2010

Name -----Student No. -----

I. All the followings are true except (14 marks)

1. The resting membrane potential of a neuron:

- a. is the potential maintained by a nonconducting neuron's plasma membrane.
- b. its movement away from zero is called hyperpolarization.
- c. is achieved by active extrusion of potassium ions out of the neuron.
- d. its movement towards zero is called depolarization.

2. Bilirubin

- a. is produced by RBC burst
- b. is a porphyrin pigment derived from hem
- c. contains iron
- d. is excreted in bile

3. Facilitated diffusion

- a. occurs through receptor protein with a weak binding force.
- b. differs from simple diffusion in being needs energy.
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- d. differs from simple diffusion in that its rate approaches a maximum as the concentration of diffusing substance increases.

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- a. is associated with a transient increase in membrane permeability to sodium
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5. The following are true about the ABO and Rh systems

- a. a person who is group AB has no anti-A and anti-B antibodies
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- d. the second rhesus positive baby of a Rh negative mother is at a greater risk than the first

6. In normal human blood

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- b. the iron is mostly in hemoglobin
- c. there are more white blood cells than red blood cells.
- d. there are more red blood cells than platelets

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- d. Part of them are formed in the thymus.

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- b. their normal concentration in circulation is about quarter a million/ μl
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- a. group A blood is transfused to a group B person.
- b. group AB blood is transfused to a group A person.
- c. group B blood is transfused to a group O person.
- d. group O blood is transfused to a group AB person.

14. Na^+/K^+ Pump

- a. is an active pump with large α and small β -subunits
- d. plays a major role in the maintenance of a potential difference across the cell membrane.
- b. controls cell volume through controlling water osmosis
- c. acts as an electrogenic pump.

II. Define

(18 marks)

1. Plasmin

2. Perforins

3. Voltage gated ion channels (give one example)

4. Kernicterus

5. Thrombomodulin

6. Inhibitory postsynaptic potential (IPSP)

7. Co-transport (give one example)

8. Allograft

9. Polycythemia Vera (Erythremia)

III. True and false and correct the false

(10 marks)

1. Gamma aminobutyric acid (GABA) is the major inhibitory neurotransmitter in the CNS ().
2. Erythropoietin increases the average half life of red blood cells ().
3. Administration of antihistaminics is useful in treatment of asthma ().
4. The variable region of antibody is the site of complement attachment ().
5. The interaction of G-proteins-linked receptors with signaling molecule results in activation or inhibition of cyclic AMP ().
6. plasma proteins include certain clotting factors ().
7. Osmotic pressure is the amount of pressure required to facilitate osmosis ().
8. IgE can cause allergy to the foetus ().
9. Adrenaline is secreted at postganglionic neurons of sympathetic nervous system ().
10. Like facilitated diffusion, primary and secondary active transport depends on carrier protein ().

IV. Write on**(12 marks)**

1. Intrinsic pathway for blood clotting
2. Regulation of the immune system emphasizing a pivotal role of the helper T cells

V. Mention the function of**(6 marks)**

1. Initial segment of nerve cell
2. Smooth endoplasmic reticulum
3. Microtubules

***With Best Wishes
Prof. Dr. Maged Yassin***

بسم الله الرحمن الرحيم

The Islamic University of Gaza

Faculty of Medicine

Medical Biology Mid Term Exam

Time allowed: One hour

Date: 21/11/2010

Name ----- Student No. -----

Answer the following questions

I. All the followings are true except (12 marks)

1. Microtubules

- a. constitute part of cytoskeleton.
- b. composed of tubulin protein molecules.
- c. responsible for support and muscle contraction.
- d. present in cilia and flagella.

2. Examples of positive feedback include

- a. regulation of blood CO₂.
- b. blood clotting.
- c. childbirth.
- d. generation of nerve signals.

3. The most common cells to exhibit amoeboid locomotion in the human body are

- a. neutrophils
- b. red blood cells
- c. fibroblasts
- d. macrophages

4. Nervous system

- a. has integrative portion that include brain and spinal cord.
- b. its autonomic portion controls function of skeletal muscles.
- c. has sensory input portion that detect state of surroundings..
- d. has motor output portion that transmit appropriate signals to muscles.

5. The resting membrane potential of a neuron:

- a. is the potential maintained by a nonconducting neuron's plasma membrane.
- b. it is generated mainly by K⁺ leakage channels.
- c. is maintained at about -70 mV.
- d. its movement towards zero is called repolarization.

6. Ciliary movement

- a. differs from sperm movement in being quasi-sinusoidal waves
- b. occurs in respiratory airways and fallopian tube
- c. caused by a motor protein called dynein
- d. contains only with availability of ATP and appropriate concentration of Mg^{2+} and Ca^{2+} .

7. Steps involved in the regulation of arterial blood pressure include

- a. stimulation or inhibition of baroreceptors.
- b. transmission of signals to vasomotor area in the medulla oblongata.
- c. increase or decrease parasympathetic activity.
- d. increase or decrease of vasoconstrictor tone of blood vessels.

8. The action potential

- a. has amplitude which does not vary with stimulus strength.
- b. is initiated by increase membrane potential to a critical value
- c. is generated in the postsynaptic neuron at a low threshold initial segment
- d. is terminated by increasing K^+ conductance

9. Extracellular fluid differs from intracellular fluid in that

- a. it has a lesser volume.
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10. Na^+/K^+ pump

- a. prevents cell lysis by continuous Na^+ influx.
- b. like facilitated diffusion it depends on carrier protein.
- c. unlike facilitated diffusion it requires energy that derived directly from ATP .
- d. participates in genesis of resting membrane potential.

11. Cell membrane

- a. is permeable to fat-soluble substances.
- b. consists of a layer of protein sandwiched between two layers of lipid.
- c. normally contains enzymes
- d. has cholesterol molecules that help in determining the degree of its permeability

12. Lysosomes

- a. are membrane-bound organelles in the cytoplasm of most cells.
- b. contain lysozymes.
- c. originated from Golgi apparatus.
- d. responsible for tissue regression.

II. Define three of the followings:

(8 marks)

1. Chemotaxis

2. Absolute refractory period

3. Glycocalyx

4. Gain of a control system

III. True or false and correct the false

(10 marks)

1. Phospholipids and cholesterol of the cell membrane are synthesized by the smooth endoplasmic reticulum ().

2. Motor proteins of muscles are actin filaments ().

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

4. Ribosomes are formed by rough endoplasmic reticulum ().
5. Acetylcholine acts through voltage gated channels ().
6. Calcium pump in the membrane of sarcoplasmic reticulum pumps calcium to the outside ().
7. Osmotic pressure is determined by particle mass/unit volume of fluid ().
8. Depolarization of cardiac muscle is achieved mainly by calcium ions influx ().
9. Peroxisomes arise from Golgi apparatus ().
10. Facilitated diffusion differs from simple diffusion in being requires energy ().

VI. Explain the mechanism of

(10 marks)

1. Co-transport of glucose along with Na^+

2. Saltatory conduction

3. Regulation of extracellular carbon dioxide (CO₂)

***With Best Wishes
Prof. Dr. Maged Yassin***

بسم الله الرحمن الرحيم

The Islamic University of Gaza
Faculty of Medicine
Medical Biology Final Exam
Time allowed: Two hours
Date: 09/01/2011

Name -----Student No. -----

I. All the followings are true except (15 marks)

1. Blood platelets

- a. an increase in their number prolongs the bleeding time.
- b. are important in stopping bleeding in that they release a vasoconstrictor substance called serotonin.
- c. are formed from giant cells in the bone marrow called megakaryocytes.
- d. their activation is initiated by binding to collagen.

2. Hemoglobin

- a. carried oxygen in a molecular form to tissues
- b. its affinity to oxygen is decreased in a person living at high altitude
- c. its affinity to oxygen is greater in mother than that in fetus.
- d. its destruction increases bilirubin level in blood..

3. The nerve impulse

- a. is associated with a transient increase in membrane permeability to sodium
- b. causes propagation of electrical current along the nerve fiber
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4. Neutrophils

- a. are not confined to the circulation.
- b. show phagocytic activity.
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- c. is achieved by active extrusion of potassium ions out of the neuron.
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8. In normal human blood

- a. the neutrophils is the most common type of white blood cell
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15. Facilitated diffusion

- a. occurs through receptor protein with a weak binding force.
- b. differs from simple diffusion in being needs energy.
- c. is the way by which glucose can cross the cell membrane.
- d. differs from simple diffusion in that its rate approaches a maximum as the concentration of diffusing substance increases.

II. Define

(18 marks)

1. End plate potential

2. Thrombomodulin

3. Plasmin

4. Allograft

5. Perforins

6. Voltage gated ion channels (give one example)

7. Kernicterus

8. Co-transport (give one example)

9. Polycythemia Vera (Erythremia)

III. True and false and correct the false

(10 marks)

1. IgE can cause allergy to the foetus ().
2. Plasma proteins include certain clotting factors ().
3. Glutamate is the major excitatory neurotransmitter in the CNS ().
4. Tropomyosin is a thick filament protein covers the active sites of actin in skeletal muscle ().
5. Osmotic pressure is the amount of pressure required to facilitate osmosis ().
6. Erythropoietin increases the average half life of red blood cells ().
7. Administration of antihistaminics is useful in treatment of asthma ().
8. The variable region of antibody is the site of complement attachment ().
9. Like facilitated diffusion, primary and secondary active transport depends on carrier protein ().

10. The interaction of G-proteins-linked receptors with signaling molecule results in activation or inhibition of cyclic AMP ().

IV. Write on

(17 marks)

1. Excitation contraction coupling of skeletal muscle

2. Intrinsic pathway for blood clotting

3. Regulation of the immune system emphasizing a pivotal role of the helper T cells

***With Best Wishes
Prof. Dr. Maged Yassin***

بسم الله الرحمن الرحيم

The Islamic University of Gaza

Faculty of Medicine

Medical Biology Mid Term Exam

Time allowed: One hour

Date: 12/11/2011

Name -----Student No. -----

Answer the following questions

I. All the followings are true except

(12 marks)

1. Microtubules

- a. constitute part of cytoskeleton.
- b. composed of tubulin protein molecules.
- c. responsible for support and muscle contraction.
- d. present in cilia and flagella.

2. Examples of positive feedback include

- a. regulation of blood CO₂.
- b. blood clotting.
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3. The most common cells to exhibit amoeboid locomotion in the human body are

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- a. are membrane-bound organelles in the cytoplasm of most cells.
- b. contain lysozymes.
- c. originated from Golgi apparatus.
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II. Define the followings:

(8 marks)

1. Chemotaxis

2. Absolute refractory period

3. Facilitated diffusion

III. True or false and correct the false

(10 marks)

1. Phospholipids and cholesterol of the cell membrane are synthesized by the smooth endoplasmic reticulum ().
2. Motor proteins of muscles are actin filaments ().
3. Na^+/K^+ pump plays a minor role in generating resting membrane potential ().
4. Ribosomes are formed by rough endoplasmic reticulum ().
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1. Co-transport of glucose along with Na^+

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***With Best Wishes
Prof. Dr. Maged Yassin***

بسم الله الرحمن الرحيم

The Islamic University of Gaza

Faculty of Medicine

Medical Biology Final Exam

Time allowed: 120 minutes

Date: 31/12/2011

Name -----Student No. -----

I. All the followings are true except

(18 marks)

1. Vitamin B12

- a. its daily requirements is 1-3 µgm
- b. can not be manufactured in liver
- c. its absorption needs intrinsic factor secreted by stomach
- d. its deficiency causes microcytic anaemia

2. The following are true about the ABO and Rh systems

- a. a person who is group AB has no anti-A and anti-B antibodies
- b. the presence of the D antigen means that the subject is Rh positive
- c. rhesus antibodies occur naturally
- d. the second rhesus positive baby of a Rh negative mother is at a greater risk than the first

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- c. contains iron
- d. is excreted in bile

6. The action potential:

- a. it has an amplitude which varies directly to the strength of stimulus
- b. is initiated by a decrease in the membrane potential to a critical value.
- c. travels in one direction across the synapse.
- d. can release neurotransmitter from synaptic knob by the opening of voltage-sensitive Ca²⁺ channels.

7. Neutrophils

- a. are not confined to the circulation.
- b. show phagocytic activity.
- c. are the most numerous leukocytes in blood.
- d. Part of them are formed in the thymus.

8. The following are true about blood platelets

- a. they are formed in the bone marrow.
- b. their normal concentration in circulation is about quarter a million/ μ l
- c. releases phospholipids which have a role in the clotting process
- d. they have nuclei to be reproduced

9. The resting membrane potential of a neuron:

- a. is the potential maintained by a nonconducting neuron's plasma membrane.
- b. its movement away from zero is called hyperpolarization.
- c. is achieved by active extrusion of potassium ions out of the neuron.
- d. its movement towards zero is called depolarization.

10. Hemoglobin

- a. carried oxygen in a molecular form to tissues
- b. its affinity to oxygen is decreased in a person living at high altitude
- c. its affinity to oxygen is greater in mother than that in fetus.
- d. its destruction increases bilirubin level in blood..

11. Facilitated diffusion

- a. occurs through receptor protein with a weak binding force.
- b. differs from simple diffusion in being needs energy.
- c. is the way by which glucose can cross the cell membrane.
- d. differs from simple diffusion in that its rate approaches a maximum as the concentration of diffusing substance increases.

12. Red blood cells

- a. their number tends to be greater in person living at high altitude
- b. do not contain mitochondria
- c. have a life span of 120 days in the circulation
- d. are released from the bone marrow as mature erythrocytes

13. The nerve impulse

- a. is associated with a transient increase in membrane permeability to sodium
- b. causes propagation of electrical current along the nerve fibre
- c. is generated in the postsynaptic neuron at a high threshold initial segment.
- d. is terminated by increasing K^+ efflux.

14. In terms of ABO blood groups, the transfused cells are likely to be affected by antigen-antibody reaction when

- a. group A blood is transfused to a group B person.
- b. group AB blood is transfused to a group A person.
- c. group B blood is transfused to a group O person.
- d. group O blood is transfused to a group AB person.

15. In the neurons

- a. the axons convey impulse away from the cell body
- b. neurotransmitters are synthesized in cell bodies and then transported to axons
- c. there is an influx of Na^+ and efflux of K^+ during depolarization
- d. the excitability is increased if the extracellular calcium concentration is decreased

16. Erythropoietin

- a. is a glycoprotein hormone secreted into blood mainly by the kidney
- b. the main stimulus of its production is hypoxia
- c. its administration is helpful in the treatment of the anemia associated with renal failure
- d. increases the average half-life of erythrocytes

17. Lymphocytes

- a. all originate from bone marrow
- b. are affected by interleukines
- c. most of them are mobile
- d. are part of the body's defense against cancer

18. Blood platelets

- a. an increase in their number prolongs the bleeding time.
- b. are important in stopping bleeding in that they release a vasoconstrictor substance called serotonin.
- c. are formed from giant cells in the bone marrow called megakaryocytes.
- d. their activation is initiated by binding to collagen.

II. Define

(12 marks)

1. Ligand gated ion channels (give one example)**2. Polycythemia Vera (Erythremia)****3. Sprue****4. Allograft**

5. Plasmin

6. Kernicterus

III. True and false and correct the false

(11 marks)

1. Rough tissue surfaces resist phagocytosis ().
2. IgE can cause allergy to the foetus ().
3. Osmotic pressure is the amount of pressure required to facilitate osmosis ().
4. Administration of antihistaminics is useful in treatment of asthma ().
5. The variable region of antibody is the site of complement attachment ().
6. Like facilitated diffusion, primary and secondary active transport depends on carrier protein ().
7. Plasmin is a fibrolytic protein in blood vessels ().
8. Prothrombin is a plasma protein ().
9. Brain macrophages are called microglia ().
10. In Sick cell anemia, RBCs have abnormal Hb called hemoglobin S with faulty α -chains ().
11. Eosinophils are produced in large quantities in people with parasitic infection ().

IV. Write on

(19 marks)

1. Intrinsic pathway for blood clotting

2. Regulation of the immune system emphasizing a pivotal role of the helper T cells

3. Genesis of action potential across the nerve fiber

With Best Wishes
Prof. Dr. Maged Yassin

بسم الله الرحمن الرحيم
Al Azhar University of Gaza
Faculty of Medicine
General Physiology Mid Term Exam
Time allowed: One hour
Date: 06/05/2012

Name ----- **Student No.** -----

Answer the following questions

I. All the followings are true except (10 marks)

1. Microtubules

- a. constitute part of cytoskeleton.
- b. composed of tubulin protein molecules.
- c. responsible for support and muscle contraction.
- d. present in cilia and flagella.

2. Examples of positive feedback include

- a. regulation of blood CO₂.
- b. blood clotting.
- c. childbirth.
- d. generation of nerve signals.

3. The most common cells to exhibit amoeboid locomotion in the human body are

- a. neutrophils
- b. red blood cells
- c. fibroblasts
- d. macrophages

4. Nervous system

- a. has integrative portion that include brain and spinal cord.
- b. its autonomic portion controls function of skeletal muscles.
- c. has sensory input portion that detect state of surroundings..
- d. has motor output portion that transmit appropriate signals to muscles.

5. Ciliary movement

- a. differs from sperm movement in being quasi-sinusoidal waves
- b. occurs in respiratory airways and fallopian tube
- c. caused by a motor protein called dynein
- d. continues only with availability of ATP and appropriate concentration of Mg²⁺ and Ca²⁺.

6. Steps involved in the regulation of arterial blood pressure include

- a. stimulation or inhibition of baroreceptors.
- b. transmission of signals to vasomotor area in the medulla oblongata.
- c. increase or decrease parasympathetic activity.
- d. increase or decrease of vasoconstrictor tone of blood vessels.

7. Extracellular fluid differs from intracellular fluid in that

- a. it has a lesser volume.
- b. it has a lower tonicity.
- c. its anions are mainly inorganic.
- d. it has a higher sodium:potassium ratio.

8. Na^+/K^+ pump

- a. prevents cell lysis by continuous Na^+ influx.
- b. like facilitated diffusion it depends on carrier protein.
- c. unlike facilitated diffusion it requires energy that derived directly from ATP .
- d. participates in genesis of resting membrane potential.

9. Cell membrane

- a. is permeable to fat-soluble substances.
- b. consists of a layer of protein sandwiched between two layers of lipid.
- c. normally contains enzymes
- d. has cholesterol molecules that help in determining the degree of its permeability

10. Lysosomes

- a. are membrane-bound organelles in the cytoplasm of most cells.
- b. contain lysozymes.
- c. originated from Golgi apparatus.
- d. responsible for tissue regression.

II. Define the followings:

(8 marks)

1. Chemotaxis

2. Gain of a control system

3. Facilitated diffusion

III. True or false and correct the false (12 marks)

1. Phospholipids and cholesterol of the cell membrane are synthesized by the smooth endoplasmic reticulum ().
2. Motor proteins of muscles are actin filaments whereas in cilia are dynein ().
3. Na^+/K^+ pump plays a minor role in generating resting membrane potential ().
4. Ribosomes are formed by rough endoplasmic reticulum ().
5. Acetylcholine acts through voltage gated channels ().
6. Osmotic pressure is determined by particle mass/unit volume of fluid ().
7. Peroxisomes arise from Golgi apparatus ().
8. Facilitated diffusion differs from simple diffusion in being requires energy ().

VI. Explain the mechanism of

(10 marks)

1. Co-transport of glucose along with Na^+

2. Regulation of extracellular carbon dioxide (CO_2)

***With Best Wishes
Prof. Dr. Maged Yassin***