المملكة العربية السعودية

وزارة التعليم

MINISTRY OF EDUCATION

هام

لكل المهتمين و المهتمات

بدروس و مراجع الجامعية

مدونة المناهج السعودية eduschool40.blog

Integumentary system

-Name the largest organ in the body ?
Skin
-Name the two layers which make up the skin ?
- Vascular: Dermis
- Avascular: Epidermis

-Match types of skin accessory organs:

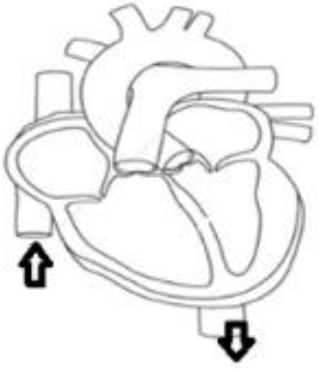
sweat gland	protection
hair and nails	secrete oil
Sebaceous gland	thermal homeostasis

Cardiovascular system

Match the following:

1- Right heart	Oxygen- rich blood
2- Left heart	Oxygen -poor blood
-3- erytheopiosis	mitral valve
4- bicuspid valve	RBCs formation in bone marrow
5- Fibrin	Blood Clot

Draw arrows showing the blood flow in the heart on this

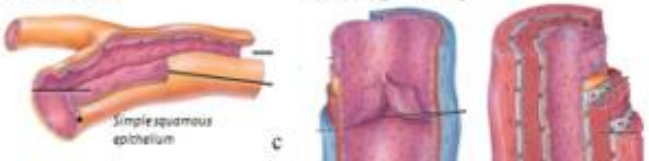


diagram

1) What are types of agranular Leukocytes?
(neurtophils, basophils, eosinophils, monocytes, lymphocytes)

2) What are types of granular leukocytes?
(neurtophils, basophils, eosinophils, monocytes, lymphocytes)

-Put a, b, or c a) vein or venule, b) artery or arteriole c) Capillary



Digestive system

Tick the accessory organs in GIT: (pancreas, small intestine, liver , pharynx, gall bladder).

Tick items help in mechanical digestion: (teeth, esophagus, bile, stomach wall, pancreas)

Match the components of gastric juice and pancreatic juice:

- mucous , HCl , enzymes
- Buffer, Enzumes

Where does digestion of carbohydrates, fat and proteins begin ?

Carbohydrates:	mouth
Fat:	stomach
Proteins:	mouth

Match:

Emulsification	Produced in liver and stored in gall bladder
Chyme	digested food in the stomach
Bile	breakdown of fats
Peristalsis	secreted into the duodenum
Pancreatic juice and bile	contractions in smooth muscles in GIT

Match for digestive enzymes :

Lingual lipase, gastric lipase, pancreatic lipase
proteins

Salivary amylase, pancreatic amylase, maltase, lactase, sucrase
lipids

Pepsin, trypsin, aminopeptidases, dipeptidases
carbohydrates

Say whither True or false:

-Digestion of proteins gives monosaccharide. (T / F)

-Digestion of polysaccharides gives amino acids. (T / F)

- Intestinal mucosa develops villi, microvilli for rapid absorption (T / F)

- Pepsin is produced in inactive form called pepsinogen. (T / F)

Nervous system

Choose:

- The junction between two nerve cells is called (synapse – myelin sheath – neurotransmitters).

-(synapse – myelin sheath – neurotransmitters) is made up of specialized glial cells known as Schwann cells .

-(synapse – Schwann cells – neurotransmitters)are stored in small synaptic vesicles clustered at the tip of the axon terminals.

-(sensory neurons, motor neurons, interneurons) connect sensory and motor neurons in the reflexes

small synaptic vesicles clustered at the tip of the axon terminals.
-(sensory neurons, motor neurons, interneurons) connect sensory and motor neurons in the reflexes.
-(dendrites, axon) transmit signals towards the cell body, whereas (dendrites, axon) transmit signals away from the cell body

Match the correct function:

1-Afferent or Sensory — transmit information AWAY from the CNS
2-Efferent or Motor — transmit information TOWARD the CNS
3-Brain — controls skeletal muscles (conscious)
4-Somatic Nervous System: — receives, interprets and sends messages
5-Autonomic Nervous System — controls involuntary muscles (unconscious, homeostasis)
6-Sympathetic — controls activities that conserve energy
7-Parasympathetic — controls activities that consume energy

Match for brain parts and their functions:

Brain stem	Centers for rely sensory information and motor responses
Diencephalon	Regulates heart rate, breathing, and blood pressure
Cerebellum	learning, remembering, thinking and planning
Cerebrum	Maintains muscle tone, posture and balance

Immunity and lymphatic system

Say whither True or false:

1- T and B lymphocytes are involved in non-specific immunity. (T / F)
2- Acquired immunity is initiated after exposure to a specific antigen. (T / F)
3- B- lymphocytes are the cells which produce antibodies . (T / F)
4- Saliva, stomach acid, skin are components of acquired immunity (T / F)
5- Passive immunity is induced by vaccines (T / F)
6- Lysozyme present in saliva and tears is involved in surface barriers. (T / F)
7- Complements are involved in 2nd line of defenses. (T / F)
8- IgE play role in allergy. (T / F)
9- Cell mediated immunity is monitored by antibodies. (T / F)
10- The advantage of active immunity is to obtain memory cells. (T / F)

Reproductive system

Match the correct answer:

Leydig cells	nourishment and final maturation of sperm
Sertoli cells	:Produce testosterone
Spermatogenesis	Formation of eggs
Oogenesis	Formation of sperms
Sperms produced in the ovary	discharge of eggs from
Ovulation	Semineferous tubules
Graafian follicle	The mature follicle ready to ovulate
Implantation	It is the site of fertilization
Fallopian tubes :	Occurs in the uterine endometrium
Progesterone	cause changes to the endometrium of the uterus and the appearance of the menstrual flow
Estrogen	Stimulates the male secondary sex characteristics
Testosterone	Stimulates the female secondary sex characteristics
LH	stimulates the growth of the follicle into a mature follicle
FSH:	Causes the mature follicle to ovulate

Urinary System

Complete:

-The functional unit of the kidney is -------Nephron----------

-Renal capsule is composed of: ------Bauman capsule-----,-------Glumorulus---------

-Renal tubule is composed of: ----PCT----, -----Loop of Henel-------, -----DCT--------

Match for the reabsorption process:

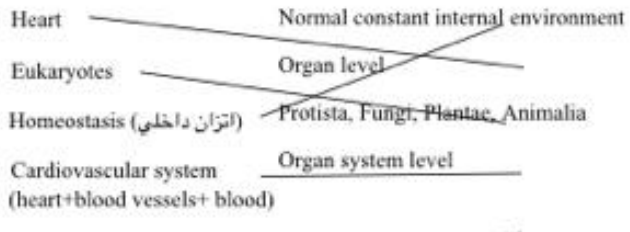
Aldosterone	increase blood volume and blood pressure
ANP and BNP	reabsorption of sodium ions
ADH	decrease urine volume

Put T/ F:

-Erythropoietin Stimulates production of new white blood cells

Homework : Introduction to Biology

Match the characteristics of living things:



smallest ~~unit~~ of life

cell

Complete the following:

- --**Biology**--- is the science studying the living organisms.

-***Taxonomy (علم التصنيف)*** means classification of organisms into groups according to their (similarities – colors).

Biological molecules I (Carbohydrates and Lipids)

-Match the types of carbohydrates with their examples

single sugar molecule	As Glycogen, starch, cellulose
two monosaccharides units	As glucose , fructose , ribose, galactose
(> 10 to thousands monosaccharides units	As Lactose , sucrose, maltose

Write down how to make:

-Lactose:------Glucose ----- + --------galactose----

-Sucrose: ------ Glucose ----- + -------Fructose----------

-Maltose: ---- Glucose --------- + ------- Glucose ---------

Complete:

-Dehydration reaction includes (formation of bonds—breaking bonds)

-Hydrolysis reaction includes (changing polymers into monomers—changing monomers into polymers)

-Lipids (do---- donot) make polymers.

-Match for examples of lipids and their structures:

a- Triglycerides (fats and oils)----------3

b- Phospholipids (Ex. cell membrane)----------2

c- Steroids (As cholesterol, some hormones)----------5

-Match for examples of lipids and their structures:

a- Triglycerides (fats and oils)----------3

b- Phospholipids (Ex. cell membrane)----------2

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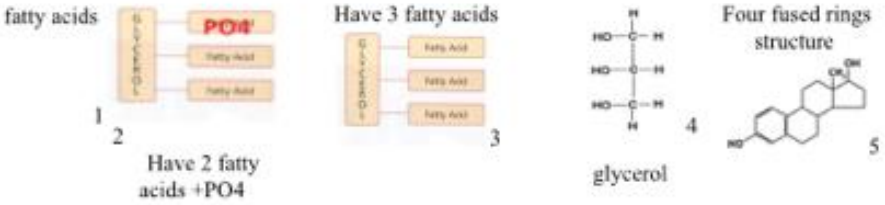
d- Backbone of triglycerides----------4



(Biomolecules II (Proteins

-What is the name of the bond present in a protein? ---Peptide---

-What is the monomers (وحدات بنائية) of:

- Carbohydrates	amino acids
- Lipids	glucose
- DNA/ RNA	none
- Proteins	nucleotides

-What is the role of enzymes as catalysts محفزات ?

- make the reaction much more (quickly --- slowly)

-facilitate the reaction without being (changed ---- unchanged)

- rely on its (shape --- size) to function properly

-each enzyme is (specific متخصص --- non-specific غير متخصص) for a specific substrate(متفاعلات)

True or False:

- Heamoglobin is an example of tertiary structure (الثلاثي) of protein (T / F)

- Secondary structure of proteins are stabilized by hydrogen bonds (T / F)

-The denaturated proteins are active proteins (T / F)

-All amino acids share the amino and carboxyl group, except for the R group is different (T / F)

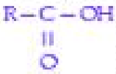
Which of the following protein conformation (تشكل) (1, 2, 3, 4, 5) is

-The most complex protein structure ----------3

$R-C(=O)-OH$ units of proteins----------1

Which of the following protein conformation (,4 ,3 ,2 ,1) (تشكل 5) is

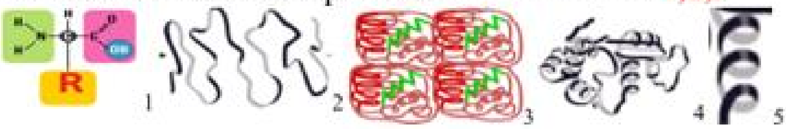
-The most complex protein structure -------------3



ʒ units of proteins---------------1

nal proteins -----------------3,4

- Cannot be functional proteins------------------1,2,5



Biomolecules III (nucleic acids)

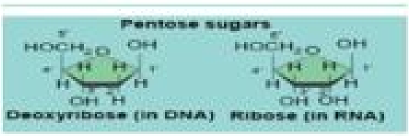
Comparatively بالمقارنة what are the differences between the two nucleic acids ?

DNA	RNA
Name : Deoxyribonucleic acid	Ribonucleic acid
Sugar (deoxyribose – ribose)	(deoxyribose – ribose)
Bases: (A, T, C, G)	A, U, C, G
Bond: phospho-di-ester bond	Phospho-di-ester bond
shape: (double helix----single stranded)	(double helix ----single stranded)

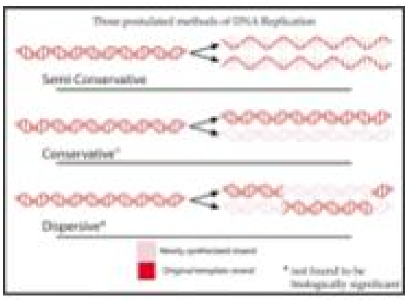
Complete:

-DNA is a polymer of units called ---nucleotides-----
-a nucleotide is composed of: ----base----- + ------sugar---+ -----phosphate group-
- In DNA synthesis, leading strand (القائد) proceeds (continuously, discontinuously) but lagging strand(المتأخر) proceeds (continuously, discontinuously)
- Okazaki fragments (قطع اوكازاكي) found only on ---lagging---- strand.
- . Each core histone with its associatedالمصاحب DNA is called ----nucleosome---------
.ATP- is an energy molecule, powers all cellular activities---- -

Q: The difference between the two sugars in DNA and RNA is the missing of one ----oxygen--- atom



س: اي من هذه يمثل التضاعف في ال DNA : 1 -نصف محافظ 2- محافظ 3- مشتت



Q: Match then arrange in ascending order تصاعدي:

Chromosome (coiled DNA)	
Nucleosome (DNA+ histone protein)	
Nucleotide (Base + sugar+ phosphate gr)	
Base (A, T, C, G)	
DNA (Polymer of nucleotides)	

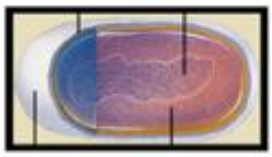
- **What would be the complementary المكمل DNA strand for the following DNA sequence?**

DNA 5'-GCGTATGG-

3-Actin is an example of intermediate filament. X

4- Microtubules arrangement in cilia and flagella is nine triplets but centerioles is 9+2 structure X

-Match the structures in the figures below with the correct description



A prokaryotic cell

Microtubules move chromosomes during cell division

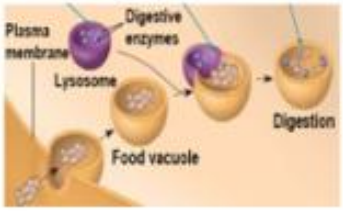
The genetic material is stored in nucleoid

Ribosomes

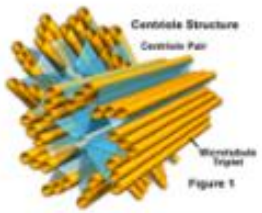
Lysosomes digestin [1] gocytizedبلع food

[2]

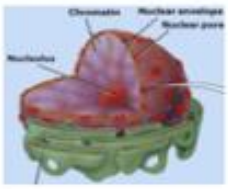
[3]



Has pores on its outer membrane and stores the genetic material



Proteins factories



Composed of nine triplets of microtubules arranged in asters نجمة

Biological membranes

Match the correct definition تعريف :

Fluid mosaic model

chooses what may cross يعبرthe membrane

Semi-permeable (شبه نفاذ)

Phospholipid bilayer

embeddedيتضمن with mobileمتحركة proteins

Integral proteins (بروتينات متكاملة)

surface proteins

Peripheral proteins (بروتينات طرفية)

trans-membrane proteins

Integral proteins (بروتينات متكاملة) surface proteins

Peripheral proteins (بروتينات طرفية) trans-membrane proteins

glycocalyx glycoproteins and glycolipids

-Which part of phospholipid is Hydrophilic or hydrophobic?

- Hydrophilic fatty acids (tail)

- hydrophobic phosphate group (head)

Fill in the following table for types of transport in the cell membrane

Type	Simple Diffusion	Osmosis	Facilitated Diffusion	Active transport
Direction of Gradients	High→low	High→low	High→low	low → High
Use Energy	X	X	X	√
Use transport protein	X	X	√	√
Example	O2, CO2	Water	Glucose	Na+, K+

Fill in the three cases of osmosis:

	Movement of water	What happened to the cell?
In Hypertonic solution (salt solution)	In→out	 Shrinks and shrivel up
In Hypotonic solution (distilled water)	out → In	 Swollen and burst
In Isotonic solution	Same	 Normal

Match :

- Exocytosis vesicles move particles into the cell
- Endocytosis vesicles move particles out of the cell
- Phagocytosis vesicle brings water containing substances into the cell
- Pinocytosis vesicle brings large mass of nutrients into the cell

Q: In the figure (Na+, K+ pump), what are A and B?

A=K+
B= Na+

Q: This figure shows two processes occurring inside the cell. Describe them . Put 1,2, 3,4

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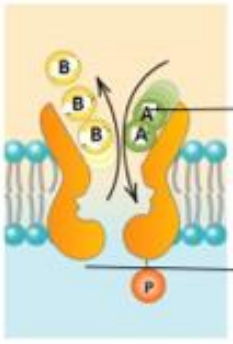

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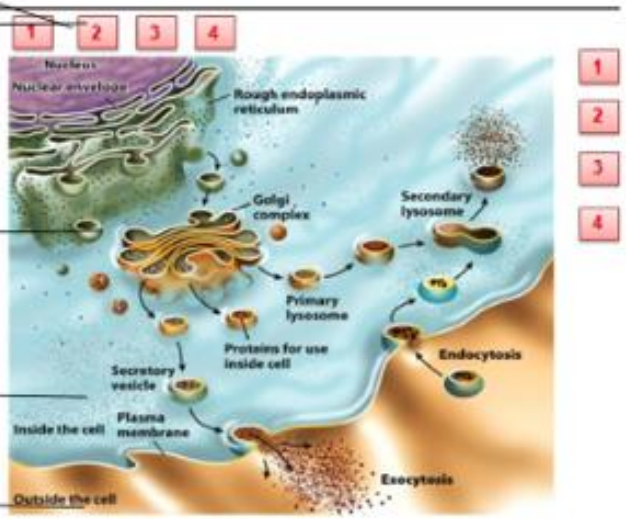


Tissues: Epithelial /connective /muscular /nervous

Choose the correct answer:

- Simple epithelium acts for (diffusion, protection), whereas stratified epithelium acts for (diffusion, protection).

-What is the gland that release hormones into the blood without ducts? (salivary gland, pituitary).

-Salivary glands and sweat glands are examples of (exocrine, endocrine).

-Cartilage has cells called (osteocyte, chondrocyte) and (gel-like, solid) matrix.

-Bone has cells called (osteocyte, chondrocyte) and (ossified, liquid) matrix.

Match the figure with its correct description:

-Single row of flat cells

-Single row of cubical cells

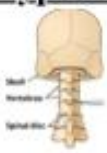
- Many rows of cells. The surface cells are squamous

-Many rows of cells. The surface cells are distensible

-Single row of columnar cells.Nuclei are located at different levels

-Match for types and examples of cartilage:

-Match for types and examples of cartilage:

Hyaline cartilage 

Elastic cartilage 

Fibro cartilage 

-Fill in the characteristics for each type of muscle

	Skeletal	Cardiac	Smooth
Location	Attached to bone	Heart	Blood vessels, internal organs
striations	√	√	X
Control	voluntary	involuntary	involuntary
nucleus	multinucleated	One nucleus	One nucleus
branching	X	X	X
intercalated discs	X	√	X

-What is the nerve cells function in communication called? --
--Neurons----

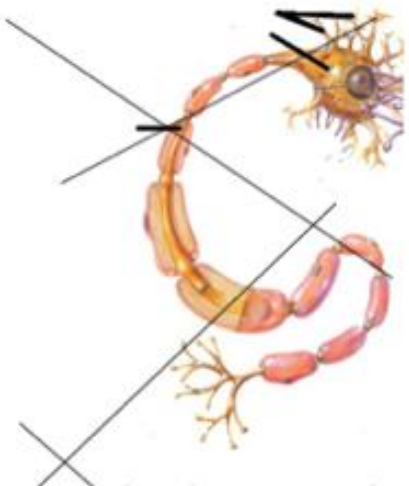
-What are the supporting cells of the nervous system called?
---Neuroglia-

-Put the three main parts of neurons:

Dendrites

Cell Body

Axon

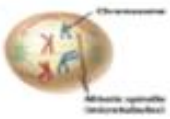


Mitosis and Meiosis

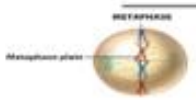
Fill in the difference between Mitosis and Mitosis:

Meiosis	Mitosis	Difference
(body cells , germ cells)	(body cells , germ cells)	Occurrence
(23 ,46)	(23 ,46)	No of chromosomes
(diploid, haploid)	(diploid, haploid)	Cell type
(4 ,2)	(4 ,2)	No of cells
(Identical, not identical	(Identical, not identical)	Genetic composition
Yes / No	Yes / No	Crossing over
Growth and repairing tissue? ?Producing gametes	Growth and repairing tissue? ?Producing gametes	purpose

Match for the cell division stages

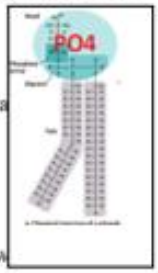


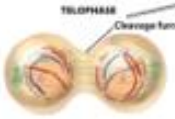
Anaphase : chromosomes move to the poles of the cell



Metaphase : chromosomes align themselves to the center of the cell

Prophase: nuclear membrane disappears, spindle appa





Cytokinesis : division of the cytoplasm resulting in tw

Telophase : chromosomes are in two equal groups, cleavage furrow appeared

Inheritance

A colour- blind male will has the following genotype

a. X^CY

b. X^cY

"The genetic composition of an individual" is called .....

a. genotype.

Telophase : chromosomes are in two equal groups, cleavage furrow appeared

Inheritance

A colour- blind male will has the following genotype

a. X^CY

b. X^cY

"The genetic composition of an individual" is called .....

a. genotype.

b. phenotype.

c. karyotype.

Cytokinesis means .....

a. Division of nucleus.

b. Division of cytoplasm.

c. Division of cell.

A colour- blind female will has the following genotype

a- X^cY

b- X^cX^c

Each trait is controlled by

a. One gene.

b. Two genes.

One girl have <u>wavy hair</u>, this phenotype indicate that her hair trait is

a. Dominance.

b. Incomplete dominant.

Gene expression

Match:

Transcription	DNA to DNA
Translation	DNA to RNA
Replication	RNA to protein
RNA polymerase	synthesizes 2 DNA copies
DNA polymerase	synthesizes mRNA

-What would be each three nucleotides on mRNA called? -------
Codon--

-In translation, what is the :
start codon: ---AUG-----
stop codons: ---UGA, UAG, UAA, -

-Which amino acid is encoded by start codon ? ----Methionine---
-

-The anticodon on the tRNA of amino acid valine is GUA. What will be the corresponding nucleotides on the coding DNA strand?

CAT