

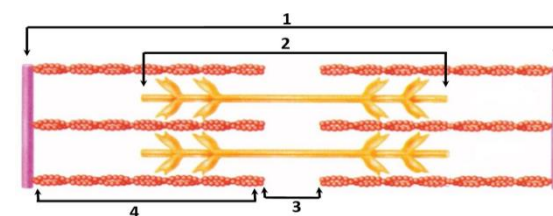
Note: choose the correct option:

(2 marks for each right answer)

- Immediately before entering trachea, the air that comes out from the lungs passes through:-  
 A-larynx B-bronchioles C-alveoli D-two bronchi
  - Which of the following pairs are mismatched?  
 A-myelinated axons : gray matter of spinal cord B- dendrites : white matter of cerebrum  
 C-unmyelinated axons : white matter of cerebrum D-All of them are incorrect
  - Which one of the following leads directly to a change in the permeability of the postsynaptic membrane by affecting chemically gated ion channels during the transmission of nerve impulses at the synapse?  
 A-reaching the action potential to the axon terminal B-releasing neurotransmitters into the synaptic cleft  
 C-the interaction of neurotransmitter and receptor molecules D-the fusion of vesicles with the presynaptic membrane
  - Yellow bone marrow and Red bone marrow are similar in that both of them:-  
 A-are found in long bone B-consist of fat cells C-produce blood cells D-are found in spongy bone
  - The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-  
 A-reuptake receptors on the postsynaptic neuron B-reuptake receptors on the presynaptic neuron  
 C-receptor proteins on the postsynaptic neuron D-sodium ionic channels on the postsynaptic neuron
  - .....the addict approaches lethal dose.  
 A-before tolerance B-before dependence C-whenver the effective dose rises D-after withdrawal
  - During childbirth, the fetus passes through the greatly enlarged:-  
 A-cervix and vagina B-fallopian tube and vagina C-vagina and urethra D-cervix and urethra
  - According to the information provided by the adjacent table that shows several monohybrid crosses, each cross produces 100 individuals in which cross only one of the parents can be a hybrid? :  
 A-only 1  
 B-only 2  
 C-1 and 2  
 D-2 and 3
- | cross | Number of individuals which express the dominant trait | Number of individuals which express the recessive trait |
|-------|--|---|
| 1     | 74   | 26  |
| 2     | 51   | 49  |
| 3     | 100  | 0   |
- Which of the following has a hybrid individual?  
 A-a brown rabbit B-a pea plant that has terminal flowers  
 C- a pea plant that has yellow pods D-None of them are correct
  - In the bone formation of which of the following bones ,the osteocytes are initially scattered randomly throughout the embryonic connective tissue but soon fuse into layers and become flat plates of bones?  
 A-in the bones that develop directly into hard bone without forming cartilage first B-in all kind of bones  
 C-in the bones that form cartilage first D-only in the bones of the appendicular skeleton
  - Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-  
 A-are not surrounded by connective tissue B-are surrounded by connective tissue that unite to form tendons  
 C-are surrounded by connective tissue that does not unite to form tendons D-are multinucleate
  - Which of the following hormones is a steroid hormone and fat soluble?  
 A-thyroxine B-triiodothyronine C-cortisol D-All of them are correct
  - Which of the following is correct about antigens :- A-is a substance that stimulates an immune response  
 B- antigens that are normally present in a person's body provoke no response  
 C-pathogens or parts of pathogens, bacterial toxins, insect venom and pollen are various kinds of antigens  
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  - The.....joint enables to rotate the arm in a complete circle:-  
 A-pivot B-hinge C-ball-and-socket D-gliding

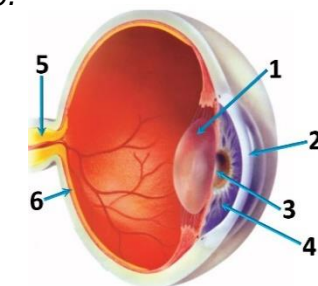
15- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?

- A-1  
B-2  
C-3  
D-4



16- According to adjacent figure choose the correct answer from the following table:-

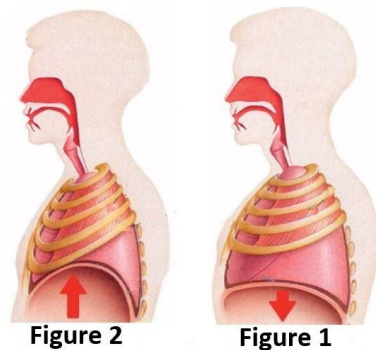
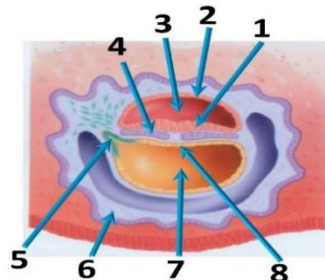
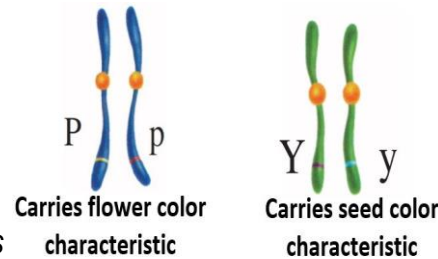
	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
A	3	2, 4, 3, 1	4	6
B	1	2, 3, 1	2	5
C	3	2, 3, 1	4	6
D	1	2, 4, 3, 1	2	5



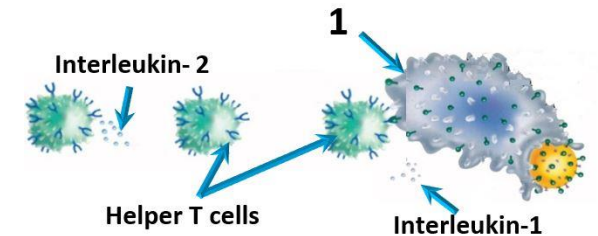
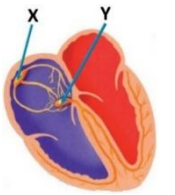
- Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.  
 A-self pollination, stigmas B- self pollination, anthers  
 C-cross pollination, stigmas D- cross pollination, anthers
- Cytotoxic T cells recognize cells that have been infected by the pathogen because they have..... on their surfaces that match the.....on the surfaces of the infected body cell.  
 A-receptor proteins, antigens B-viral antigens, receptor proteins  
 C-viral antigens, antigens D-receptor proteins, receptor proteins
- Hair cells are located in the :-  
 A-semicircular canals B-organ of Corti C-middle ear D-Both (A + B) are correct
- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?  
 A- (AB<sup>+</sup>) → (AB<sup>-</sup>) B- (O<sup>-</sup>) → (B<sup>+</sup>) C- (A<sup>+</sup>) → (B<sup>+</sup>) D-(B<sup>-</sup>) → (B<sup>-</sup>)
- In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-  
 A-are not eliminated during development B-are not produced in the bone marrow  
 C-are eliminated during development D-the body produces antibodies to kill them
- Urethra is a duct:-  
 A-through which both urine and sperm exit the body at the same time B-through which only urine exits the body  
 C-in which the fluid secreted from the seminal vesicles mixes with the sperm D-Both (B + C) are correct
- Which of the following is not true about the spleen?  
 A-it is the largest lymphatic organ B-it collects pathogens from the lymph  
 C-it contains lymphocytes D-Both (B + C) are correct
- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-  
 A-are secreted from the same endocrine gland B-have the same target cell  
 C-regulate the concentration of thyroid hormones in the blood through negative feedback D-All of them are correct
- Memory cells are formed for the first time in.....response.  
 A-primary immune B- secondary immune C-inflammatory D-temperature
- Allantois is formed during the.....period.  
 A-first trimester of pregnancy B-second trimester of pregnancy  
 C-third trimester of pregnancy D-egg formation
- Which of the following is true about oxytocin hormone ?  
 A-stimulates flow of milk from the breasts during lactation B-is made by posterior pituitary  
 C-stimulates milk production in breasts during lactation. D-Both (A + B) are correct.
- In which of the following crosses the pheotype ratio and the genotype ratio is not equal?  
 A-GGBb × ggBb B- Ggbb × ggBb C- GG × gg D- Gg × gg



- 29-** All of the following are part of the lymphatic system except:-  
**A-**lymphatic capillaries **B-**the vessels that carry lymph from the heart to the tissues  
**C-**lymph nodes **D-**the vessels that return lymph from the tissues to the superior vena cava
- 30-** .....it is a part of the brain that interprets touch information  
**A-**thalamus **B-**medulla oblongata **C-**cerebrum **D-**midbrain
- 31-** Body hair helps humans sense touch because bending a hair stimulates large numbers of ..... found at the base of .....in the skin.  
**A-** thermoreceptors , the epidermis **B-** chemoreceptors , the epidermis  
**C-** mechanoreceptors , hair follicles **D-** chemoreceptors , hair follicles
- 32-** The pulmonary arteries and the aorta are similar in that:-  
**A-**their walls are composed of three layers **B-**both vessels carry oxygenated blood to the heart  
**C-**both vessels carry oxygenated blood away from the heart **D-**Both (A + C ) are correct
- 33-** According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.  
**A-**the pair of factors P and p is not separated , during the formation of gametes  
**B-**the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic  
**C-** the pair of factors Y and y is not separated , during the formation of gametes  
**D-**the law of independent assortment is not observed for both genes (P ' p)and (Y ' y)
- 34-** In the adjacent figure which numbers point to the primary germ layers
- A-**6 , 2 , 5  
**B-**1 , 4 , 8  
**C-**4 , 7 , 2  
**D-**6 , 1 , 3
- 35-** Which of the following is an example of integration of organ systems?  
**A-**nutrients from the digestive system are distributed by the cardiovascular system  
**B-**The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system  
**C-**The endocrine system secretes hormones which regulate the activity of the reproductive system **D-**All of them are correct
- 36-** Which of the following options describes adjacent figures correctly?:-
- |                     | In figure.1 | In figure .2 |
|---------------------|-------------|--------------|
| <b>A-</b> Diaphragm | contracts   | relaxes      |
| Rib muscles         | relax       | contract     |
| Thoracic cavity     | expands     | contracts    |
- |                     | In figure.1 | In figure .2 |
|---------------------|-------------|--------------|
| <b>B-</b> Diaphragm | relaxes     | contracts    |
| Rib muscles         | contract    | relax        |
| Thoracic cavity     | contracts   | expands      |
- |                     | In figure.1 | In figure .2 |
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| <b>C-</b> Diaphragm | relaxes     | contracts    |
| Rib muscles         | relax       | contract     |
| Thoracic cavity     | contracts   | expands      |
- |                     | In figure.1 | In figure .2 |
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| <b>D-</b> Diaphragm | contracts   | relaxes      |
| Rib muscles         | contract    | relax        |
| Thoracic cavity     | expands     | contracts    |
- 37-** All of the following about the first polar body and the second polar body are incorrect except both of them are;- **A-**haploid cells **B-**produced in the fallopian tube **C-**produced in the ovary **D-**diploid cells
- 38-** The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-  
**A-**menstruation **B-**the follicle to rupture and release its egg **C-**implantation **D-**the follicle to form
- 39-** In a dyhybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-  
**A-**nine genotypes and four phenotypes **B-**four genotypes and nine phenotypes  
**C-** four genotypes and four phenotypes **D-**nine genotypes and nine phenotypes
- 40-** Both neuropeptides and neurotransmitters are secreted by the:-  
**A-**endocrine glands and are classified as hormones **B-**nervous system and are classified as hormones  
**C-**endocrine glands and act as chemical messengers . **D-**nervous system and act as chemical messengers



- 41-** In complete dominance the phenotype might not always indicate genotype because:-  
**A-**two or more alleles influence the phenotype **B-**some environmental factors can affect the phenotype  
**C-**The same phenotype may appear for a homozygous dominant genotype and a hybrid genotype  
**D-**Both (B + C ) are correct
- 42-** Which of the following is not an example of connective tissue?  
**A-**blood **B-**the outer layer of blood vessels structure **C-**the tissue that lines the trachea **D-**fat tissue
- 43-** According to the adjacent figure,both structure X and Y  
**A-**are two areas of specialized tissue known as nodes  
**B-**are called pacemaker  
**C-**every 0.8 of a second they send an electrical pulse to the walls of the atria  
**D-**Both (A + B ) are correct
- 44-** Both testes produce:-  
**A-**sperm **B-**sex hormones **C-**the fluids that nourish and protect the sperm **D-**Both (A + B) are correct
- 45-** Which one of the following is correct regarding the neuron when at rest(during the resting potential)?  
**A-**the concentration of potassium ions  $K^+$  is greater inside the cell than outside  
**B-**the concentration of potassium ions  $K^+$  is greater outside the cell than inside  
**C-**the concentration of negatively charged proteins is greater outside the cell than inside  
**D-**the concentration sodium ions  $Na^+$  is greater inside the cell than outside
- 46-** In the adjacent figure, all of the following about the cell which is labeled 1 are correct except it.  
**A-**displays antigens  
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- 47-** Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.  
**A-**prostaglandins **B-**endorphins **C-**enkephalins **D-**All of them are correct
- 48-** Which of the following crosses produces a pink flowers four o'clocks?  
**A-**red flowers four o'clocks × pink flowers four o'clocks **B-**red flowers four o'clocks × white flowers four o'clocks  
**C-** pink flowers four o'clocks × pink flowers four o'clocks **D-**All of them are correct
- 49-** In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed , which of the following genotypes represents the genotype of the parents for both characteristics together?  
**A-**ttRr × ttrr **B-** TtRR × ttrr **C-** ttRR × ttrr **D-** TTRr × ttrr
- 50-** ..... activates the complement system in the humoral immune response.  
**A-**encountering a certain pathogen **B-** forming a ring-shaped structure  
**C-**antigen-antibody binding **D-** releasing interferon



**A**



Note: choose the correct option:

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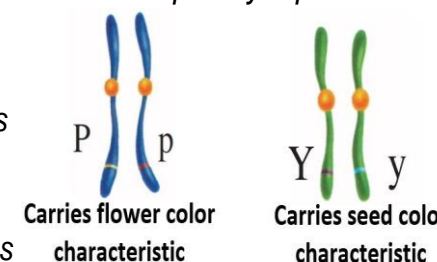
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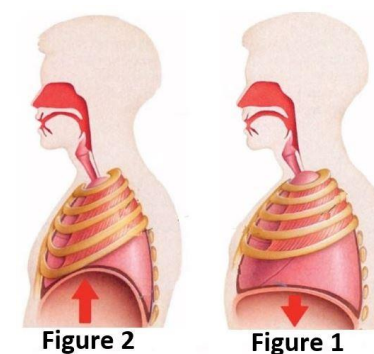
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	In figure.1	In figure .2
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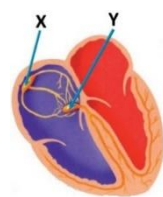
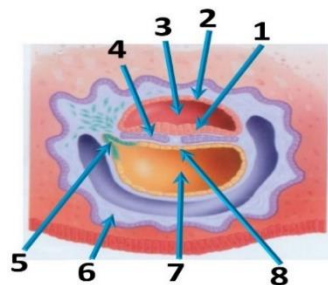
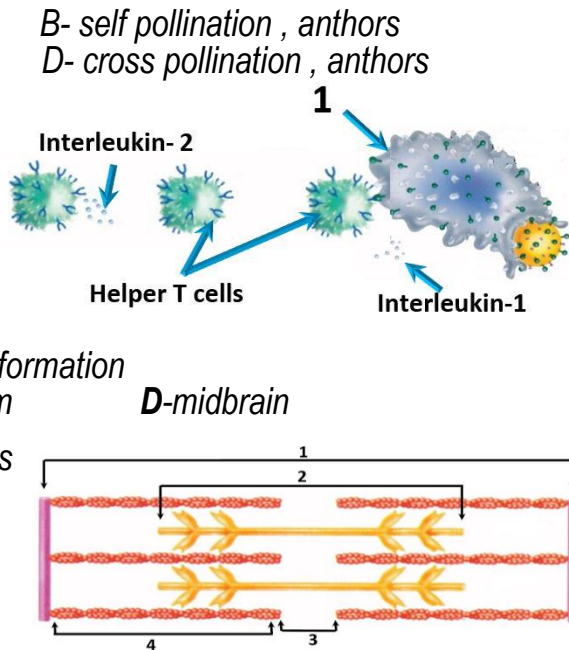
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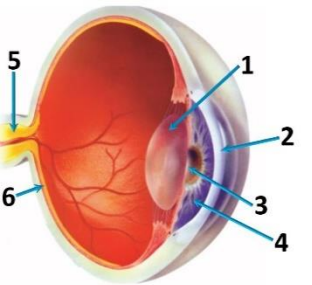


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A-blood B-the outer layer of blood vessels structure C-the tissue that lines the trachea D-fat tissue
- 46- According to adjacent figure choose the correct answer from the following table:-

	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
A	3	2 , 4 , 3 , 1	4	6
B	1	2 , 3 , 1	2	5
C	3	2 , 3 , 1	4	6
D	1	2 , 4 , 3 , 1	2	5



- 47- In which of the following crosses the pheotype ratio and the genotype ratio is not equal?  
A-GGBb × ggBb B- Ggbb × ggBb C- GG × gg D- Gg × gg
- 48- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?  
A- (AB<sup>+</sup>) → (AB<sup>-</sup>) B- (O<sup>-</sup>) → (B<sup>+</sup>) C- (A<sup>+</sup>) → (B<sup>+</sup>) D-(B<sup>-</sup>) → (B<sup>-</sup>)
- 49- In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-  
A-are not eliminated during development B-are not produced in the bone marrow  
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- 50- Which of the following crosses produces a pink flowers four o'clocks?  
A-red flowers four o'clocks × pink flowers four o'clocks B-red flowers four o'clocks × white flowers four o'clocks  
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**B**



Note: choose the correct option:

(2 marks for each right answer)

- Cytotoxic T cells recognize cells that have been infected by the pathogen because they have..... on their surfaces that match the.....on the surfaces of the infected body cell.  
 A-receptor proteins , antigens B-viral antigens , receptor proteins  
 C-viral antigens , antigens D-receptor proteins , receptor proteins
- Which of the following is not an example of connective tissue?  
 A-blood B-the outer layer of blood vessels structure C-the tissue that lines the trachea D-fat tissue
- During childbirth, the fetus passes through the greatly enlarged:-  
 A-cervix and vagina B-fallopian tube and vagina C-vagina and urethra D-cervix and urethra
- Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-  
 A-are not surrounded by connective tissue B-are surrounded by connective tissue that unite to form tendons  
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- Both neuropeptides and neurotransmitters are secreted by the:-  
 A-endocrine glands and are classified as hormones B-nervous system and are classified as hormones  
 C-endocrine glands and act as chemical messengers D-nervous system and act as chemical messengers
- Which of the following hormones is a steroid hormone and fat soluble?  
 A-thyroxine B-triiodothyronine C-cortisol D-All of them are correct
- In a dyhybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-  
 A-nine genotypes and four phenotypes B-four genotypes and nine phenotypes  
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- .....the addict approaches lethal dose.  
 A-before tolerance B-before dependence C-whenver the effective dose rises D-after withdrawal
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 A-GGBb × ggBb B- Ggbb × ggBb C- GG × gg D- Gg × gg
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 A- thermoreceptors , the epidermis B- chemoreceptors , the epidermis  
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- Both testes produce:-  
 A-sperm B-sex hormones C-the fluids that nourish and protect the sperm D-Both (A + B) are correct
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 A-lymphatic capillaries B-the vessels that carry lymph from the heart to the tissues  
 C-lymph nodes D-the vessels that return lymph from the tissues to the superior vena cava
- Memory cells are formed for the first time in.....response.  
 A-primary immune B- secondary immune C-inflammatory D-temperature
- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-  
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 A-in the bones that develop directly into hard bone without forming cartilage first B-in all kind of bones  
 C-in the bones that form cartilage first D-only in the bones of the appendicular skeleton

17- The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-  
 A-menstruation B-the follicle to rupture and release its egg C-implantation D-the follicle to form

18- Which of the following is not true about the spleen?

- A-it is the largest lymphatic organ B-it collects pathogens from the lymph  
 C-it contains lymphocytes D-Both (B + C) are correct

19- Hair cells are located in the :-

- A-semicircular canals B-organ of Corti C-middle ear D-Both (A + B) are correct

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- A-are not eliminated during development B-are not produced in the bone marrow  
 C-are eliminated during development D-the body produces antibodies to kill them

21- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-

- A-reuptake receptors on the postsynaptic neuron B-reuptake receptors on the presynaptic neuron  
 C-receptor proteins on the postsynaptic neuron D-sodium ionic channels on the postsynaptic neuron

22- Which of the following is an example of integration of organ systems?

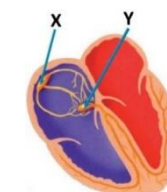
- A-nutrients from the digestive system are distributed by the cardiovascular system  
 B-The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system  
 C-The endocrine system secretes hormones which regulate the activity of the reproductive system D-All of them are correct

23- Urethra is a duct:-

- A-through which both urine and sperm exit the body at the same time B-through which only urine exits the body  
 C-in which the fluid secreted from the seminal vesicles mixes with the sperm D-Both (B + C) are correct

24- According to the adjacent figure,both structure X and Y

- A-are two areas of specialized tissue known as nodes  
 B-are called pacemaker  
 C-every 0.8 of a second they send an electrical pulse to the walls of the atria  
 D-Both (A + B) are correct



25- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?

- A- (AB<sup>+</sup>) → (AB<sup>-</sup>) B- (O<sup>-</sup>) → (B<sup>+</sup>) C- (A<sup>+</sup>) → (B<sup>+</sup>) D- (B<sup>-</sup>) → (B<sup>-</sup>)

26- Which of the following options describes adjacent figures correctly?:-

	In figure.1	In figure .2
A- Diaphragm	contracts	relaxes
Rib muscles	relax	contract
Thoracic cavity	expands	contracts

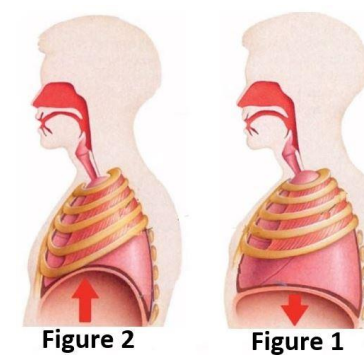
	In figure.1	In figure .2
B- Diaphragm	relaxes	contracts
Rib muscles	contract	relax
Thoracic cavity	contracts	expands

	In figure.1	In figure .2
C- Diaphragm	relaxes	contracts
Rib muscles	relax	contract
Thoracic cavity	contracts	expands

	In figure.1	In figure .2
D- Diaphragm	contracts	relaxes
Rib muscles	contract	relax
Thoracic cavity	expands	contracts



27- Which of the following is correct about antigens :- A-is a substance that stimulates an immune response  
 B- antigens that are normally present in a person's body provoke no response  
 C-pathogens or parts of pathogens , bacterial toxins , insect venom and pollen are various kinds of antigens  
 D-All of them are correct

28- The pulmonary arteries and the aorta are similar in that:-

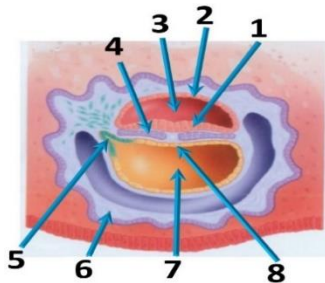
- A-their walls are composed of three layers B-both vessels carry oxygenated blood to the heart  
 C-both vessels carry oxygenated blood away from the heart D-Both (A + C) are correct

29- Allantois is formed during the.....period.

- A-first trimester of pregnancy B-second trimester of pregnancy  
 C-third trimester of pregnancy D-egg formation



- 30-** The.....joint enables to rotate the arm in a complete circle:-  
**A**-pivot                      **B**-hinge                      **C**-ball-and-socket                      **D**-gliding
- 31-** Which of the following is true about oxytocin hormone ?  
**A**-stimulates flow of milk from the breasts during lactation                      **B**-is made by posterior pituitary  
**C**-stimulates milk production in breasts during lactation.                      **D**-Both (A + B) are correct.
- 32-** In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed , which of the following genotypes represents the genotype of the parents for both characteristics together?  
**A**-ttRr × ttrr                      **B**- TtRR × ttrr                      **C**- ttRR × ttrr                      **D**- TTRr × ttrr
- 33-** Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.  
**A**-self pollination , stigmas                      **B**- self pollination , anthers  
**C**-cross pollination , stigmas                      **D**- cross pollination , anthers
- 34-** According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.  
**A**-the pair of factors P and p is not separated , during the formation of gametes  
**B**-the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic  
**C**- the pair of factors Y and y is not separated , during the formation of gametes  
**D**-the law of independent assortment is not observed for both genes (P ‘ p )and (Y ‘ y )
- 35-** Which of the following pairs are mismatched?  
**A**-myelinated axons : gray matter of spinal cord                      **B**- dendrites : white matter of cerebrum  
**C**-unmyelinated axons : white matter of cerebrum                      **D**-All of them are incorrect
- 36-** Which of the following has a hybrid individual?  
**A**-a brown rabbit                      **B**-a pea plant that has terminal flowers  
**C**- a pea plant that has yellow pods                      **D**-None of them are correct
- 37-** ..... activates the complement system in the humoral immune response.  
**A**-encountering a certain pathogen                      **B**- forming a ring-shaped structure  
**C**-antigen-antibody binding                      **D**- releasing interferon
- 38-** Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.  
**A**-prostaglandins                      **B**-endorphins                      **C**-enkephalins                      **D**-All of them are correct
- 39-** In the adjacent figure, all of the following about the cell which is labeled 1 are correct except it.  
**A**-displays antigens  
**B**-is activated by interleukin 1  
**C**-engulfs pathogens  
**D**-is a type of white blood cells
- 40-** All of the following about the first polar body and the second polar body are incorrect except both of them are;- **A**-haploid cells                      **B**-produced in the fallopian tube                      **C**-produced in the ovary                      **D**-diploid cells
- 41-** Which one of the following leads directly to a change in the permeability of the postsynaptic membrane by affecting chemically gated ion channels during the transmission of nerve impulses at the synapse?  
**A**-reaching the action potential to the axon terminal                      **B**-releasing neurotransmitters into the synaptic cleft  
**C**-the interaction of neurotransmitter and receptor molecules                      **D**-the fusion of vesicles with the presynaptic membrane
- 42-** In the adjacent figure which numbers point to the primary germ layers



- 43-** Immediately before entering trachea , the air that comes out from the lungs passes through:-  
**A**-larynx                      **B**-bronchioles                      **C**-alveoli                      **D**-two bronchi
- 44-** In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?  
**A**-1  
**B**-2  
**C**-3  
**D**-4
- 45-** .....it is a part of the brain that interprets touch information  
**A**-thalamus                      **B**-medulla oblongata                      **C**-cerebrum                      **D**-midbrain
- 46-** Which one of the following is correct regarding the neuron when at rest(during the resting potential)?  
**A**-the concentration of potassium ions K<sup>+</sup> is greater inside the cell than outside  
**B**-the concentration of potassium ions K<sup>+</sup> is greater outside the cell than inside  
**C**-the concentration of negatively charged proteins is greater outside the cell than inside  
**D**-the concentration sodium ions Na<sup>+</sup> is greater inside the cell than outside
- 47-** According to adjacent figure choose the correct answer from the following table:-
- |   | Which structure with muscles attached to it bends the rays of the incoming light? | The structures through which light passes | Is a clear protective layer through which light passes first | Millions of axons that exit the eye, which of the following structures form? |
|---|---|---|--|--|
| A | 3   | 2 , 4 , 3 , 1                             | 4  | 6  |
| B | 1   | 2 , 3 , 1                                 | 2  | 5  |
| C | 3   | 2 , 3 , 1                                 | 4  | 6  |
| D | 1   | 2 , 4 , 3 , 1                             | 2  | 5  |
- 48-** According to the information provided by the adjacent table that shows several monohybrid crosses , each cross produces 100 individuals in which cross only one of the parents can be a hybrid? :
- | cross | Number of individuals which express the dominant trait | Number of individuals which express the recessive trait |
|-------|--|---|
| 1     | 74   | 26  |
| 2     | 51   | 49  |
| 3     | 100  | 0   |
- 49-** Which of the following crosses produces a pink flowers four o'clocks?  
**A**-red flowers four o'clocks × pink flowers four o'clocks                      **B**-red flowers four o'clocks × white flowers four o'clocks  
**C**- pink flowers four o'clocks × pink flowers four o'clocks                      **D**-All of them are correct
- 50-** Yellow bone marrow and Red bone marrow are similar in that both of them:-  
**A**-are found in long bone                      **B**-consist of fat cells                      **C**-produce blood cells                      **D**-are found in spongy bone

C



Note: choose the correct option:

(2 marks for each right answer)

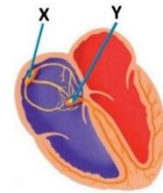
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2- Cytotoxic T cells recognize cells that have been infected by the pathogen because they have..... on their surfaces that match the.....on the surfaces of the infected body cell.

A-receptor proteins , antigens

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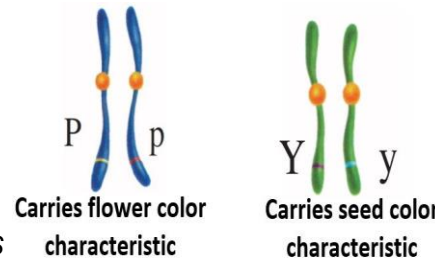
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6- Which of the following is an example of integration of organ systems?

A-nutrients from the digestive system are distributed by the cardiovascular system

B-The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system

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7- Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-

A-are not surrounded by connective tissue B-are surrounded by connective tissue that unite to form tendons

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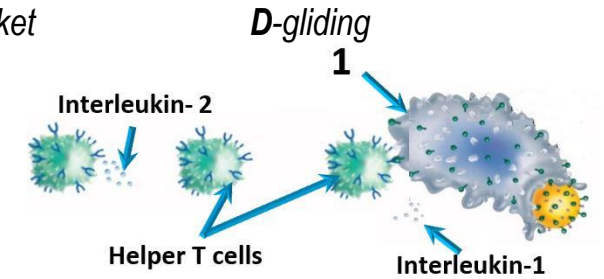
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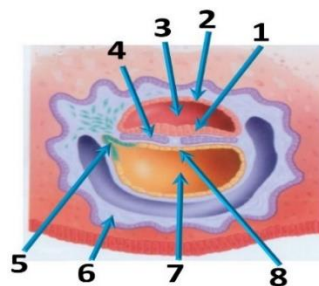
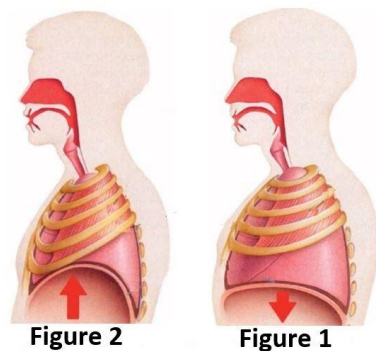
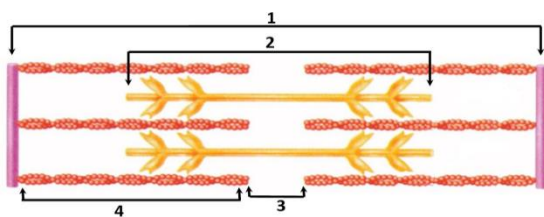
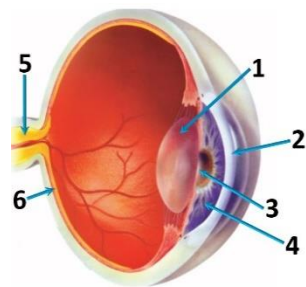
B- (O<sup>-</sup>) → (B<sup>+</sup>)

C- (A<sup>+</sup>) → (B<sup>+</sup>)

D- (B<sup>-</sup>) → (B<sup>-</sup>)



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A-1  
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C-3  
D-4
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| Rib muscles     | relax       | contract     |
| Thoracic cavity | expands     | contracts    |
- |                 | In figure.1 | In figure .2 |
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| Thoracic cavity | expands     | contracts    |
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A-sperm  
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B-through which only urine exits the body  
C-in which the fluid secreted from the seminal vesicles mixes with the sperm  
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C-receptor proteins on the postsynaptic neuron  
B-reuptake receptors on the presynaptic neuron  
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- 43-** In the adjacent figure which numbers point to the primary germ layers  
A-6, 2, 5  
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- 44-** Which of the following is not an example of connective tissue?  
A-blood  
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- | cross | Number of individuals which express the dominant trait | Number of individuals which express the recessive trait |
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**D**



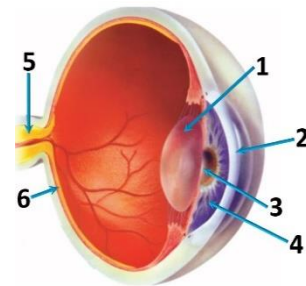


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1- According to adjacent figure choose the correct answer from the following table:-

	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
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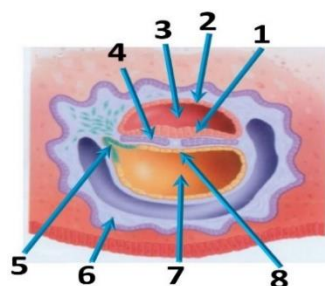
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- A-receptor proteins , antigens  
 B-viral antigens , receptor proteins  
 C-viral antigens , antigens  
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 B- chemoreceptors , the epidermis  
 C- mechanoreceptors , hair follicles  
 D- chemoreceptors , hair follicles

7- Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.

- A-prostaglandins  
 B-endorphins  
 C-enkephalins  
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8- Which of the following crosses produces a pink flowers four o'clocks?

- A-red flowers four o'clocks × pink flowers four o'clocks  
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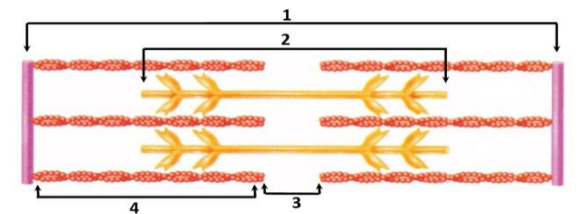
- A-primary immune  
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 B-2  
 C-3  
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- A-endocrine glands and are classified as hormones  
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- A-menstruation  
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22- Urethra is a duct:-

- A-through which both urine and sperm exit the body at the same time  
 B-through which only urine exits the body  
 C-in which the fluid secreted from the seminal vesicles mixes with the sperm  
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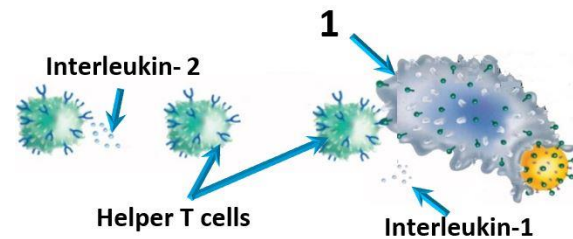
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- 30- Yellow bone marrow and Red bone marrow are similar in that both of them:-  
A-are found in long bone      B-consist of fat cells      C-produce blood cells      D-are found in spongy bone
- 31- The.....joint enables to rotate the arm in a complete circle:-  
A-pivot      B-hinge      C-ball-and-socket      D-gliding
- 32- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-  
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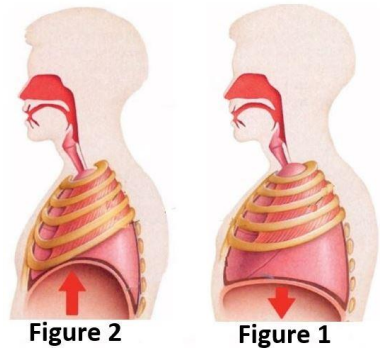
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A-reaching the action potential to the axon terminal      B-releasing neurotransmitters into the synaptic cleft  
C-the interaction of neurotransmitter and receptor molecules      D-the fusion of vesicles with the presynaptic membrane
- 47- Which of the following options describes adjacent figures correctly?:-

	In figure.1	In figure .2
A- Diaphragm	contracts	relaxes
Rib muscles	relax	contract
Thoracic cavity	expands	contracts

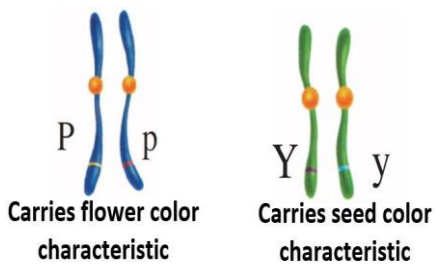
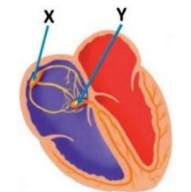
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- 48- In a dyhybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-  
A-nine genotypes and four phenotypes      B-four genotypes and nine phenotypes  
C- four genotypes and four phenotypes      D-nine genotypes and nine phenotypes
- 49- According to the adjacent figure,both structure X and Y  
A-are two areas of specialized tissue known as nodes  
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D-Both (A + B ) are correct
- 50- According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.  
A-the pair of factors P and p is not separated , during the formation of gametes  
B-the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic  
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E



Note: choose the correct option:

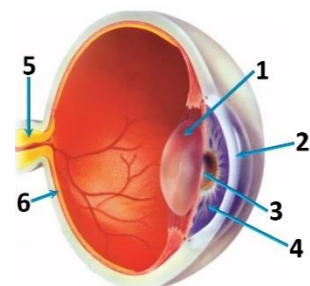
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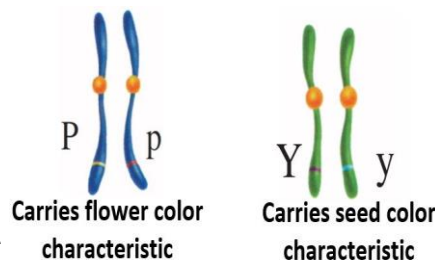
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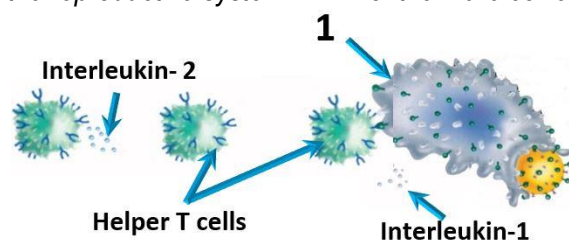
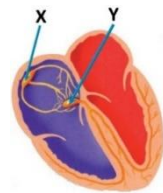
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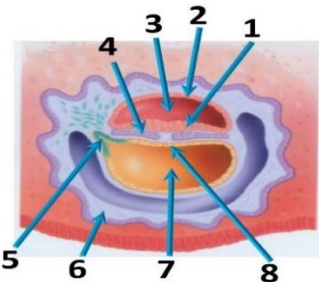
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- 41- Urethra is a duct:-  
**A**-through which both urine and sperm exit the body at the same time      **B**-through which only urine exits the body  
**C**-in which the fluid secreted from the seminal vesicles mixes with the sperm      **D**-Both ( B + C ) are correct



42- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?  
**A**- (AB<sup>+</sup>) → (AB<sup>-</sup>)      **B**- (O<sup>-</sup>) → (B<sup>+</sup>)      **C**- (A<sup>+</sup>) → (B<sup>+</sup>)      **D**-(B<sup>-</sup>) → (B<sup>-</sup>)

- 43- The.....joint enables to rotate the arm in a complete circle:-  
**A**-pivot      **B**-hinge      **C**-ball-and-socket      **D**-gliding
- 44- Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.  
**A**-prostaglandins      **B**-endorphins      **C**-enkephalins      **D**-All of them are correct

- 45- In the adjacent figure which numbers point to the primary germ layers  
**A**-6 , 2 , 5  
**B**-1 , 4 , 8  
**C**-4 , 7 , 2  
**D**-6 , 1 , 3



- 46- In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed , which of the following genotypes represents the genotype of the parents for both characteristics together?  
**A**-ttRr × ttrr      **B**- TtRR × ttrr      **C**- ttRR × ttrr      **D**- TTRr × ttrr

- 47- Memory cells are formed for the first time in.....response.  
**A**-primary immune      **B**- secondary immune      **C**-inflammatory      **D**-temperature

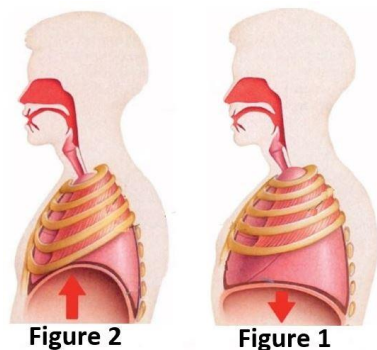
- 48- Which of the following options describes adjacent figures correctly?:-

	In figure.1	In figure .2
<b>A</b> - Diaphragm	contracts	relaxes
Rib muscles	relax	contract
Thoracic cavity	expands	contracts

	In figure.1	In figure .2
<b>C</b> - Diaphragm	relaxes	contracts
Rib muscles	relax	contract
Thoracic cavity	contracts	expands

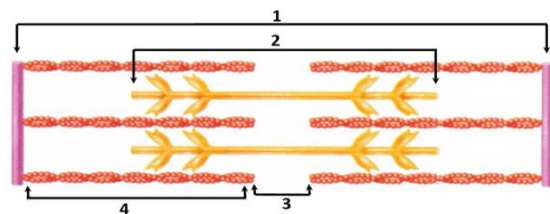
	In figure.1	In figure .2
<b>B</b> - Diaphragm	relaxes	contracts
Rib muscles	contract	relax
Thoracic cavity	contracts	expands

	In figure.1	In figure .2
<b>D</b> - Diaphragm	contracts	relaxes
Rib muscles	contract	relax
Thoracic cavity	expands	contracts



- 49- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?

- A**-1  
**B**-2  
**C**-3  
**D**-4



- 50- In a dyhybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-  
**A**-nine genotypes and four phenotypes      **B**-four genotypes and nine phenotypes  
**C**- four genotypes and four phenotypes      **D**-nine genotypes and nine phenotypes

F



Note: choose the correct option:

(2 marks for each right answer)

- In complete dominance the phenotype might not always indicate genotype because:-  
 A-two or more alleles influence the phenotype B-some environmental factors can affect the phenotype  
 C-The same phenotype may appear for a homozygous dominant genotype and a hybrid genotype  
 D-Both (B + C) are correct
- All of the following are part of the lymphatic system except:-  
 A-lymphatic capillaries B-the vessels that carry lymph from the heart to the tissues  
 C-lymph nodes D-the vessels that return lymph from the tissues to the superior vena cava
- Which of the following has a hybrid individual?  
 A-a brown rabbit B-a pea plant that has terminal flowers  
 C- a pea plant that has yellow pods D-None of them are correct
- Which of the following is correct about antigens :- A-is a substance that stimulates an immune response  
 B- antigens that are normally present in a person's body provoke no response  
 C-pathogens or parts of pathogens , bacterial toxins , insect venom and pollen are various kinds of antigens  
 D-All of them are correct
- Memory cells are formed for the first time in.....response.  
 A-primary immune B- secondary immune C-inflammatory D-temperature
- Which of the following crosses produces a pink flowers four o'clocks?  
 A-red flowers four o'clocks  $\times$  pink flowers four o'clocks B-red flowers four o'clocks  $\times$  white flowers four o'clocks  
 C- pink flowers four o'clocks  $\times$  pink flowers four o'clocks D-All of them are correct
- Which of the following hormones is a steroid hormone and fat soluble?  
 A-thyroxine B-triiodothyronine C-cortisol D-All of them are correct
- In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed , which of the following genotypes represents the genotype of the parents for both characteristics together?  
 A-ttRr  $\times$  ttrr B- TtRR  $\times$  ttrr C- ttRR  $\times$  ttrr D- TTRr  $\times$  ttrr
- Which one of the following is correct regarding the neuron when at rest(during the resting potential)?  
 A-the concentration of potassium ions  $K^+$  is greater inside the cell than outside  
 B-the concentration of potassium ions  $K^+$  is greater outside the cell than inside  
 C-the concentration of negatively charged proteins is greater outside the cell than inside  
 D-the concentration sodium ions  $Na^+$  is greater inside the cell than outside
- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-  
 A-are secreted from the same endocrine gland B-have the same target cell  
 C-regulate the concentration of thyroid hormones in the blood through negative feedback D-All of them are correct
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- ..... activates the complement system in the humoral immune response.  
 A-encountering a certain pathogen B- forming a ring-shaped structure  
 C-antigen-antibody binding D- releasing interferon
- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-  
 A-reuptake receptors on the postsynaptic neuron B-reuptake receptors on the presynaptic neuron  
 C-receptor proteins on the postsynaptic neuron D-sodium ionic channels on the postsynaptic neuron

14- The pulmonary arteries and the aorta are similar in that:-

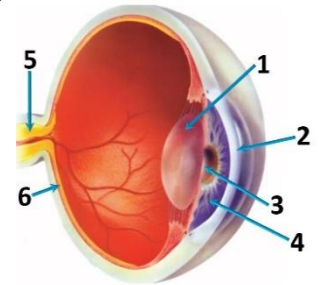
- A-their walls are composed of three layers B-both vessels carry oxygenated blood to the heart  
 C-both vessels carry oxygenated blood away from the heart D-Both (A + C) are correct

15- Hair cells are located in the :-

- A-semicircular canals B-organ of Corti C-middle ear D-Both (A + B) are correct

16- According to adjacent figure choose the correct answer from the following table:-

	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
A	3	2, 4, 3, 1	4	6
B	1	2, 3, 1	2	5
C	3	2, 3, 1	4	6
D	1	2, 4, 3, 1	2	5



17- In a dihybrid cross( hybrid $\times$ hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-

- A-nine genotypes and four phenotypes B-four genotypes and nine phenotypes  
 C- four genotypes and four phenotypes D-nine genotypes and nine phenotypes

18- Yellow bone marrow and Red bone marrow are similar in that both of them:-

- A-are found in long bone B-consist of fat cells C-produce blood cells D-are found in spongy bone

19- Immediately before entering trachea , the air that comes out from the lungs passes through:-

- A-larynx B-bronchioles C-alveoli D-two bronchi

20- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?

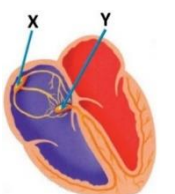
- A- (AB<sup>+</sup>)  $\rightarrow$  (AB<sup>-</sup>) B- (O<sup>-</sup>)  $\rightarrow$  (B<sup>+</sup>) C- (A<sup>+</sup>)  $\rightarrow$  (B<sup>+</sup>) D-(B<sup>-</sup>)  $\rightarrow$  (B<sup>-</sup>)

21- .....the addict approaches lethal dose.

- A-before tolerance B-before dependence C-whenver the effective dose rises D-after withdrawal

22- According to the adjacent figure,both structure X and Y

- A-are two areas of specialized tissue known as nodes  
 B-are called pacemaker  
 C-every 0.8 of a second they send an electrical pulse to the walls of the atria  
 D-Both (A + B) are correct



23- Urethra is a duct:-

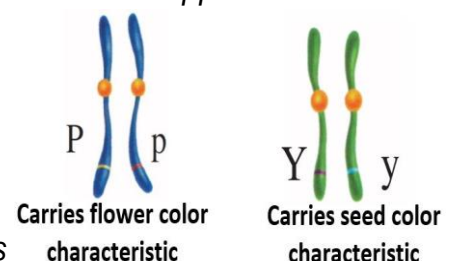
- A-through which both urine and sperm exit the body at the same time B-through which only urine exits the body  
 C-in which the fluid secreted from the seminal vesicles mixes with the sperm D-Both (B + C) are correct

24- In the bone formation of which of the following bones ,the osteocytes are initially scattered randomly throughout the embryonic connective tissue but soon fuse into layers and become flat plates of bones?

- A-in the bones that develop directly into hard bone without forming cartilage first B-in all kind of bones  
 C-in the bones that form cartilage first D-only in the bones of the appendicular skeleton

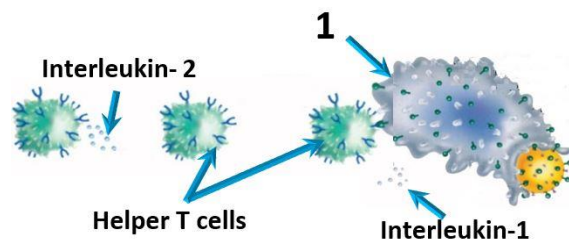
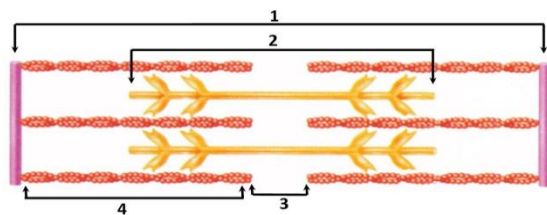
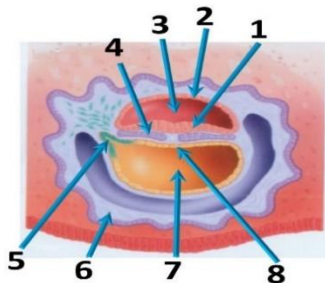
25- According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.

- A-the pair of factors P and p is not separated , during the formation of gametes  
 B-the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic  
 C- the pair of factors Y and y is not separated , during the formation of gametes  
 D-the law of independent assortment is not observed for both genes (P  $\times$  p )and (Y  $\times$  y )





- 26- In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-  
A-are not eliminated during development      B-are not produced in the bone marrow  
C-are eliminated during development      D-the body produces antibodies to kill them
- 27- Both neuropeptides and neurotransmitters are secreted by the:-  
A-endocrine glands and are classified as hormones      B-nervous system and are classified as hormones  
C-endocrine glands and act as chemical messengers .      D-nervous system and act as chemical messengers
- 28- All of the following about the first polar body and the second polar body are incorrect except both of them are:- A-haploid cells      B-produced in the fallopian tube      C-produced in the ovary      D-diploid cells
- 29- Which of the following is not an example of connective tissue?  
A-blood      B-the outer layer of blood vessels structure      C-the tissue that lines the trachea      D-fat tissue
- 30- In the adjacent figure which numbers point to the primary germ layers
- A-6 , 2 , 5  
B-1 , 4 , 8  
C-4 , 7 , 2  
D-6 , 1 , 3
- 31- Both testes produce:-  
A-sperm      B-sex hormones      C-the fluids that nourish and protect the sperm      D-Both (A + B) are correct
- 32- During childbirth, the fetus passes through the greatly enlarged:-  
A-cervix and vagina      B-fallopian tube and vagina      C-vagina and urethra      D-cervix and urethra
- 33- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?
- A-1  
B-2  
C-3  
D-4
- 34- Which one of the following leads directly to a change in the permeability of the postsynaptic membrane by affecting chemically gated ion channels during the transmission of nerve impulses at the synapse?  
A-reaching the action potential to the axon terminal      B-releasing neurotransmitters into the synaptic cleft  
C-the interaction of neurotransmitter and receptor molecules      D-the fusion of vesicles with the presynaptic membrane
- 35- Which of the following is not true about the spleen?  
A-it is the largest lymphatic organ      B-it collects pathogens from the lymph  
C-it contains lymphocytes      D-Both (B + C ) are correct
- 36- In the adjacent figure, all of the following about the cell which is labeled 1 are correct except it.  
A-displays antigens  
B-is activated by interleukin 1  
C-engulfs pathogens  
D-is a type of white blood cells
- 37- .....it is a part of the brain that interprets touch information  
A-thalamus      B-medulla oblongata      C-cerebrum      D-midbrain
- 38- Which of the following is true about oxytocin hormone ?  
A-stimulates flow of milk from the breasts during lactation      B-is made by posterior pituitary  
C-stimulates milk production in breasts during lactation.      D-Both (A + B) are correct.
- 39- Which of the following pairs are mismatched?  
A-myelinated axons : gray matter of spinal cord      B- dendrites : white matter of cerebrum  
C-unmyelinated axons : white matter of cerebrum      D-All of them are incorrect



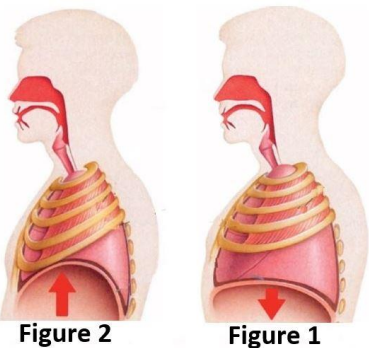
- 40- Allantois is formed during the.....period.  
A-first trimester of pregnancy      B-second trimester of pregnancy  
C-third trimester of pregnancy      D-egg formation
- 41- Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.  
A-self pollination , stigmas      B- self pollination , anthers  
C-cross pollination , stigmas      D- cross pollination , anthers
- 42- Body hair helps humans sense touch because bending a hair stimulates large numbers of ..... found at the base of .....in the skin.  
A- thermoreceptors , the epidermis      B- chemoreceptors , the epidermis  
C- mechanoreceptors , hair follicles      D- chemoreceptors , hair follicles
- 43- Which of the following options describes adjacent figures correctly?:-

	In figure.1	In figure .2
A- Diaphragm	contracts	relaxes
Rib muscles	relax	contract
Thoracic cavity	expands	contracts

	In figure.1	In figure .2
B- Diaphragm	relaxes	contracts
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- 44- The.....joint enables to rotate the arm in a complete circle:-  
A-pivot      B-hinge      C-ball-and-socket      D-gliding
- 45- According to the information provided by the adjacent table that shows several monohybrid crosses , each cross produces 100 individuals in which cross only one of the parents can be a hybrid? :
- | cross | Number of individuals which express the dominant trait | Number of individuals which express the recessive trait |
|-------|--|---|
| 1     | 74   | 26  |
| 2     | 51   | 49  |
| 3     | 100  | 0   |
- A-only 1  
B-only 2  
C-1 and 2  
D-2 and 3
- 46- Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-  
A-are not surrounded by connective tissue      B-are surrounded by connective tissue that unite to form tendons  
C-are surrounded by connective tissue that does not unite to form tendons      D-are multinucleate
- 47- In which of the following crosses the pheotype ratio and the genotype ratio is not equal?  
A-GGBb × ggBb      B- Ggbb × ggBb      C- GG × gg      D- Gg × gg
- 48- Which of the following is an example of integration of organ systems?  
A-nutrients from the digestive system are distributed by the cardiovascular system  
B-The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system  
C-The endocrine system secretes hormones which regulate the activity of the reproductive system      D-All of them are correct
- 49- The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-  
A-menstruation      B-the follicle to rupture and release its egg      C-implantation      D-the follicle to form
- 50- Cytotoxic T cells recognize cells that have been infected by the pathogen because they have ..... on their surfaces that match the.....on the surfaces of the infected body cell.  
A-receptor proteins , antigens      B-viral antigens , receptor proteins  
C-viral antigens , antigens      D-receptor proteins , receptor proteins

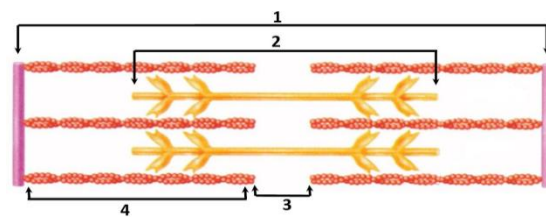
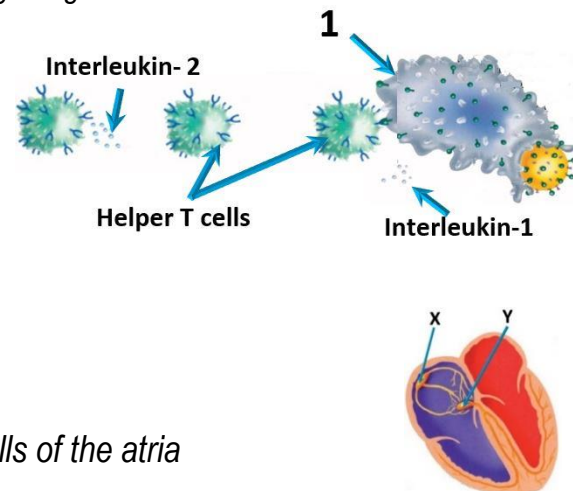




Note: choose the correct option:

(2 marks for each right answer)

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**A**-in the bones that develop directly into hard bone without forming cartilage first **B**-in all kind of bones  
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- 2- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-  
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- 4- According to the adjacent figure, both structure X and Y  
**A**-are two areas of specialized tissue known as nodes  
**B**-are called pacemaker  
**C**-every 0.8 of a second they send an electrical pulse to the walls of the atria  
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- 5- ..... activates the complement system in the humoral immune response.  
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- 6- The pulmonary arteries and the aorta are similar in that:-  
**A**-their walls are composed of three layers **B**-both vessels carry oxygenated blood to the heart  
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- 7- Both testes produce:-  
**A**-sperm **B**-sex hormones **C**-the fluids that nourish and protect the sperm **D**-Both (A + B) are correct
- 8- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?  
**A**-1  
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**A**- ( $AB^+$ )  $\rightarrow$  ( $AB^-$ ) **B**- ( $O^-$ )  $\rightarrow$  ( $B^+$ ) **C**- ( $A^+$ )  $\rightarrow$  ( $B^+$ ) **D**- ( $B^-$ )  $\rightarrow$  ( $B^-$ )

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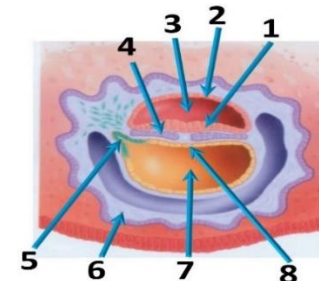
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16- In the adjacent figure which numbers

point to the primary germ layers

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**A**-self pollination, stigmas**B**- self pollination, anthers**C**-cross pollination, stigmas**D**- cross pollination, anthers

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**A**-reaching the action potential to the axon terminal**B**-releasing neurotransmitters into the synaptic cleft**C**-the interaction of neurotransmitter and receptor molecules**D**-the fusion of vesicles with the presynaptic membrane

23- Which of the following is true about oxytocin hormone ?

**A**-stimulates flow of milk from the breasts during lactation**B**-is made by posterior pituitary**C**-stimulates milk production in breasts during lactation.**D**-Both (A + B) are correct.

24- Which of the following pairs are mismatched?

**A**-myelinated axons : gray matter of spinal cord**B**- dendrites : white matter of cerebrum**C**-unmyelinated axons : white matter of cerebrum**D**-All of them are incorrect

25- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-

**A**-reuptake receptors on the postsynaptic neuron**B**-reuptake receptors on the presynaptic neuron**C**-receptor proteins on the postsynaptic neuron**D**-sodium ionic channels on the postsynaptic neuron

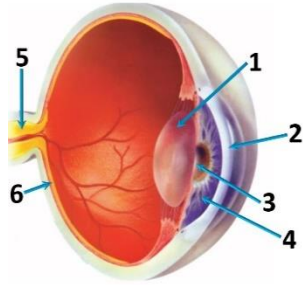


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B	1	2, 3, 1	2	5
C	3	2, 3, 1	4	6
D	1	2, 4, 3, 1	2	5



- 30- According to the information provided by the adjacent table that shows several monohybrid crosses , each cross produces 100 individuals in which cross only one of the parents can be a hybrid? :

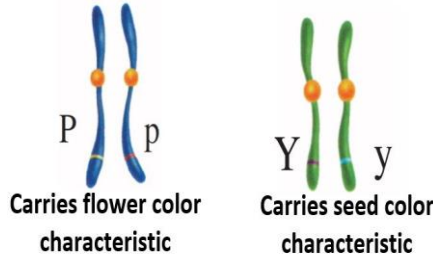
cross	Number of individuals which express the dominant trait	Number of individuals which express the recessive trait
1	74	26
2	51	49
3	100	0

- A-only 1  
B-only 2  
C-1 and 2  
D-2 and 3
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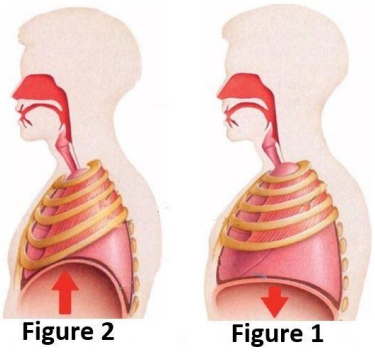
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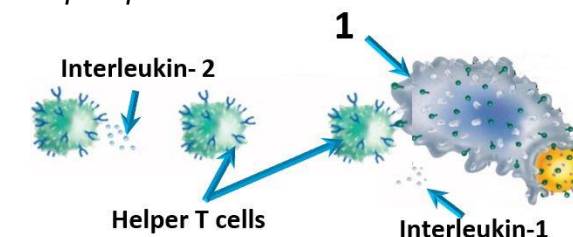
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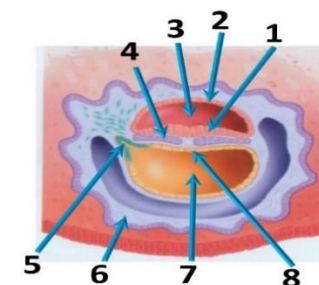
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point to the primary germ layers

- A-6 , 2 , 5  
B-1 , 4 , 8  
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27- Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.

- A-prostaglandins B-endorphins C-enkephalins D-All of them are correct

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- A-the concentration of potassium ions K<sup>+</sup> is greater inside the cell than outside  
B-the concentration of potassium ions K<sup>+</sup> is greater outside the cell than inside  
C-the concentration of negatively charged proteins is greater outside the cell than inside  
D-the concentration sodium ions Na<sup>+</sup> is greater inside the cell than outside



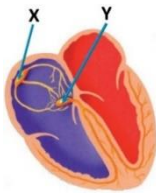
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A-are two areas of specialized tissue known as nodes  
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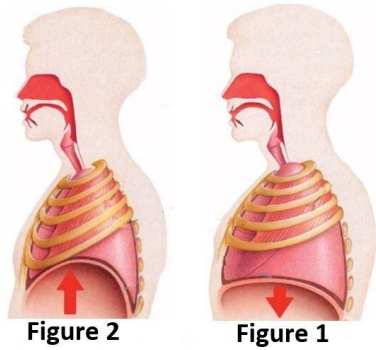
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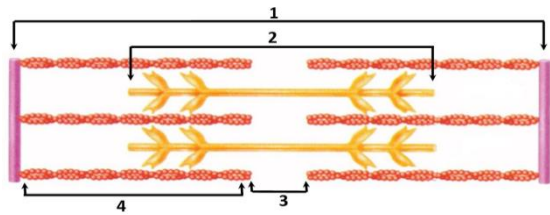
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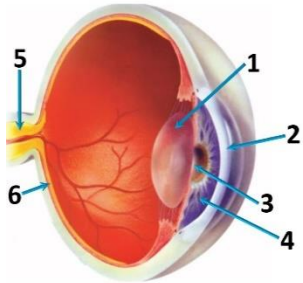
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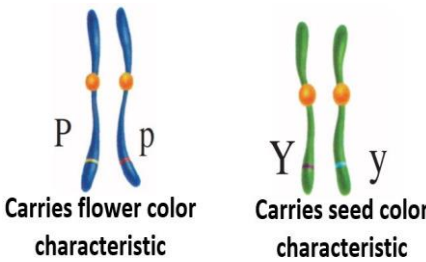
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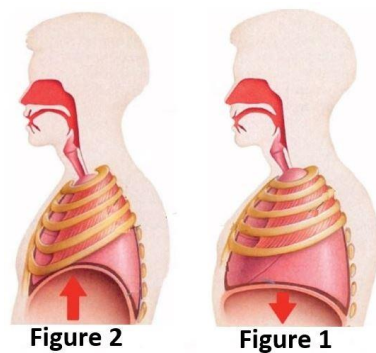


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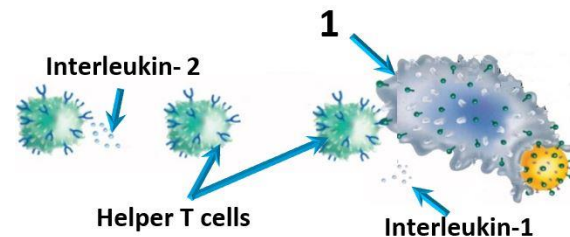
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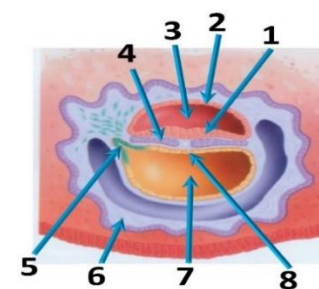
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**A-**thyroxine **B-**triiodothyronine **C-**cortisol **D-**All of them are correct

**36-** In the bone formation of which of the following bones ,the osteocytes are initially scattered randomly throughout the embryonic connective tissue but soon fuse into layers and become flat plates of bones?

**A-**in the bones that develop directly into hard bone without forming cartilage first **B-**in all kind of bones  
**C-**in the bones that form cartilage first **D-**only in the bones of the appendicular skeleton

**37-** Which one of the following is correct regarding the neuron when at rest(during the resting potential)?

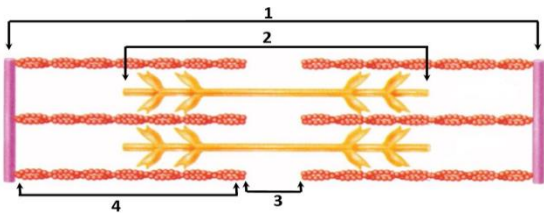
**A-**the concentration of potassium ions  $K^+$  is greater inside the cell than outside  
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**D-**the concentration sodium ions  $Na^+$  is greater inside the cell than outside

**38-** The.....joint enables to rotate the arm in a complete circle:-

**A-**pivot **B-**hinge **C-**ball-and-socket **D-**gliding

**39-** In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?

A-1  
B-2  
C-3  
D-4



**40-** In a dyhybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-

A-nine genotypes and four phenotypes B-four genotypes and nine phenotypes  
C- four genotypes and four phenotypes D-nine genotypes and nine phenotypes

**41-** Which of the following is not an example of connective tissue?

**A-**blood **B-**the outer layer of blood vessels structure **C-**the tissue that lines the trachea **D-**fat tissue

**42-** Hair cells are located in the :-

**A-**semicircular canals **B-**organ of Corti **C-**middle ear **D-**Both (A + B ) are correct

**43-** In complete dominance the phenotype might not always indicate genotype because:-

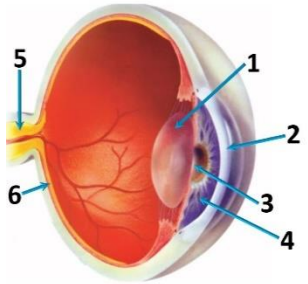
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C-The same pheontype may appear for a homozygous dominant genotype and a hybrid genotype  
D-Both (B + C ) are correct

**44-** Both neuropeptides and neurotransmitters are secreted by the:-

**A-**endocrine glands and are classified as hormones **B-**nervous system and are classified as hormones  
**C-**endocrine glands and act as chemical messengers . **D-**nervous system and act as chemical messengers

**45-** According to adjacent figure choose the correct answer from the following table:-

	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
A	3	2 , 4 , 3 , 1	4	6
B	1	2 , 3 , 1	2	5
C	3	2 , 3 , 1	4	6
D	1	2 , 4 , 3 , 1	2	5



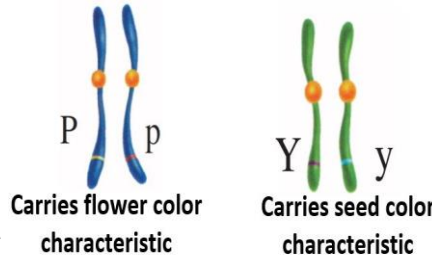
**46-** According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.

**A-**the pair of factors P and p is not separated , during the formation of gametes

**B-**the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic

**C-** the pair of factors Y and y is not separated , during the formation of gametes

**D-**the law of independent assortment is not observed for both genes (P , p )and (Y , y )



**47-** Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.

A-self pollination , stigmas

C-cross pollination , stigmas

B- self pollination , anthers

D- cross pollination , anthers

**48-** Cytotoxic T cells recognize cells that have been infected by the pathogen because they have..... on their surfaces that match the.....on the surfaces of the infected body cell.

**A-**receptor proteins , antigens

**C-**viral antigens , antigens

**B-**viral antigens , receptor proteins

**D-**receptor proteins , receptor proteins

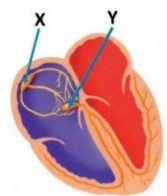
**49-** According to the adjacent figure,both structure X and Y

**A-**are two areas of specialized tissue known as nodes

**B-**are called pacemaker

**C-**every 0.8 of a second they send an electrical pulse to the walls of the atria

**D-**Both (A + B ) are correct



**50-** During childbirth, the fetus passes through the greatly enlarged:-

**A-**cervix and vagina **B-**fallopian tube and vagina **C-**vagina and urethra **D-**cervix and urethra



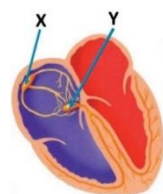
Note: choose the correct option:

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- 1- In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed , which of the following genotypes represents the genotype of the parents for both characteristics together?  
 A-  $ttRr \times ttrr$  B-  $TtRR \times ttrr$  C-  $ttRR \times ttrr$  D-  $TTRr \times ttrr$

- 2- According to the adjacent figure, both structure X and Y

- A-are two areas of specialized tissue known as nodes  
 B-are called pacemaker  
 C-every 0.8 of a second they send an electrical pulse to the walls of the atria  
 D-Both ( A + B ) are correct



- 3- Which of the following crosses produces a pink flowers four o'clocks?

- A-red flowers four o'clocks  $\times$  pink flowers four o'clocks B-red flowers four o'clocks  $\times$  white flowers four o'clocks  
 C- pink flowers four o'clocks  $\times$  pink flowers four o'clocks D-All of them are correct

- 4- Which of the following options describes adjacent figures correctly?:-

	In figure.1	In figure .2
A- Diaphragm	contracts	relaxes
Rib muscles	relax	contract
Thoracic cavity	expands	contracts

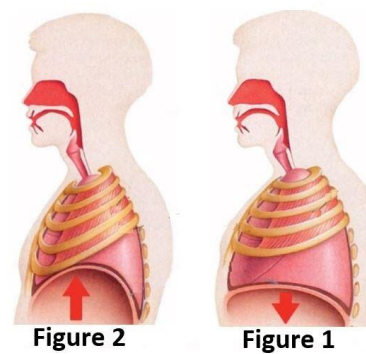
	In figure.1	In figure .2
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Rib muscles	contract	relax
Thoracic cavity	contracts	expands

	In figure.1	In figure .2
C- Diaphragm	relaxes	contracts
Rib muscles	relax	contract
Thoracic cavity	contracts	expands

	In figure.1	In figure .2
D- Diaphragm	contracts	relaxes
Rib muscles	contract	relax
Thoracic cavity	expands	contracts



- 5- Memory cells are formed for the first time in.....response.

- A-primary immune B- secondary immune C-inflammatory D-temperature

- 6- All of the following are part of the lymphatic system except:-

- A-lymphatic capillaries B-the vessels that carry lymph from the heart to the tissues  
 C-lymph nodes D-the vessels that return lymph from the tissues to the superior vena cava

- 7- ..... activates the complement system in the humoral immune response.

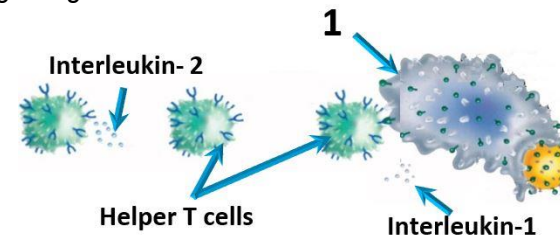
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- 8- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-

- A-are secreted from the same endocrine gland B-have the same target cell  
 C-regulate the concentration of thyroid hormones in the blood through negative feedback D-All of them are correct

- 9- In the adjacent figure, all of the following about the cell which is labeled 1 are correct except it.

- A-displays antigens  
 B-is activated by interleukin 1  
 C-engulfs pathogens  
 D-is a type of white blood cells



- 10- Immediately before entering trachea , the air that comes out from the lungs passes through:-

- A-larynx B-bronchioles C-alveoli D-two bronchi

- 11- Cytotoxic T cells recognize cells that have been infected by the pathogen because they have..... on their surfaces that match the.....on the surfaces of the infected body cell.

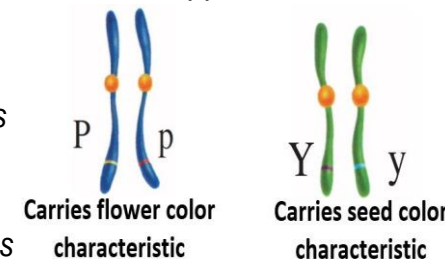
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- 14- Which of the following has a hybrid individual?

- A-a brown rabbit B-a pea plant that has terminal flowers  
 C- a pea plant that has yellow pods D-None of them are correct

- 15- Urethra is a duct:-

- A-through which both urine and sperm exit the body at the same time B-through which only urine exits the body  
 C-in which the fluid secreted from the seminal vesicles mixes with the sperm D-Both ( B + C ) are correct

- 16- Which one of the following leads directly to a change in the permeability of the postsynaptic membrane by affecting chemically gated ion channels during the transmission of nerve impulses at the synapse?

- A-reaching the action potential to the axon terminal B-releasing neurotransmitters into the synaptic cleft  
 C-the interaction of neurotransmitter and receptor molecules D-the fusion of vesicles with the presynaptic membrane

- 17- Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-

- A-are not surrounded by connective tissue B-are surrounded by connective tissue that unite to form tendons  
 C-are surrounded by connective tissue that does not unite to form tendons D-are multinucleate

- 18- Yellow bone marrow and Red bone marrow are similar in that both of them:-

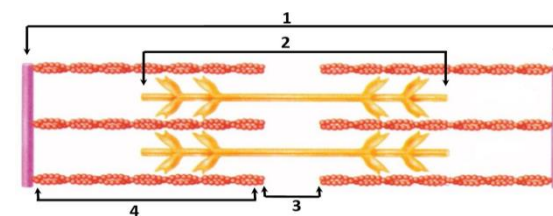
- A-are found in long bone B-consist of fat cells C-produce blood cells D-are found in spongy bone

- 19- In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-

- A-are not eliminated during development B-are not produced in the bone marrow  
 C-are eliminated during development D-the body produces antibodies to kill them

- 20- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?

- A-1  
 B-2  
 C-3  
 D-4



- 21- Body hair helps humans sense touch because bending a hair stimulates large numbers of ..... found at the base of .....in the skin.

- A- thermoreceptors , the epidermis B- chemoreceptors , the epidermis  
 C- mechanoreceptors , hair follicles D- chemoreceptors , hair follicles

- 22- Hair cells are located in the :-

- A-semicircular canals B-organ of Corti C-middle ear D-Both ( A + B ) are correct

- 23- Which of the following is true about oxytocin hormone ?

- A-stimulates flow of milk from the breasts during lactation B-is made by posterior pituitary  
 C-stimulates milk production in breasts during lactation. D-Both ( A + B ) are correct.



- | cross | Number of individuals which express the dominant trait | Number of individuals which express the recessive trait |
|-------|--|---|
| 1     | 74   | 26  |
| 2     | 51   | 49  |
| 3     | 100  | 0   |

- 41-** The pulmonary arteries and the aorta are similar in that:-  
**A-**their walls are composed of three layers **B-**both vessels carry oxygenated blood to the heart  
**C-**both vessels carry oxygenated blood away from the heart **D-**Both (A + C ) are correct
- 42-** Which of the following is an example of integration of organ systems?  
**A-**nutrients from the digestive system are distributed by the cardiovascular system  
**B-**The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system  
**C-**The endocrine system secretes hormones which regulate the activity of the reproductive system **D-**All of them are correct
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**A-**it is the largest lymphatic organ **B-**it collects pathogens from the lymph  
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- 44-** .....the addict approaches lethal dose.  
**A-**before tolerance **B-**before dependence **C-**whenever the effective dose rises **D-**after withdrawal
- 45-** In the adjacent figure which numbers point to the primary germ layers
- A-**6 , 2 , 5  
**B-**1 , 4 , 8  
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**D-**6 , 1 , 3
- 46-** According to adjacent figure choose the correct answer from the following table:-
- |   | Which structure with muscles attached to it bends the rays of the incoming light? | The structures through which light passes | Is a clear protective layer through which light passes first | Millions of axons that exit the eye, which of the following structures form? |
|---|---|---|--|--|
| A | 3   | 2 , 4 , 3 , 1                             | 4  | 6  |
| B | 1   | 2 , 3 , 1                                 | 2  | 5  |
| C | 3   | 2 , 3 , 1                                 | 4  | 6  |
| D | 1   | 2 , 4 , 3 , 1                             | 2  | 5  |
- 47-** The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-  
**A-**menstruation **B-**the follicle to rupture and release its egg **C-**implantation **D-**the follicle to form
- 48-** The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-  
**A-**reuptake receptors on the postsynaptic neuron **B-**reuptake receptors on the presynaptic neuron  
**C-**receptor proteins on the postsynaptic neuron **D-**sodium ionic channels on the postsynaptic neuron
- 49-** In which of the following crosses the phenotype ratio and the genotype ratio is not equal?  
**A-**GGBb × ggBb **B-**Ggbb × ggBb **C-**GG × gg **D-**Gg × gg
- 50-** Which one of the following is correct regarding the neuron when at rest(during the resting potential)?  
**A-**the concentration of potassium ions  $K^+$  is greater inside the cell than outside  
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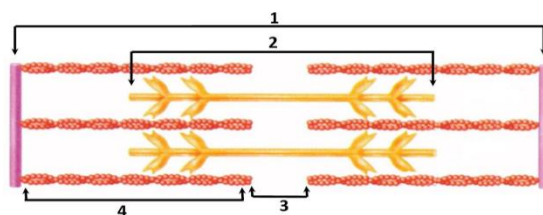
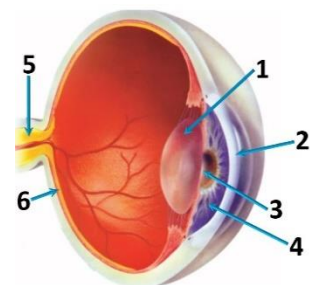
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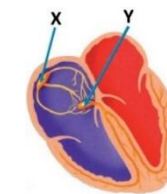
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- 2- Which of the following pairs are mismatched?  
 A-myelinated axons : gray matter of spinal cord B- dendrites : white matter of cerebrum  
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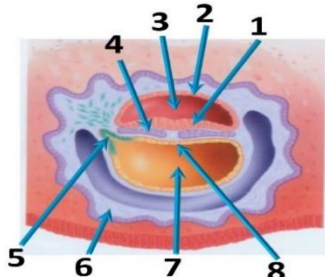




- 29- Which of the following is correct about antigens :- **A**-is a substance that stimulates an immune response  
**B**- antigens that are normally present in a person's body provoke no response  
**C**-pathogens or parts of pathogens , bacterial toxins , insect venom and pollen are various kinds of antigens  
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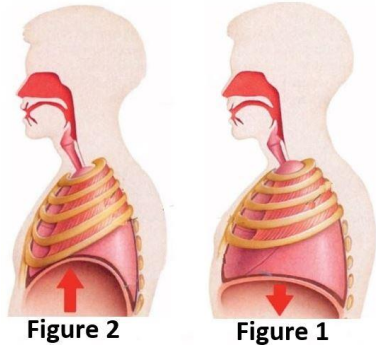
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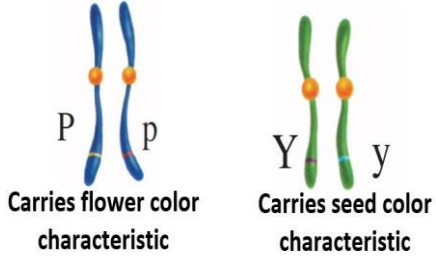


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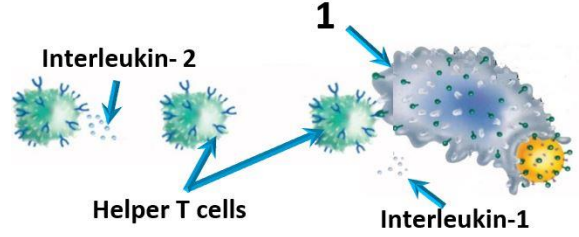
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**A**-reaching the action potential to the axon terminal      **B**-releasing neurotransmitters into the synaptic cleft  
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- 41- .....it is a part of the brain that interprets touch information  
**A**-thalamus      **B**-medulla oblongata      **C**-cerebrum      **D**-midbrain
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**A**-red flowers four o'clocks × pink flowers four o'clocks      **B**-red flowers four o'clocks × white flowers four o'clocks  
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**A**-haploid cells      **B**-produced in the fallopian tube      **C**-produced in the ovary      **D**-diploid cells

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**A**-the pair of factors P and p is not separated , during the formation of gametes  
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- 46- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-  
**A**-reuptake receptors on the postsynaptic neuron      **B**-reuptake receptors on the presynaptic neuron  
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- 47- Allantois is formed during the.....period.  
**A**-first trimester of pregnancy      **B**-second trimester of pregnancy  
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- 48- Hair cells are located in the :-  
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- 49- According to the information provided by the adjacent table that shows several monohybrid crosses , each cross produces 100 individuals in which cross only one of the parents can be a hybrid? :  
**A**-only 1  
**B**-only 2  
**C**-1 and 2  
**D**-2 and 3

cross	Number of individuals which express the dominant trait	Number of individuals which express the recessive trait
1	74	26
2	51	49
3	100	0

- 50- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?  
**A**- ( AB<sup>+</sup> ) → ( AB<sup>-</sup> )      **B**- ( O<sup>-</sup> ) → ( B<sup>+</sup> )      **C**- ( A<sup>+</sup> ) → ( B<sup>+</sup> )      **D**- ( B<sup>-</sup> ) → ( B<sup>-</sup> )

L



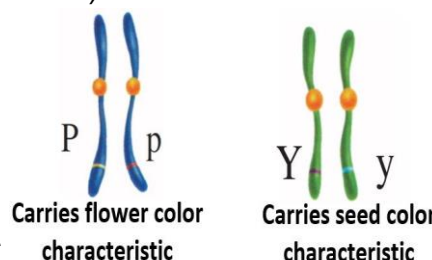
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2- Which of the following is true about oxytocin hormone ?

A-stimulates flow of milk from the breasts during lactation

B-is made by posterior pituitary

C-stimulates milk production in breasts during lactation.

D-Both (A + B) are correct.

3- The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-

A-menstruation B-the follicle to rupture and release its egg C-implantation D-the follicle to form

4- Urethra is a duct:-

A-through which both urine and sperm exit the body at the same time

B-through which only urine exits the body

C-in which the fluid secreted from the seminal vesicles mixes with the sperm

D-Both ( B + C ) are correct

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A-endocrine glands and are classified as hormones B-nervous system and are classified as hormones

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C-in the bones that form cartilage first

D-only in the bones of the appendicular skeleton

12- Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.

A-self pollination , stigmas

B- self pollination , anthers

C-cross pollination , stigmas

D- cross pollination , anthers

13- The.....joint enables to rotate the arm in a complete circle:-

A-pivot

B-hinge

C-ball-and-socket

D-gliding

14- In complete dominance the phenotype might not always indicate genotype because:-

A-two or more alleles influence the phenotype

B-some environmental factors can affect the phenotype

C-The same phenotype may appear for a homozygous dominant genotype and a hybrid genotype

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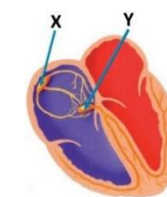
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B-are called pacemaker

C-every 0.8 of a second they send an electrical pulse to the walls of the atria

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C-vagina and urethra

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A-reuptake receptors on the postsynaptic neuron

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C-receptor proteins on the postsynaptic neuron

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19- In a dyhybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-

A-nine genotypes and four phenotypes

B-four genotypes and nine phenotypes

C- four genotypes and four phenotypes

D-nine genotypes and nine phenotypes

20- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?

A- (AB<sup>+</sup>) → (AB<sup>-</sup>) B- (O<sup>-</sup>) → (B<sup>+</sup>) C- (A<sup>+</sup>) → (B<sup>+</sup>) D-(B<sup>-</sup>) → (B<sup>-</sup>)

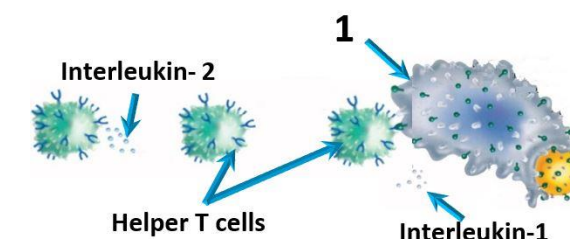
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B-bronchioles

C-alveoli

D-two bronchi

24- Which of the following hormones is a steroid hormone and fat soluble?

A-thyroxine

B-triiodothyronine

C-cortisol

D-All of them are correct

25- In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-

A-are not eliminated during development

B-are not produced in the bone marrow

C-are eliminated during development

D-the body produces antibodies to kill them

26- Hair cells are located in the :-

A-semicircular canals

B-organ of Corti

C-middle ear

D-Both (A + B ) are correct

27- In which of the following crosses the phenotype ratio and the genotype ratio is not equal?

A-GGBb × ggBb

B- Ggbb × ggBb

C- GG × gg

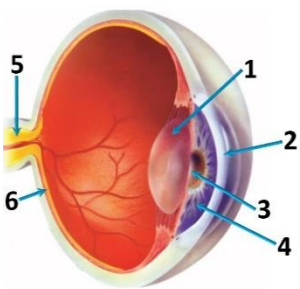
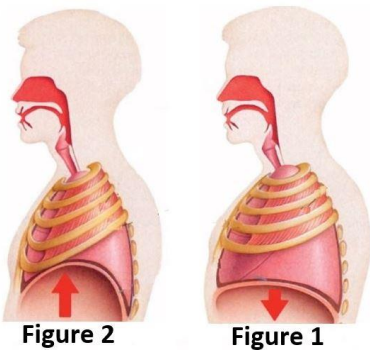
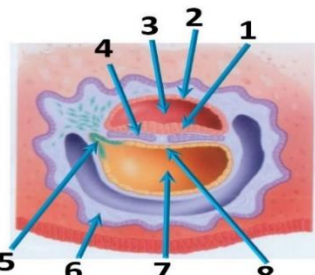
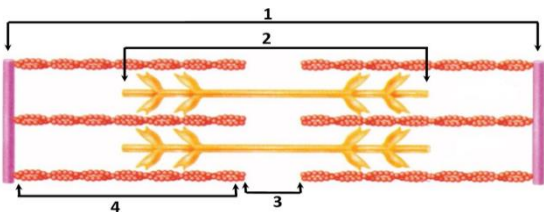
D- Gg × gg

28- All of the following about the first polar body and the second polar body are incorrect except both of them are;- A-haploid cells B-produced in the fallopian tube C-produced in the ovary D-diploid cells



- 29- .....the addict approaches lethal dose.  
A-before tolerance    B-before dependence    C-whenver the effective dose rises    D-after withdrawal
- 30- .....it is a part of the brain that interprets touch information  
A-thalamus    B-medulla oblongata    C-cerebrum    D-midbrain
- 31- Which one of the following is correct regarding the neuron when at rest(during the resting potential)?  
A-the concentration of potassium ions  $K^+$  is greater inside the cell than outside  
B-the concentration of potassium ions  $K^+$  is greater outside the cell than inside  
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A- $ttRr \times ttrr$     B-  $TtRR \times ttrr$     C-  $ttRR \times ttrr$     D-  $TTRr \times ttrr$
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A-primary immune    B- secondary immune    C-inflammatory    D-temperature
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A-receptor proteins , antigens    B-viral antigens , receptor proteins  
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- 35- Which of the following is correct about antigens :- A-is a substance that stimulates an immune response  
B- antigens that are normally present in a person's body provoke no response  
C-pathogens or parts of pathogens , bacterial toxins , insect venom and pollen are various kinds of antigens  
D-All of them are correct
- 36- Yellow bone marrow and Red bone marrow are similar in that both of them:-  
A-are found in long bone    B-consist of fat cells    C-produce blood cells    D-are found in spongy bone
- 37- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-  
A-are secreted from the same endocrine gland    B-have the same target cell  
C-regulate the concentration of thyroid hormones in the blood through negative feedback    D-All of them are correct
- 38- Which of the following is an example of integration of organ systems?  
A-nutrients from the digestive system are distributed by the cardiovascular system  
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- 39- Which of the following pairs are mismatched?  
A-myelinated axons : gray matter of spinal cord    B- dendrites : white matter of cerebrum  
C-unmyelinated axons : white matter of cerebrum    D-All of them are incorrect
- 40- Body hair helps humans sense touch because bending a hair stimulates large numbers of ..... found at the base of .....in the skin.  
A- thermoreceptors , the epidermis    B- chemoreceptors , the epidermis  
C- mechanoreceptors , hair follicles    D- chemoreceptors , hair follicles
- 41- Which of the following is not true about the spleen?  
A-it is the largest lymphatic organ    B-it collects pathogens from the lymph  
C-it contains lymphocytes    D-Both (B + C ) are correct
- 42- Both testes produce:-  
A-sperm    B-sex hormones    C-the fluids that nourish and protect the sperm    D-Both (A + B) are correct
- 43- Which of the following is not an example of connective tissue?  
A-blood    B-the outer layer of blood vessels structure    C-the tissue that lines the trachea    D-fat tissue

- 44- Which of the following crosses produces a pink flowers four o'clocks?  
A-red flowers four o'clocks  $\times$  pink flowers four o'clocks    B-red flowers four o'clocks  $\times$  white flowers four o'clocks  
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- 45- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?  
A-1  
B-2  
C-3  
D-4
- 46- In the adjacent figure which numbers point to the primary germ layers  
A-6 , 2 , 5  
B-1 , 4 , 8  
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- 47- Which of the following options describes adjacent figures correctly?:-
- |                 | In figure.1 | In figure .2 |
|-----------------|-------------|--------------|
| A- Diaphragm    | contracts   | relaxes      |
| Rib muscles     | relax       | contract     |
| Thoracic cavity | expands     | contracts    |
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- 48- According to adjacent figure choose the correct answer from the following table:-
- |   | Which structure with muscles attached to it bends the rays of the incoming light? | The structures through which light passes | Is a clear protective layer through which light passes first | Millions of axons that exit the eye, which of the following structures form? |
|---|---|---|--|--|
| A | 3   | 2 , 4 , 3 , 1                             | 4  | 6  |
| B | 1   | 2 , 3 , 1                                 | 2  | 5  |
| C | 3   | 2 , 3 , 1                                 | 4  | 6  |
| D | 1   | 2 , 4 , 3 , 1                             | 2  | 5  |
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A-a brown rabbit    B-a pea plant that has terminal flowers  
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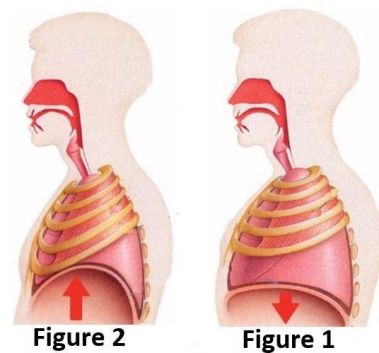
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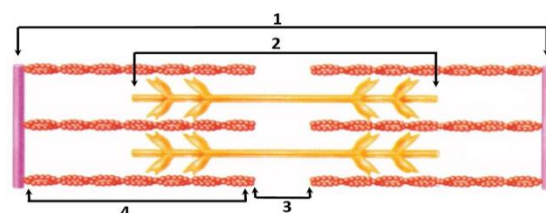
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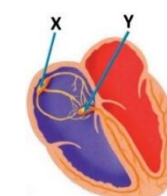
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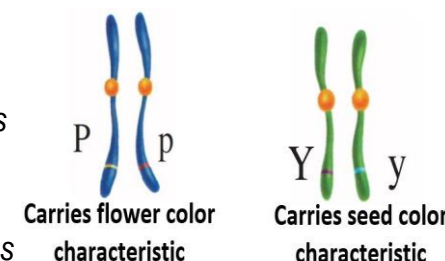
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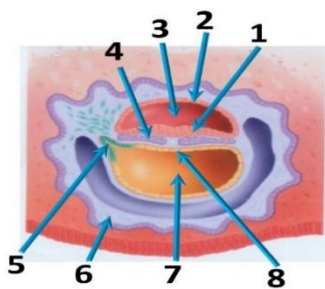
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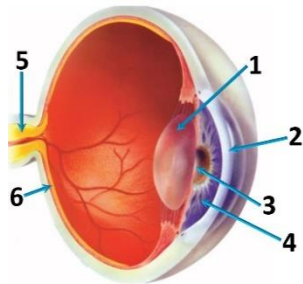
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	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
A	3	2 , 4 , 3 , 1	4	6
B	1	2 , 3 , 1	2	5
C	3	2 , 3 , 1	4	6
D	1	2 , 4 , 3 , 1	2	5



34- .....the addict approaches lethal dose.  
A-before tolerance   B-before dependence   C-whenver the effective dose rises   D-after withdrawal

35- According to the information provided by the adjacent table that shows several monohybrid crosses , each cross produces 100 individuals in which cross only one of the parents can be a hybrid? :

cross	Number of individuals which express the dominant trait	Number of individuals which express the recessive trait
1	74	26
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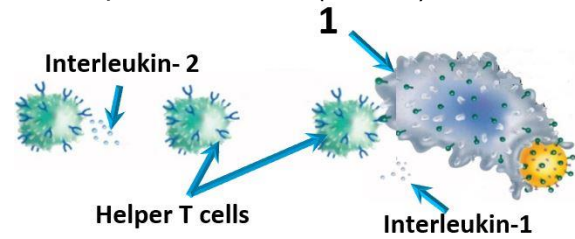
- A-only 1
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- C-1 and 2
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36- Allantois is formed during the.....period.  
A-first trimester of pregnancy                      B-second trimester of pregnancy  
C-third trimester of pregnancy                      D-egg formation

37- In complete dominance the phenotype might not always indicate genotype because:-  
A-two or more alleles influence the phenotype                      B-some environmental factors can affect the phenotype  
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D-Both (B + C ) are correct

38- Urethra is a duct:-  
A-through which both urine and sperm exit the body at the same time                      B-through which only urine exits the body  
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41- The.....joint enables to rotate the arm in a complete circle:-  
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A-blood                      B-the outer layer of blood vessels structure                      C-the tissue that lines the trachea                      D-fat tissue

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A- thermoreceptors , the epidermis                      B- chemoreceptors , the epidermis  
C- mechanoreceptors , hair follicles                      D- chemoreceptors , hair follicles

48- .....it is a part of the brain that interprets touch information  
A-thalamus                      B-medulla oblongata                      C-cerebrum                      D-midbrain

49- In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-  
A-are not eliminated during development                      B-are not produced in the bone marrow  
C-are eliminated during development                      D-the body produces antibodies to kill them

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A-reaching the action potential to the axon terminal                      B-releasing neurotransmitters into the synaptic cleft  
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Note: choose the correct option:

(2 marks for each right answer)

- 1- Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-  
**A-are not surrounded by connective tissue** **B-are surrounded by connective tissue that unite to form tendons**  
**C-are surrounded by connective tissue that does not unite to form tendons** **D-are multinucleate**
- 2- Allantois is formed during the.....period.  
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**A-self pollination , stigmas** **B- self pollination , anthers**  
**C-cross pollination , stigmas** **D- cross pollination , anthers**
- 7- Hair cells are located in the :-  
**A-semicircular canals** **B-organ of Corti** **C-middle ear** **D-Both (A + B ) are correct**
- 8- Which of the following crosses produces a pink flowers four o'clocks?  
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**C- pink flowers four o'clocks × pink flowers four o'clocks** **D-All of them are correct**
- 9- Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.  
**A-prostaglandins** **B-endorphins** **C-enkephalins** **D-All of them are correct**
- 10- All of the following are part of the lymphatic system except:-  
**A-lymphatic capillaries** **B-the vessels that carry lymph from the heart to the tissues**  
**C-lymph nodes** **D-the vessels that return lymph from the tissues to the superior vena cava**
- 11- Which of the following has a hybrid individual?  
**A-a brown rabbit** **B-a pea plant that has terminal flowers**  
**C- a pea plant that has yellow pods** **D-None of them are correct**
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**A-the concentration of potassium ions  $K^+$  is greater inside the cell than outside**  
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- 14- During childbirth, the fetus passes through the greatly enlarged:-  
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- 15- Both neuropeptides and neurotransmitters are secreted by the:-  
**A-endocrine glands and are classified as hormones** **B-nervous system and are classified as hormones**  
**C-endocrine glands and act as chemical messengers** **D-nervous system and act as chemical messengers**

16- Body hair helps humans sense touch because bending a hair stimulates large numbers of ..... found at the base of .....in the skin.

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17- The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-

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**D-2 and 3**

19- In the adjacent figure which numbers

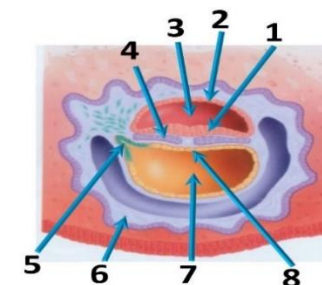
point to the primary germ layers

**A-6 , 2 , 5**

**B-1 , 4 , 8**

**C-4 , 7 , 2**

**D-6 , 1 , 3**



20- In which of the following crosses the phenotype ratio and the genotype ratio is not equal?

**A-GGBb × ggBb**

**B- Ggbb × ggBb**

**C- GG × gg**

**D- Gg × gg**

21- .....the addict approaches lethal dose.

**A-before tolerance** **B-before dependence** **C-whenever the effective dose rises** **D-after withdrawal**

22- Immediately before entering trachea , the air that comes out from the lungs passes through:-

**A-larynx**

**B-bronchioles**

**C-alveoli**

**D-two bronchi**

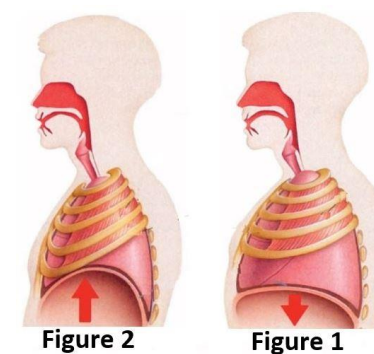
23- Which of the following options describes adjacent figures correctly?:-

	In figure.1	In figure .2
<b>A- Diaphragm</b>	contracts	relaxes
<b>Rib muscles</b>	relax	contract
<b>Thoracic cavity</b>	expands	contracts

	In figure.1	In figure .2
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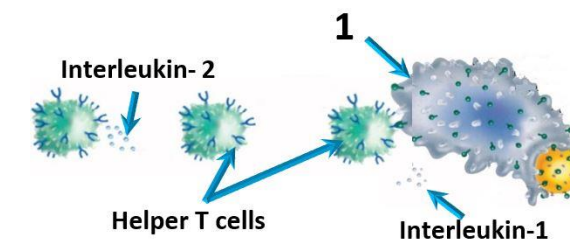
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**D-is a type of white blood cells**



25- In the bone formation of which of the following bones ,the osteocytes are initially scattered randomly throughout the embryonic connective tissue but soon fuse into layers and become flat plates of bones?

**A-in the bones that develop directly into hard bone without forming cartilage first** **B-in all kind of bones**

**C-in the bones that form cartilage first**

**D-only in the bones of the appendicular skeleton**

26- Which of the following hormones is a steroid hormone and fat soluble?

**A-thyroxine**

**B-triiodothyronine**

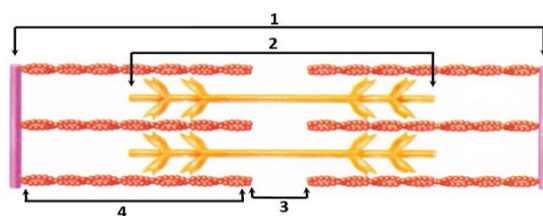
**C-cortisol**

**D-All of them are correct**



27- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?

- A-1  
B-2  
C-3  
D-4

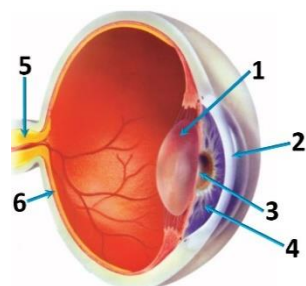


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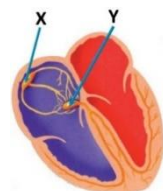


30- In a dyhybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-

- A-nine genotypes and four phenotypes B-four genotypes and nine phenotypes  
C- four genotypes and four phenotypes D-nine genotypes and nine phenotypes

31- According to the adjacent figure,both structure X and Y

- A-are two areas of specialized tissue known as nodes  
B-are called pacemaker  
C-every 0.8 of a second they send an electrical pulse to the walls of the atria  
D-Both (A + B ) are correct

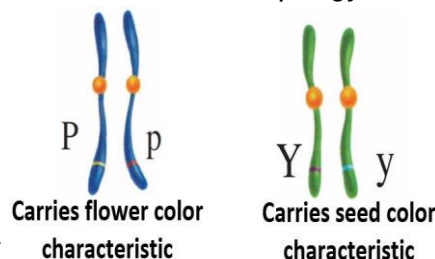


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- A-are found in long bone B-consist of fat cells C-produce blood cells D-are found in spongy bone

33- According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.

- A-the pair of factors P and p is not separated , during the formation of gametes  
B-the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic  
C- the pair of factors Y and y is not separated , during the formation of gametes  
D-the law of independent assortment is not observed for both genes (P · p)and (Y · y )



34- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-

- A-reuptake receptors on the postsynaptic neuron B-reuptake receptors on the presynaptic neuron  
C-receptor proteins on the postsynaptic neuron D-sodium ionic channels on the postsynaptic neuron

35- ..... activates the complement system in the humoral immune response.

- A-encountering a certain pathogen B- forming a ring-shaped structure  
C-antigen-antibody binding D- releasing interferon

36- Which of the following is correct about antigens :- A-is a substance that stimulates an immune response

- B- antigens that are normally present in a person's body provoke no response  
C-pathogens or parts of pathogens , bacterial toxins , insect venom and pollen are various kinds of antigens  
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37- Both testes produce:-

- A-sperm B-sex hormones C-the fluids that nourish and protect the sperm D-Both (A + B) are correct

38- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-

- A-are secreted from the same endocrine gland B-have the same target cell  
C-regulate the concentration of thyroid hormones in the blood through negative feedback D-All of them are correct

39- Which one of the following leads directly to a change in the permeability of the postsynaptic membrane by affecting chemically gated ion channels during the transmission of nerve impulses at the synapse?

- A-reaching the action potential to the axon terminal B-releasing neurotransmitters into the synaptic cleft  
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40- All of the following about the first polar body and the second polar body are incorrect except both of them are;- A-haploid cells B-produced in the fallopian tube C-produced in the ovary D-diploid cells

41- Which of the following is an example of integration of organ systems?

- A-nutrients from the digestive system are distributed by the cardiovascular system  
B-The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system  
C-The endocrine system secretes hormones which regulate the activity of the reproductive system D-All of them are correct

42- In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed , which of the following genotypes represents the genotype of the parents for both characteristics together?

- A-ttRr × ttrr B- TtRR × ttrr C- ttRR × ttrr D- TTRr × ttrr

43- Which of the following is true about oxytocin hormone ?

- A-stimulates flow of milk from the breasts during lactation B-is made by posterior pituitary  
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44- The pulmonary arteries and the aorta are similar in that:-

- A-their walls are composed of three layers B-both vessels carry oxygenated blood to the heart  
C-both vessels carry oxygenated blood away from the heart D-Both (A + C ) are correct

45- Memory cells are formed for the first time in.....response.

- A-primary immune B- secondary immune C-inflammatory D-temperature

46- In complete dominance the phenotype might not always indicate genotype because:-

- A-two or more alleles influence the phenotype B-some environmental factors can affect the phenotype  
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47- Which of the following pairs are mismatched?

- A-myelinated axons : gray matter of spinal cord B- dendrites : white matter of cerebrum  
C-unmyelinated axons : white matter of cerebrum D-All of them are incorrect

48- Which of the following is not true about the spleen?

- A-it is the largest lymphatic organ B-it collects pathogens from the lymph  
C-it contains lymphocytes D-Both (B + C ) are correct

49- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?

- A- (AB<sup>+</sup>) → (AB<sup>-</sup>) B- (O<sup>-</sup>) → (B<sup>+</sup>) C- (A<sup>+</sup>) → (B<sup>+</sup>) D-(B<sup>-</sup>) → (B<sup>-</sup>)

50- Cytotoxic T cells recognize cells that have been infected by the pathogen because they have..... on their surfaces that match the.....on the surfaces of the infected body cell.

- A-receptor proteins , antigens B-viral antigens , receptor proteins  
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Note: choose the correct option:

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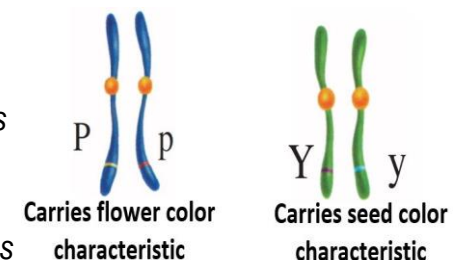
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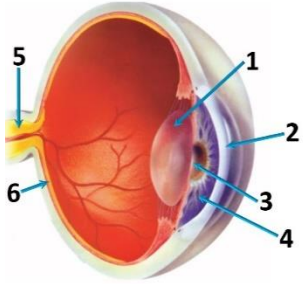
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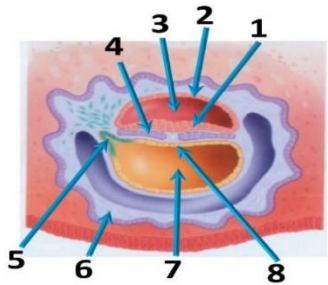
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- 32- According to adjacent figure choose the correct answer from the following table:-

	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
A	3	2, 4, 3, 1	4	6
B	1	2, 3, 1	2	5
C	3	2, 3, 1	4	6
D	1	2, 4, 3, 1	2	5



- 33- Both neuropeptides and neurotransmitters are secreted by the:-  
A-endocrine glands and are classified as hormones B-nervous system and are classified as hormones  
C-endocrine glands and act as chemical messengers D-nervous system and act as chemical messengers

- 34- In the adjacent figure which numbers point to the primary germ layers



- A-6, 2, 5  
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- 35- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-  
A-reuptake receptors on the postsynaptic neuron B-reuptake receptors on the presynaptic neuron  
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- 36- ..... activates the complement system in the humoral immune response.  
A-encountering a certain pathogen B- forming a ring-shaped structure  
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- 37- In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-  
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- 38- Which of the following crosses produces a pink flowers four o'clocks?  
A-red flowers four o'clocks × pink flowers four o'clocks B-red flowers four o'clocks × white flowers four o'clocks  
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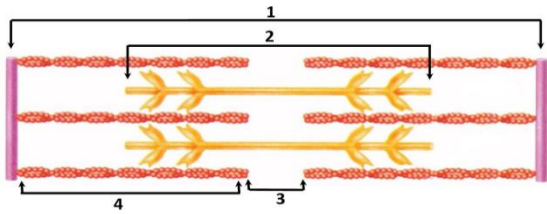
- 39- The pulmonary arteries and the aorta are similar in that:-  
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- 40- Which of the following hormones is a steroid hormone and fat soluble?  
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- 41- Cytotoxic T cells recognize cells that have been infected by the pathogen because they have..... on their surfaces that match the.....on the surfaces of the infected body cell.  
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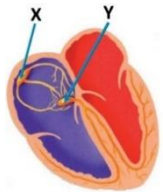
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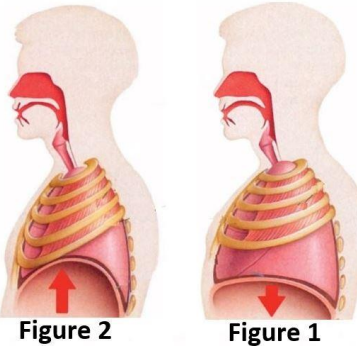
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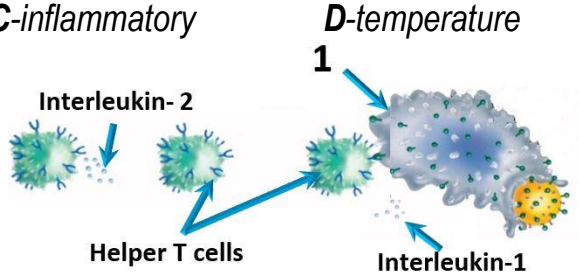
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A- thermoreceptors , the epidermis B- chemoreceptors , the epidermis  
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Note: choose the correct option:

(2 marks for each right answer)

- 1- In a dihybrid cross (hybrid × hybrid) the expected number of different genotypes and the expected number of different phenotypes are:-

A-nine genotypes and four phenotypes  
C- four genotypes and four phenotypes

B-four genotypes and nine phenotypes  
D-nine genotypes and nine phenotypes

- 2- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?

A- (AB<sup>+</sup>) → (AB<sup>-</sup>)    B- (O<sup>-</sup>) → (B<sup>+</sup>)    C- (A<sup>+</sup>) → (B<sup>+</sup>)    D- (B<sup>-</sup>) → (B<sup>-</sup>)

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- 7- In which of the following crosses the phenotype ratio and the genotype ratio is not equal?

A-GGBb × ggBb    B- Ggbb × ggBb    C- GG × gg    D- Gg × gg

- 8- Yellow bone marrow and Red bone marrow are similar in that both of them:-

A-are found in long bone    B-consist of fat cells    C-produce blood cells    D-are found in spongy bone

- 9- In complete dominance the phenotype might not always indicate genotype because:-

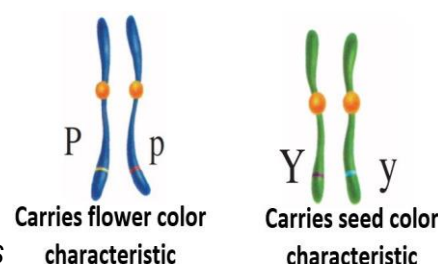
A-two or more alleles influence the phenotype    B-some environmental factors can affect the phenotype  
C-The same phenotype may appear for a homozygous dominant genotype and a hybrid genotype  
D-Both (B + C) are correct

- 10- According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.

A-the pair of factors P and p is not separated, during the formation of gametes  
B-the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic

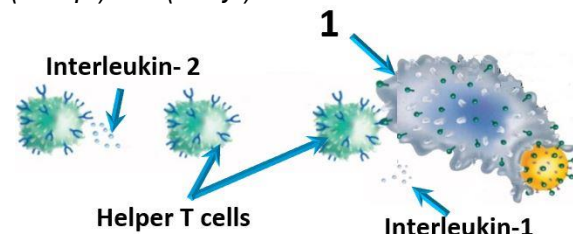
C- the pair of factors Y and y is not separated, during the formation of gametes

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- 15- The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-

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- 16- Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.

A-prostaglandins    B-endorphins    C-enkephalins    D-All of them are correct

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A-are not surrounded by connective tissue    B-are surrounded by connective tissue that unite to form tendons  
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- 18- ..... it is a part of the brain that interprets touch information

A-thalamus    B-medulla oblongata    C-cerebrum    D-midbrain

- 19- In pea plants tallness (T) is dominant to shortness (t) and round seeds (R) is dominant to wrinkled seeds (r) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed, which of the following genotypes represents the genotype of the parents for both characteristics together?

A-ttRr × ttrr    B- TtRR × ttrr    C- ttRR × ttrr    D- TTRr × ttrr

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- 26- Which of the following is an example of integration of organ systems?

A-nutrients from the digestive system are distributed by the cardiovascular system  
B-The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system  
C-The endocrine system secretes hormones which regulate the activity of the reproductive system    D-All of them are correct

- 27- Body hair helps humans sense touch because bending a hair stimulates large numbers of ..... found at the base of ..... in the skin.

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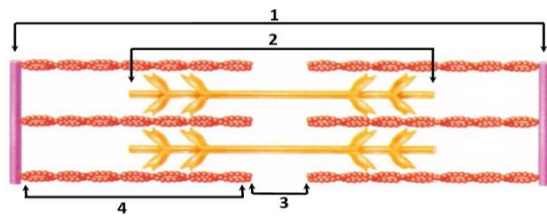
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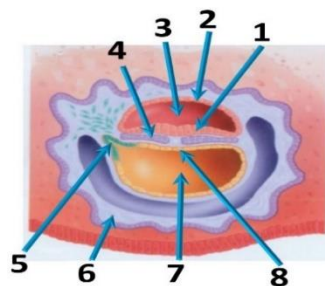
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- B-2
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- B-1 , 4 , 8
- C-4 , 7 , 2
- D-6 , 1 , 3



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35- According to the information provided by the adjacent table that shows several monohybrid crosses , each cross produces 100 individuals in which cross only one of the parents can be a hybrid? :

- A-only 1
- B-only 2
- C-1 and 2
- D-2 and 3

cross	Number of individuals which express the dominant trait	Number of individuals which express the recessive trait
1	74	26
2	51	49
3	100	0

36- Which of the following pairs are mismatched?

- A-myelinated axons : gray matter of spinal cord
- B- dendrites : white matter of cerebrum
- C-unmyelinated axons : white matter of cerebrum
- D-All of them are incorrect

37- Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.

- A-self pollination , stigmas
- B- self pollination , anthers
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38- Urethra is a duct:-

- A-through which both urine and sperm exit the body at the same time
- B-through which only urine exits the body
- C-in which the fluid secreted from the seminal vesicles mixes with the sperm
- D-Both ( B + C ) are correct

39- All of the following about the first polar body and the second polar body are incorrect except both of them are;-

40- .....the addict approaches lethal dose.

- A-before tolerance
- B-before dependence
- C-whenever the effective dose rises
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41- Which of the following is true about oxytocin hormone ?

- A-stimulates flow of milk from the breasts during lactation
- B-is made by posterior pituitary
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42- Allantois is formed during the.....period.

- A-first trimester of pregnancy
- B-second trimester of pregnancy
- C-third trimester of pregnancy
- D-egg formation

43- Both testes produce:-

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- B-sex hormones
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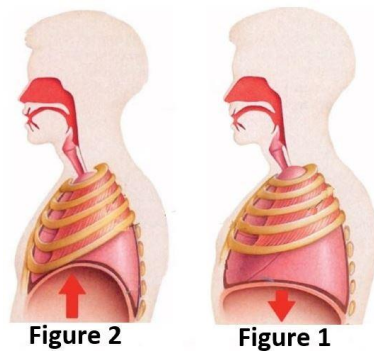
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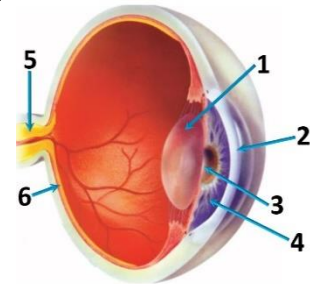
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46- Which of the following is correct about antigens :-

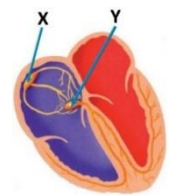
- A-is a substance that stimulates an immune response
- B- antigens that are normally present in a person's body provoke no response
- C-pathogens or parts of pathogens , bacterial toxins , insect venom and pollen are various kinds of antigens
- D-All of them are correct

47- Which of the following is not an example of connective tissue?

- A-blood
- B-the outer layer of blood vessels structure
- C-the tissue that lines the trachea
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48- According to the adjacent figure,both structure X and Y

- A-are two areas of specialized tissue known as nodes
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49- All of the following are part of the lymphatic system except:-

- A-lymphatic capillaries
- B-the vessels that carry lymph from the heart to the tissues
- C-lymph nodes
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50- During childbirth, the fetus passes through the greatly enlarged:-

- A-cervix and vagina
- B-fallopian tube and vagina
- C-vagina and urethra
- D-cervix and urethra

Q



Note: choose the correct option:

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- 1- Urethra is a duct:-  
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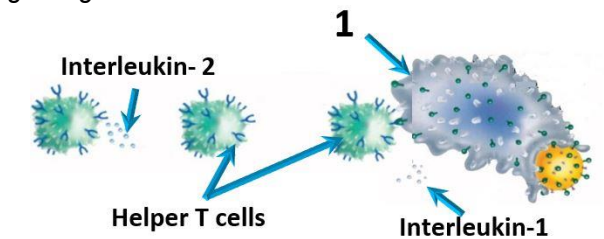
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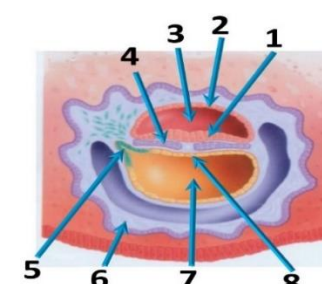
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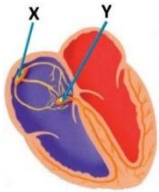
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31- According to the adjacent figure,both structure X and Y



- A-are two areas of specialized tissue known as nodes  
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- 33- ..... activates the complement system in the humoral immune response.  
A-encountering a certain pathogen      B- forming a ring-shaped structure  
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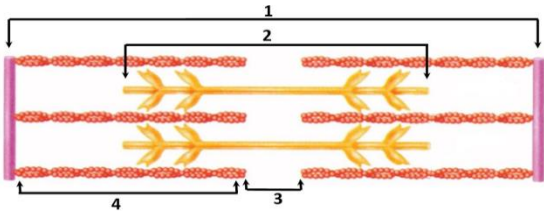
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- A-larynx      B-bronchioles      C-alveoli      D-two bronchi

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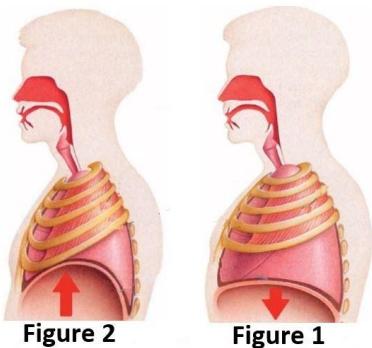


Figure 2      Figure 1

	In figure.1	In figure .2
A- Diaphragm	contracts	relaxes
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	In figure.1	In figure .2
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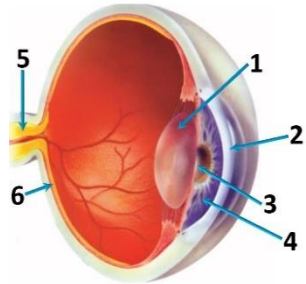
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Rib muscles	contract	relax
Thoracic cavity	expands	contracts

40- Both testes produce:-

- A-sperm      B-sex hormones      C-the fluids that nourish and protect the sperm      D-Both (A + B ) are correct

41- According to adjacent figure choose the correct answer from the following table:-

	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
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42- Which of the following hormones is a steroid hormone and fat soluble?

- A-thyroxine      B-triiodothyronine      C-cortisol      D-All of them are correct

43- In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed , which of the following genotypes represents the genotype of the parents for both characteristics together?

- A-ttRr × ttrr      B- TtRR × ttrr      C- ttRR × ttrr      D- TTRr × ttrr

44- In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-

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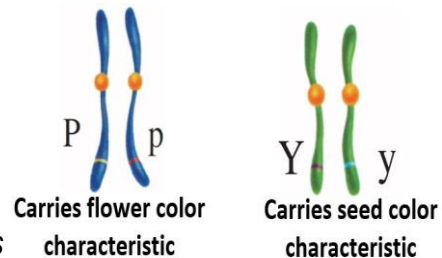
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- A-primary immune      B- secondary immune      C-inflammatory      D-temperature

R



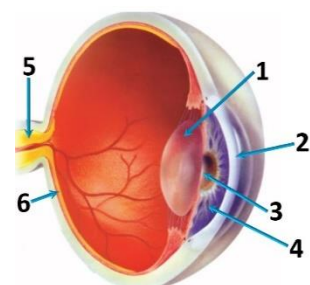
Note: choose the correct option:

(2 marks for each right answer)

- 1- In complete dominance the phenotype might not always indicate genotype because:-  
 A-two or more alleles influence the phenotype B-some environmental factors can affect the phenotype  
 C-The same phenotype may appear for a homozygous dominant genotype and a hybrid genotype  
 D-Both (B + C) are correct

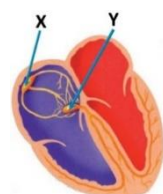
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- 3- According to the adjacent figure, both structure X and Y

- A-are two areas of specialized tissue known as nodes  
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 D-Both (A + B) are correct



- 4- Memory cells are formed for the first time in.....response.

- A-primary immune B-secondary immune C-inflammatory D-temperature

- 5- .....it is a part of the brain that interprets touch information

- A-thalamus B-medulla oblongata C-cerebrum D-midbrain

- 6- Both testes produce:-

- A-sperm B-sex hormones C-the fluids that nourish and protect the sperm D-Both (A + B) are correct

- 7- Body hair helps humans sense touch because bending a hair stimulates large numbers of ..... found at the base of .....in the skin.

- A- thermoreceptors , the epidermis B- chemoreceptors , the epidermis  
 C- mechanoreceptors , hair follicles D- chemoreceptors , hair follicles

- 8- In the bone formation of which of the following bones ,the osteocytes are initially scattered randomly throughout the embryonic connective tissue but soon fuse into layers and become flat plates of bones?

- A-in the bones that develop directly into hard bone without forming cartilage first B-in all kind of bones  
 C-in the bones that form cartilage first D-only in the bones of the appendicular skeleton

- 9- Cytotoxic T cells recognize cells that have been infected by the pathogen because they have..... on their surfaces that match the.....on the surfaces of the infected body cell.

- A-receptor proteins , antigens B-viral antigens , receptor proteins  
 C-viral antigens , antigens D-receptor proteins , receptor proteins

- 10- Which of the following is correct about antigens :- A-is a substance that stimulates an immune response

- B- antigens that are normally present in a person's body provoke no response  
 C-pathogens or parts of pathogens , bacterial toxins , insect venom and pollen are various kinds of antigens  
 D-All of them are correct

- 11- All of the following about the first polar body and the second polar body are incorrect except both of them are;- A-haploid cells B-produced in the fallopian tube C-produced in the ovary D-diploid cells

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- A-it is the largest lymphatic organ B-it collects pathogens from the lymph  
 C-it contains lymphocytes D-Both (B + C) are correct

- 15- Which one of the following is correct regarding the neuron when at rest(during the resting potential)?

- A-the concentration of potassium ions  $K^+$  is greater inside the cell than outside  
 B-the concentration of potassium ions  $K^+$  is greater outside the cell than inside  
 C-the concentration of negatively charged proteins is greater outside the cell than inside  
 D-the concentration sodium ions  $Na^+$  is greater inside the cell than outside

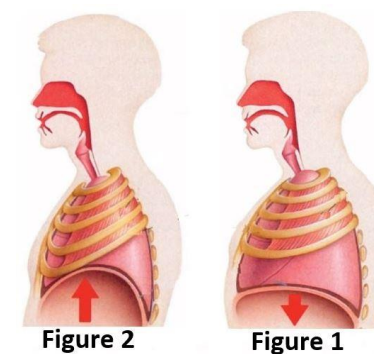
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- 17- In which of the following crosses the phenotype ratio and the genotype ratio is not equal?

- A-GGBb  $\times$  ggBb B- Ggbb  $\times$  ggBb C- GG  $\times$  gg D- Gg  $\times$  gg

- 18- The pulmonary arteries and the aorta are similar in that:-

- A-their walls are composed of three layers B-both vessels carry oxygenated blood to the heart  
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- 19- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-

- A-are secreted from the same endocrine gland B-have the same target cell  
 C-regulate the concentration of thyroid hormones in the blood through negative feedback D-All of them are correct

- 20- According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.

- A-the pair of factors P and p is not separated , during the formation of gametes  
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- 21- Which of the following hormones is a steroid hormone and fat soluble?

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- 22- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?

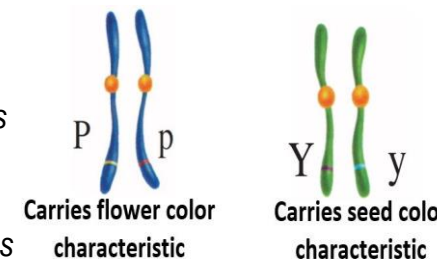
- A- (AB<sup>+</sup>)  $\rightarrow$  (AB<sup>-</sup>) B- (O<sup>-</sup>)  $\rightarrow$  (B<sup>+</sup>) C- (A<sup>+</sup>)  $\rightarrow$  (B<sup>+</sup>) D- (B<sup>-</sup>)  $\rightarrow$  (B<sup>-</sup>)

- 23- Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.

- A-self pollination , stigmas B- self pollination , anthers  
 C-cross pollination , stigmas D- cross pollination , anthers

- 24- The.....joint enables to rotate the arm in a complete circle:-

- A-pivot B-hinge C-ball-and-socket D-gliding





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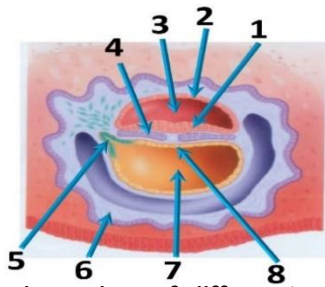
28- Allantois is formed during the.....period.  
A-first trimester of pregnancy      B-second trimester of pregnancy  
C-third trimester of pregnancy      D-egg formation

29- Which of the following crosses produces a pink flowers four o'clocks?  
A-red flowers four o'clocks × pink flowers four o'clocks      B-red flowers four o'clocks × white flowers four o'clocks  
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32- In the adjacent figure which numbers point to the primary germ layers  
A-6 , 2 , 5  
B-1 , 4 , 8  
C-4 , 7 , 2  
D-6 , 1 , 3



33- In a dyhybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-  
A-nine genotypes and four phenotypes      B-four genotypes and nine phenotypes  
C- four genotypes and four phenotypes      D-nine genotypes and nine phenotypes

34- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-  
A-reuptake receptors on the postsynaptic neuron      B-reuptake receptors on the presynaptic neuron  
C-receptor proteins on the postsynaptic neuron      D-sodium ionic channels on the postsynaptic neuron

35- Which of the following pairs are mismatched?  
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37- ..... activates the complement system in the humoral immune response.  
A-encountering a certain pathogen      B- forming a ring-shaped structure  
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38- Which of the following is true about oxytocin hormone ?  
A-stimulates flow of milk from the breasts during lactation      B-is made by posterior pituitary  
C-stimulates milk production in breasts during lactation.      D-Both ( A + B ) are correct.

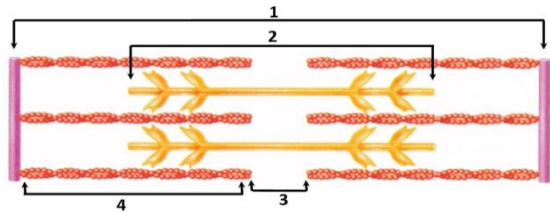
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A-are not surrounded by connective tissue      B-are surrounded by connective tissue that unite to form tendons  
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41- During childbirth, the fetus passes through the greatly enlarged:-  
A-cervix and vagina      B-fallopian tube and vagina      C-vagina and urethra      D-cervix and urethra

42- Which one of the following leads directly to a change in the permeability of the postsynaptic membrane by affecting chemically gated ion channels during the transmission of nerve impulses at the synapse?  
A-reaching the action potential to the axon terminal      B-releasing neurotransmitters into the synaptic cleft  
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44- .....the addict approaches lethal dose.  
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A-menstruation      B-the follicle to rupture and release its egg      C-implantation      D-the follicle to form

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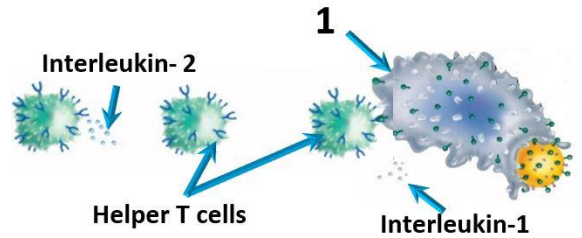
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C-1 and 2  
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cross	Number of individuals which express the dominant trait	Number of individuals which express the recessive trait
1	74	26
2	51	49
3	100	0

48- Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.  
A-prostaglandins      B-endorphins      C-enkephalins      D-All of them are correct

49- Which of the following has a hybrid individual?  
A-a brown rabbit  
C- a pea plant that has yellow pods  
B-a pea plant that has terminal flowers  
D-None of them are correct

50- In the adjacent figure, all of the following about the cell which is labeled 1 are correct except it.  
A-displays antigens  
B-is activated by interleukin 1  
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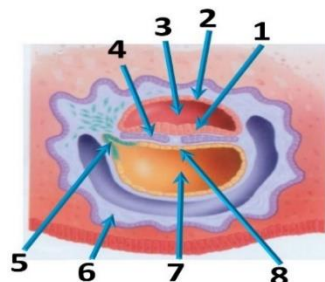
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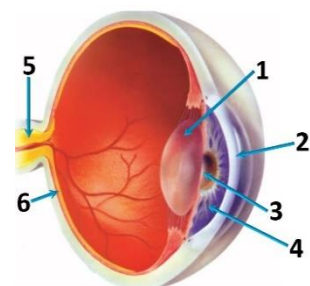
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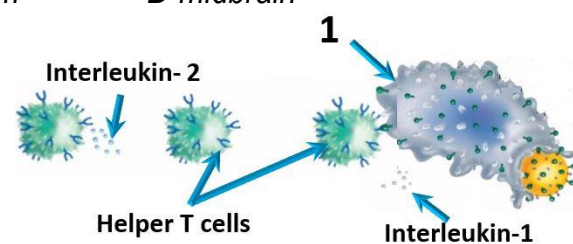
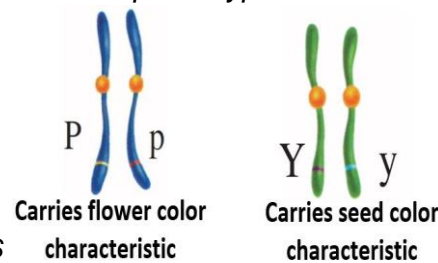
**A-nutrients from the digestive system are distributed by the cardiovascular system B-The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system C-The endocrine system secretes hormones which regulate the activity of the reproductive system D-All of them are correct**

- 28- In which of the following crosses the pheotype ratio and the genotype ratio is not equal?

**A-GGBb × ggBb B- Ggbb × ggBb C- GG × gg D- Gg × gg**



- 29-** In complete dominance the phenotype might not always indicate genotype because:-  
 A-two or more alleles influence the phenotype      B-some environmental factors can affect the phenotype  
 C-The same phenotype may appear for a homozygous dominant genotype and a hybrid genotype  
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- 30-** Which of the following is correct about antigens :- **A**-is a substance that stimulates an immune response  
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 A-first trimester of pregnancy      B-second trimester of pregnancy  
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 A-a brown rabbit      B-a pea plant that has terminal flowers  
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**A**-it is the largest lymphatic organ      **B**-it collects pathogens from the lymph  
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- 34-** In a dyhybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-  
 A-nine genotypes and four phenotypes      B-four genotypes and nine phenotypes  
 C- four genotypes and four phenotypes      D-nine genotypes and nine phenotypes
- 35-** According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.  
**A**-the pair of factors P and p is not separated , during the formation of gametes  
**B**-the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic  
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**A**-stimulates flow of milk from the breasts during lactation      **B**-is made by posterior pituitary  
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**A**-thalamus      **B**-medulla oblongata      **C**-cerebrum      **D**-midbrain
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**A**-displays antigens  
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- 39-** Which one of the following is correct regarding the neuron when at rest(during the resting potential)?  
**A**-the concentration of potassium ions  $K^+$  is greater inside the cell than outside  
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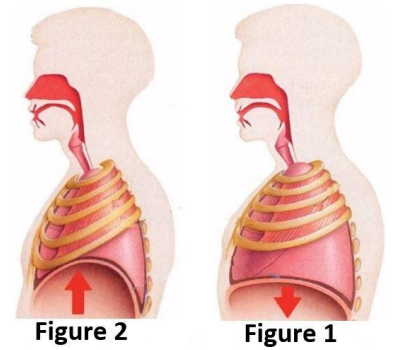
- 42-** Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.  
 A-self pollination , stigmas      B- self pollination , anthers  
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- 43-** Both thyrotropin releasing hormone and thyroid-stimulating hormone:-  
**A**-are secreted from the same endocrine gland      **B**-have the same target cell  
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**A**- thermoreceptors , the epidermis      **B**- chemoreceptors , the epidermis  
**C**- mechanoreceptors , hair follicles      **D**- chemoreceptors , hair follicles
- 45-** Which of the following options describes adjacent figures correctly?:-

	In figure.1	In figure .2
<b>A-</b> Diaphragm	contracts	relaxes
Rib muscles	relax	contract
Thoracic cavity	expands	contracts

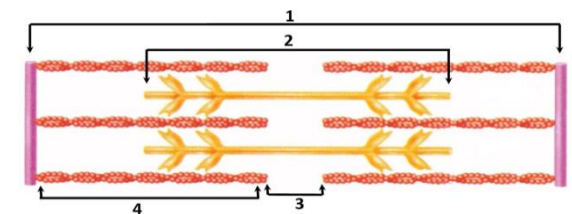
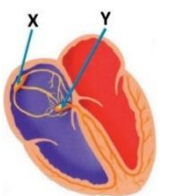
	In figure.1	In figure .2
<b>B-</b> Diaphragm	relaxes	contracts
Rib muscles	contract	relax
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<b>C-</b> Diaphragm	relaxes	contracts
Rib muscles	relax	contract
Thoracic cavity	contracts	expands

	In figure.1	In figure .2
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Rib muscles	contract	relax
Thoracic cavity	expands	contracts



- 46-** According to the adjacent figure,both structure X and Y  
**A**-are two areas of specialized tissue known as nodes  
**B**-are called pacemaker  
**C**-every 0.8 of a second they send an electrical pulse to the walls of the atria  
**D**-Both (A + B) are correct
- 47-** ..... activates the complement system in the humoral immune response.  
**A**-encountering a certain pathogen      **B**- forming a ring-shaped structure  
**C**-antigen-antibody binding      **D**- releasing interferon
- 48-** The pulmonary arteries and the aorta are similar in that:-  
**A**-their walls are composed of three layers      **B**-both vessels carry oxygenated blood to the heart  
**C**-both vessels carry oxygenated blood away from the heart      **D**-Both (A + C) are correct
- 49-** In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?  
**A**- ( $AB^+$ )  $\rightarrow$  ( $AB^-$ )      **B**- ( $O^-$ )  $\rightarrow$  ( $B^+$ )      **C**- ( $A^+$ )  $\rightarrow$  ( $B^+$ )      **D**-( $B^-$ )  $\rightarrow$  ( $B^-$ )
- 50-** In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?  
**A**-1  
**B**-2  
**C**-3  
**D**-4



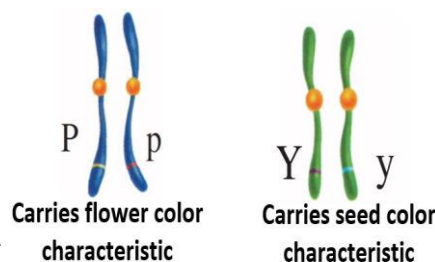
**T**



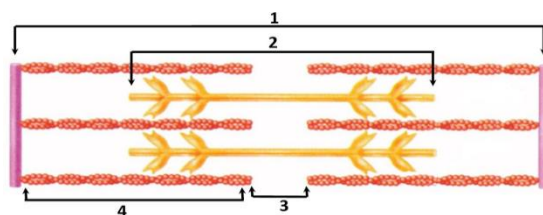
Note: choose the correct option:

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- Which of the following is not true about the spleen?  
 A-it is the largest lymphatic organ B-it collects pathogens from the lymph  
 C-it contains lymphocytes D-Both (B + C) are correct
- All of the following are part of the lymphatic system except:-  
 A-lymphatic capillaries B-the vessels that carry lymph from the heart to the tissues  
 C-lymph nodes D-the vessels that return lymph from the tissues to the superior vena cava
- Both neuropeptides and neurotransmitters are secreted by the:-  
 A-endocrine glands and are classified as hormones B-nervous system and are classified as hormones  
 C-endocrine glands and act as chemical messengers D-nervous system and act as chemical messengers
- In which of the following crosses the phenotype ratio and the genotype ratio is not equal?  
 A-GGBb × ggBb B- Ggbb × ggBb C- GG × gg D- Gg × gg
- According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.  
 A-the pair of factors P and p is not separated, during the formation of gametes  
 B-the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic  
 C- the pair of factors Y and y is not separated, during the formation of gametes  
 D-the law of independent assortment is not observed for both genes (P × p) and (Y × y)
- Yellow bone marrow and Red bone marrow are similar in that both of them:-  
 A-are found in long bone B-consist of fat cells C-produce blood cells D-are found in spongy bone
- Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.  
 A-self pollination, stigmas B- self pollination, anthers  
 C-cross pollination, stigmas D- cross pollination, anthers
- During childbirth, the fetus passes through the greatly enlarged:-  
 A-cervix and vagina B-fallopian tube and vagina C-vagina and urethra D-cervix and urethra



- Which of the following is not an example of connective tissue?  
 A-blood B-the outer layer of blood vessels structure C-the tissue that lines the trachea D-fat tissue
- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?  
 A-1 B-2 C-3 D-4



- Which of the following has a hybrid individual?  
 A-a brown rabbit B-a pea plant that has terminal flowers  
 C- a pea plant that has yellow pods D-None of them are correct
- The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-  
 A-menstruation B-the follicle to rupture and release its egg C-implantation D-the follicle to form
- In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed, which of the following genotypes represents the genotype of the parents for both characteristics together?  
 A-ttRr × ttrr B- TtRR × ttrr C- ttRR × ttrr D- TTRr × ttrr

14- Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.

A-prostaglandins B-endorphins C-enkephalins D-All of them are correct

15- The pulmonary arteries and the aorta are similar in that:-

A-their walls are composed of three layers B-both vessels carry oxygenated blood to the heart  
 C-both vessels carry oxygenated blood away from the heart D-Both (A + C) are correct

16- Which of the following crosses produces a pink flowers four o'clocks?

A-red flowers four o'clocks × pink flowers four o'clocks B-red flowers four o'clocks × white flowers four o'clocks  
 C- pink flowers four o'clocks × pink flowers four o'clocks D-All of them are correct

17- In the bone formation of which of the following bones, the osteocytes are initially scattered randomly throughout the embryonic connective tissue but soon fuse into layers and become flat plates of bones?

A-in the bones that develop directly into hard bone without forming cartilage first B-in all kind of bones  
 C-in the bones that form cartilage first D-only in the bones of the appendicular skeleton

18- According to the information provided by the adjacent table that shows several monohybrid crosses, each cross produces 100 individuals in which cross only one of the parents can be a hybrid?

cross	Number of individuals which express the dominant trait	Number of individuals which express the recessive trait
1	74	26
2	51	49
3	100	0

A-only 1

B-only 2

C-1 and 2

D-2 and 3

19- Both testes produce:-

A-sperm B-sex hormones C-the fluids that nourish and protect the sperm D-Both (A + B) are correct

20- Which of the following pairs are mismatched?

A-myelinated axons : gray matter of spinal cord B- dendrites : white matter of cerebrum  
 C-unmyelinated axons : white matter of cerebrum D-All of them are incorrect

21- In complete dominance the phenotype might not always indicate genotype because:-

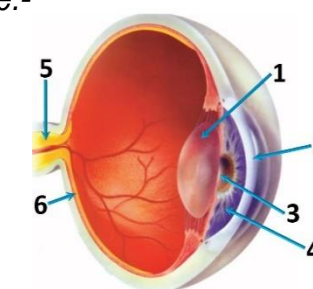
A-two or more alleles influence the phenotype B-some environmental factors can affect the phenotype  
 C-The same phenotype may appear for a homozygous dominant genotype and a hybrid genotype  
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22- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-

A-reuptake receptors on the postsynaptic neuron B-reuptake receptors on the presynaptic neuron  
 C-receptor proteins on the postsynaptic neuron D-sodium ionic channels on the postsynaptic neuron

23- According to adjacent figure choose the correct answer from the following table:-

	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
A	3	2, 4, 3, 1	4	6
B	1	2, 3, 1	2	5
C	3	2, 3, 1	4	6
D	1	2, 4, 3, 1	2	5



24- .....it is a part of the brain that interprets touch information

A-thalamus B-medulla oblongata C-cerebrum D-midbrain

25- Which of the following hormones is a steroid hormone and fat soluble?

A-thyroxine B-triiodothyronine C-cortisol D-All of them are correct

26- Which of the following is correct about antigens :- A-is a substance that stimulates an immune response

B- antigens that are normally present in a person's body provoke no response  
 C-pathogens or parts of pathogens, bacterial toxins, insect venom and pollen are various kinds of antigens  
 D-All of them are correct

27- Immediately before entering trachea, the air that comes out from the lungs passes through:-

A-larynx B-bronchioles C-alveoli D-two bronchi



28- ..... activates the complement system in the humoral immune response.

A-encountering a certain pathogen

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C-antigen-antibody binding

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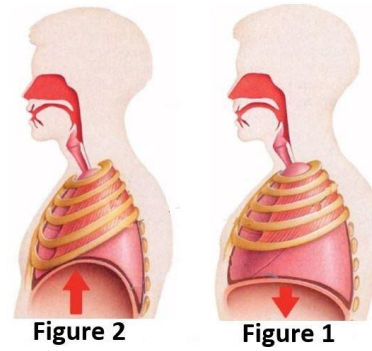
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30- Which of the following is an example of integration of organ systems?

A-nutrients from the digestive system are distributed by the cardiovascular system

B-The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system

C-The endocrine system secretes hormones which regulate the activity of the reproductive system

D-All of them are correct

31- In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-

A-are not eliminated during development

B-are not produced in the bone marrow

C-are eliminated during development

D-the body produces antibodies to kill them

32- Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-

A-are not surrounded by connective tissue

B-are surrounded by connective tissue that unite to form tendons

C-are surrounded by connective tissue that does not unite to form tendons

D-are multinucleate

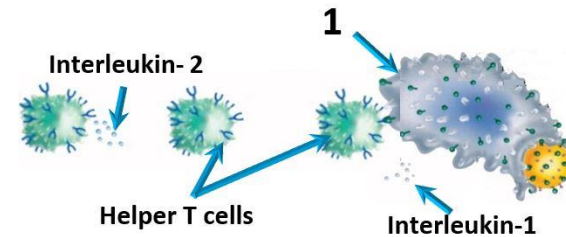
33- In the adjacent figure, all of the following about the cell which is labeled 1 are correct except it.

A-displays antigens

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34- All of the following about the first polar body and the second polar body are incorrect except both of them are:-

A-haploid cells

B-produced in the fallopian tube

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37- Urethra is a duct:-

A-through which both urine and sperm exit the body at the same time

B-through which only urine exits the body

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38- Hair cells are located in the :-

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A-are secreted from the same endocrine gland

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C-regulate the concentration of thyroid hormones in the blood through negative feedback

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40- The.....joint enables to rotate the arm in a complete circle:-

A-pivot

B-hinge

C-ball-and-socket

D-gliding

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A-first trimester of pregnancy

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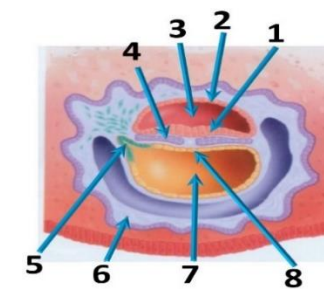
point to the primary germ layers

A-6 , 2 , 5

B-1 , 4 , 8

C-4 , 7 , 2

D-6 , 1 , 3



43- Which one of the following is correct regarding the neuron when at rest(during the resting potential)?

A-the concentration of potassium ions  $K^+$  is greater inside the cell than outside

B-the concentration of potassium ions  $K^+$  is greater outside the cell than inside

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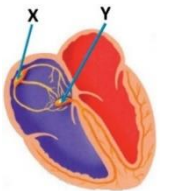
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46- Body hair helps humans sense touch because bending a hair stimulates large numbers of ..... found at the base of .....in the skin.

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A-reaching the action potential to the axon terminal

B-releasing neurotransmitters into the synaptic cleft

C-the interaction of neurotransmitter and receptor molecules

D-the fusion of vesicles with the presynaptic membrane

49- .....the addict approaches lethal dose.

A-before tolerance

B-before dependence

C-whenver the effective dose rises

D-after withdrawal

50- Cytotoxic T cells recognize cells that have been infected by the pathogen because they have..... on their surfaces that match the.....on the surfaces of the infected body cell.

A-receptor proteins , antigens

B-viral antigens , receptor proteins

C-viral antigens , antigens

D-receptor proteins , receptor proteins

U



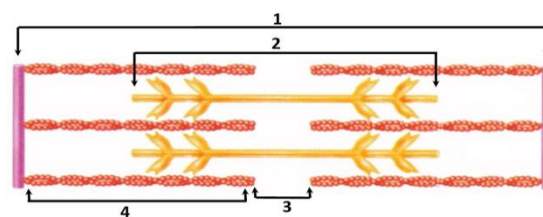
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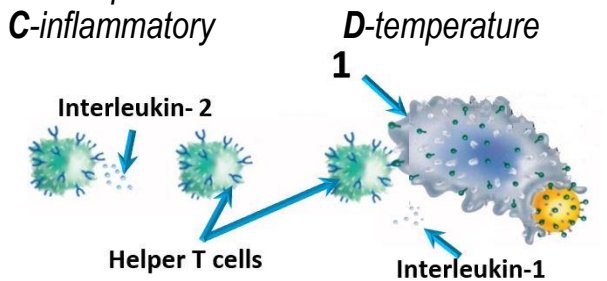
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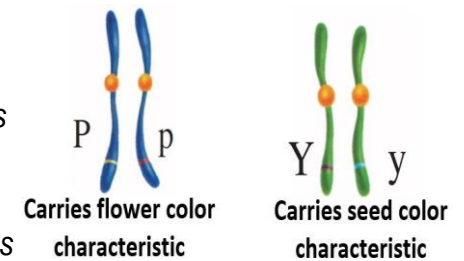
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A-receptor proteins , antigens B-viral antigens , receptor proteins  
 C-viral antigens , antigens D-receptor proteins , receptor proteins

- In the bone formation of which of the following bones ,the osteocytes are initially scattered randomly throughout the embryonic connective tissue but soon fuse into layers and become flat plates of bones?

A-in the bones that develop directly into hard bone without forming cartilage first B-in all kind of bones  
 C-in the bones that form cartilage first D-only in the bones of the appendicular skeleton

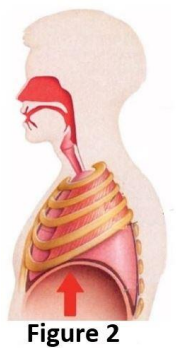
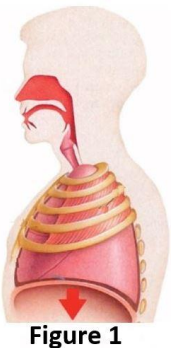
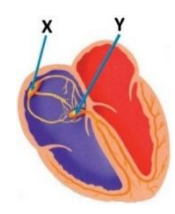
- Which of the following hormones is a steroid hormone and fat soluble?

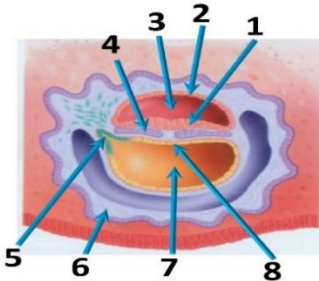
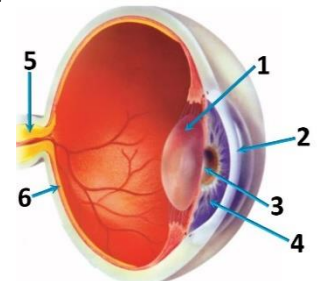
A-thyroxine B-triiodothyronine C-cortisol D-All of them are correct

- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-

A-reuptake receptors on the postsynaptic neuron B-reuptake receptors on the presynaptic neuron  
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- 26- In complete dominance the phenotype might not always indicate genotype because:-  
A-two or more alleles influence the phenotype      B-some environmental factors can affect the phenotype  
C-The same phenotype may appear for a homozygous dominant genotype and a hybrid genotype  
D-Both (B + C ) are correct
- 27- Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.  
A-prostaglandins      B-endorphins      C-enkephalins      D-All of them are correct
- 28- Which of the following options describes adjacent figures correctly?:-
- |                 | In figure.1 | In figure .2 |
|-----------------|-------------|--------------|
| A- Diaphragm    | contracts   | relaxes      |
| Rib muscles     | relax       | contract     |
| Thoracic cavity | expands     | contracts    |
- |                 | In figure.1 | In figure .2 |
|-----------------|-------------|--------------|
| B- Diaphragm    | relaxes     | contracts    |
| Rib muscles     | contract    | relax        |
| Thoracic cavity | contracts   | expands      |
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| C- Diaphragm    | relaxes     | contracts    |
| Rib muscles     | relax       | contract     |
| Thoracic cavity | contracts   | expands      |
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- 29- During childbirth, the fetus passes through the greatly enlarged:-  
A-cervix and vagina      B-fallopian tube and vagina      C-vagina and urethra      D-cervix and urethra
- 30- The.....joint enables to rotate the arm in a complete circle:-  
A-pivot      B-hinge      C-ball-and-socket      D-gliding
- 31- According to the information provided by the adjacent table that shows several monohybrid crosses , each cross produces 100 individuals in which cross only one of the parents can be a hybrid? :
- | cross | Number of individuals which express the dominant trait | Number of individuals which express the recessive trait |
|-------|--|---|
| 1     | 74   | 26  |
| 2     | 51   | 49  |
| 3     | 100  | 0   |
- A-only 1  
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C-1 and 2  
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- 32- Immediately before entering trachea , the air that comes out from the lungs passes through:-  
A-larynx      B-bronchioles      C-alveoli      D-two bronchi
- 33- Yellow bone marrow and Red bone marrow are similar in that both of them:-  
A-are found in long bone      B-consist of fat cells      C-produce blood cells      D-are found in spongy bone
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A-are two areas of specialized tissue known as nodes  
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- 37- .....it is a part of the brain that interprets touch information  
A-thalamus      B-medulla oblongata      C-cerebrum      D-midbrain
- 38- All of the following are part of the lymphatic system except:-  
A-lymphatic capillaries      B-the vessels that carry lymph from the heart to the tissues  
C-lymph nodes      D-the vessels that return lymph from the tissues to the superior vena cava

- 39- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-  
A-are secreted from the same endocrine gland      B-have the same target cell  
C-regulate the concentration of thyroid hormones in the blood through negative feedback      D-All of them are correct
- 40- Both testes produce:-  
A-sperm      B-sex hormones      C-the fluids that nourish and protect the sperm      D-Both (A + B) are correct
- 41- .....the addict approaches lethal dose.  
A-before tolerance      B-before dependence      C-whenver the effective dose rises      D-after withdrawal
- 42- Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-  
A-are not surrounded by connective tissue      B-are surrounded by connective tissue that unite to form tendons  
C-are surrounded by connective tissue that does not unite to form tendons      D-are multinucleate
- 43- In the adjacent figure which numbers point to the primary germ layers
- 
- A-6 , 2 , 5  
B-1 , 4 , 8  
C-4 , 7 , 2  
D-6 , 1 , 3
- 44- Which of the following crosses produces a pink flowers four o'clocks?  
A-red flowers four o'clocks × pink flowers four o'clocks      B-red flowers four o'clocks × white flowers four o'clocks  
C- pink flowers four o'clocks × pink flowers four o'clocks      D-All of them are correct
- 45- According to adjacent figure choose the correct answer from the following table:-
- |   | Which structure with muscles attached to it bends the rays of the incoming light? | The structures through which light passes | Is a clear protective layer through which light passes first | Millions of axons that exit the eye, which of the following structures form? |
|---|---|---|--|--|
| A | 3   | 2 , 4 , 3 , 1                             | 4  | 6  |
| B | 1   | 2 , 3 , 1                                 | 2  | 5  |
| C | 3   | 2 , 3 , 1                                 | 4  | 6  |
| D | 1   | 2 , 4 , 3 , 1                             | 2  | 5  |
- 
- 46- In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-  
A-are not eliminated during development      B-are not produced in the bone marrow  
C-are eliminated during development      D-the body produces antibodies to kill them
- 47- Both neuropeptides and neurotransmitters are secreted by the:-  
A-endocrine glands and are classified as hormones      B-nervous system and are classified as hormones  
C-endocrine glands and act as chemical messengers .      D-nervous system and act as chemical messengers
- 48- All of the following about the first polar body and the second polar body are incorrect except both of them are;-      A-haploid cells      B-produced in the fallopian tube      C-produced in the ovary      D-diploid cells
- 49- The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-  
A-menstruation      B-the follicle to rupture and release its egg      C-implantation      D-the follicle to form
- 50- The pulmonary arteries and the aorta are similar in that:-  
A-their walls are composed of three layers      B-both vessels carry oxygenated blood to the heart  
C-both vessels carry oxygenated blood away from the heart      D-Both (A + C ) are correct



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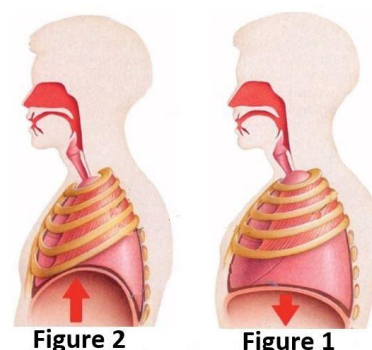
- 1- The ..... joint enables to rotate the arm in a complete circle:-  
 A-pivot B-hinge C-ball-and-socket D-gliding
- 2- Which of the following is an example of integration of organ systems?  
 A-nutrients from the digestive system are distributed by the cardiovascular system  
 B-The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system  
 C-The endocrine system secretes hormones which regulate the activity of the reproductive system D-All of them are correct
- 3- .....the addict approaches lethal dose.  
 A-before tolerance B-before dependence C-whenver the effective dose rises D-after withdrawal
- 4- Which of the following hormones is a steroid hormone and fat soluble?  
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- 6- Which of the following options describes adjacent figures correctly?:-

	In figure.1	In figure .2
A- Diaphragm	contracts	relaxes
Rib muscles	relax	contract
Thoracic cavity	expands	contracts

	In figure.1	In figure .2
B- Diaphragm	relaxes	contracts
Rib muscles	contract	relax
Thoracic cavity	contracts	expands

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C- Diaphragm	relaxes	contracts
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Thoracic cavity	contracts	expands

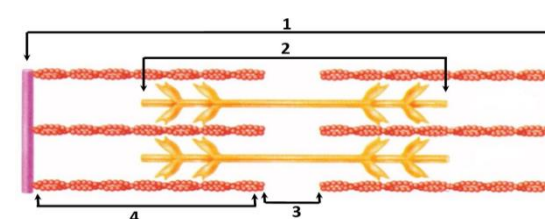
	In figure.1	In figure .2
D- Diaphragm	contracts	relaxes
Rib muscles	contract	relax
Thoracic cavity	expands	contracts



- 7- Which of the following crosses produces a pink flowers four o'clocks?  
 A-red flowers four o'clocks × pink flowers four o'clocks B-red flowers four o'clocks × white flowers four o'clocks  
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- 8- Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-  
 A-are not surrounded by connective tissue B-are surrounded by connective tissue that unite to form tendons  
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- 9- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-  
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 A-receptor proteins , antigens B-viral antigens , receptor proteins  
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- 11- All of the following are part of the lymphatic system except:-  
 A-lymphatic capillaries B-the vessels that carry lymph from the heart to the tissues  
 C-lymph nodes D-the vessels that return lymph from the tissues to the superior vena cava
- 12- Immediately before entering trachea , the air that comes out from the lungs passes through:-  
 A-larynx B-bronchioles C-alveoli D-two bronchi
- 13- Memory cells are formed for the first time in.....response.  
 A-primary immune B- secondary immune C-inflammatory D-temperature

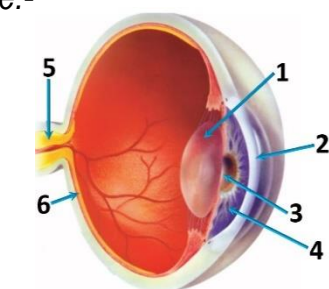
- 14- Allantois is formed during the.....period.  
 A-first trimester of pregnancy B-second trimester of pregnancy  
 C-third trimester of pregnancy D-egg formation
- 15- .....it is a part of the brain that interprets touch information  
 A-thalamus B-medulla oblongata C-cerebrum D-midbrain
- 16- In a dihybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-  
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- 17- During childbirth, the fetus passes through the greatly enlarged:-  
 A-cervix and vagina B-fallopian tube and vagina C-vagina and urethra D-cervix and urethra
- 18- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?  
 A- (AB<sup>+</sup>) → (AB<sup>-</sup>) B- (O<sup>-</sup>) → (B<sup>+</sup>) C- (A<sup>+</sup>) → (B<sup>+</sup>) D-(B<sup>-</sup>) → (B<sup>-</sup>)
- 19- In which of the following crosses the pheotype ratio and the genotype ratio is not equal?  
 A-GGBb × ggBb B- Ggbb × ggBb C- GG × gg D- Gg × gg
- 20- Which of the following is true about oxytocin hormone ?  
 A-stimulates flow of milk from the breasts during lactation B-is made by posterior pituitary  
 C-stimulates milk production in breasts during lactation. D-Both (A + B) are correct.

- 21- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?  
 A-1  
 B-2  
 C-3  
 D-4



- 22- According to adjacent figure choose the correct answer from the following table:-

	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
A	3	2 , 4 , 3 , 1	4	6
B	1	2 , 3 , 1	2	5
C	3	2 , 3 , 1	4	6
D	1	2 , 4 , 3 , 1	2	5



- 23- Which one of the following leads directly to a change in the permeability of the postsynaptic membrane by affecting chemically gated ion channels during the transmission of nerve impulses at the synapse?  
 A-reaching the action potential to the axon terminal B-releasing neurotransmitters into the synaptic cleft  
 C-the interaction of neurotransmitter and receptor molecules D-the fusion of vesicles with the presynaptic membrane
- 24- Which of the following is not an example of connective tissue?  
 A-blood B-the outer layer of blood vessels structure C-the tissue that lines the trachea D-fat tissue
- 25- In complete dominance the phenotype might not always indicate genotype because:-  
 A-two or more alleles influence the phenotype B-some environmental factors can affect the phenotype  
 C-The same pheontype may appear for a homozygous dominant genotype and a hybrid genotype  
 D-Both (B + C ) are correct
- 26- ..... activates the complement system in the humoral immune response.  
 A-encountering a certain pathogen B- forming a ring-shaped structure  
 C-antigen-antibody binding D- releasing interferon
- 27- Both neuropeptides and neurotransmitters are secreted by the:-  
 A-endocrine glands and are classified as hormones B-nervous system and are classified as hormones  
 C-endocrine glands and act as chemical messengers . D-nervous system and act as chemical messengers



**28-** Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.

- A-self pollination , stigmas  
C-cross pollination , stigmas

- B- self pollination , anthers  
D- cross pollination , anthers

**29-** According to the information provided by the adjacent table that shows several monohybrid crosses , each cross produces 100 individuals in which cross only one of the parents can be a hybrid? :

cross	Number of individuals which express the dominant trait	Number of individuals which express the recessive trait
1	74	26
2	51	49
3	100	0

- A-only 1  
B-only 2  
C-1 and 2  
D-2 and 3

**30-** Urethra is a duct:-

- A-through which both urine and sperm exit the body at the same time B-through which only urine exits the body  
C-in which the fluid secreted from the seminal vesicles mixes with the sperm D-Both ( B + C ) are correct

**31-** Both testes produce:-

- A-sperm B-sex hormones C-the fluids that nourish and protect the sperm D-Both ( A + B ) are correct

**32-** Yellow bone marrow and Red bone marrow are similar in that both of them:-

- A-are found in long bone B-consist of fat cells C-produce blood cells D-are found in spongy bone

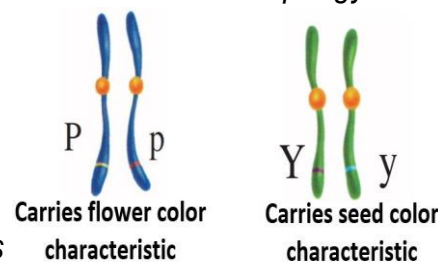
**33-** According to adjacent figure that represents a pair of homologous chromosomes for a pea plant, choose the correct answer.

- A-the pair of factors P and p is not separated , during the formation of gametes

- B-the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic

- C- the pair of factors Y and y is not separated , during the formation of gametes

- D-the law of independent assortment is not observed for both genes ( P , p ) and ( Y , y )



**34-** All of the following about the first polar body and the second polar body are incorrect except both of them are:- A-haploid cells B-produced in the fallopian tube C-produced in the ovary D-diploid cells

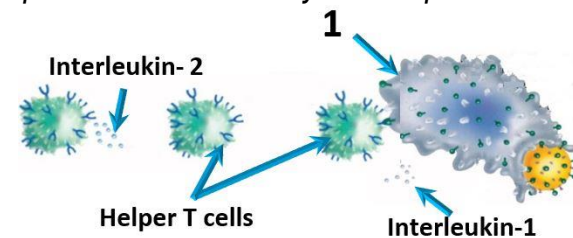
**35-** In the adjacent figure, all of the following about the cell which is labeled 1 are correct except it.

- A-displays antigens

- B-is activated by interleukin 1

- C-engulfs pathogens

- D-is a type of white blood cells



**36-** Which of the following pairs are mismatched?

- A-myelinated axons : gray matter of spinal cord

- C-unmyelinated axons : white matter of cerebrum

- B- dendrites : white matter of cerebrum

- D-All of them are incorrect

**37-** In the adjacent figure which numbers

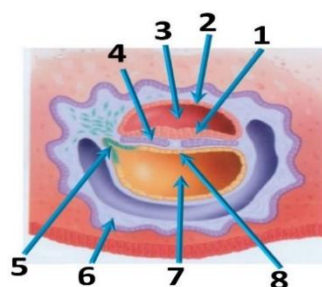
- point to the primary germ layers

- A-6 , 2 , 5

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- C-4 , 7 , 2

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**38-** Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.

- A-prostaglandins

- B-endorphins

- C-enkephalins

- D-All of them are correct

**39-** Hair cells are located in the :-

- A-semicircular canals

- B-organ of Corti

- C-middle ear

- D-Both ( A + B ) are correct

**40-** The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-

- A-menstruation

- B-the follicle to rupture and release its egg

- C-implantation

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**41-** In the bone formation of which of the following bones ,the osteocytes are initially scattered randomly throughout the embryonic connective tissue but soon fuse into layers and become flat plates of bones?

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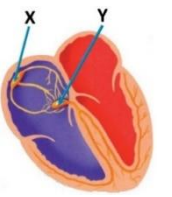
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- A-are two areas of specialized tissue known as nodes

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**43-** In normal states (mostly) the immune system does not attack the organism's own cells because the lymphocytes that recognize and react to the body's own cells:-

- A-are not eliminated during development

- B-are not produced in the bone marrow

- C-are eliminated during development

- D-the body produces antibodies to kill them

**44-** Which of the following is correct about antigens :- A-is a substance that stimulates an immune response

- B- antigens that are normally present in a person's body provoke no response

- C-pathogens or parts of pathogens , bacterial toxins , insect venom and pollen are various kinds of antigens

- D-All of them are correct

**45-** In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed , which of the following genotypes represents the genotype of the parents for both characteristics together?

- A-ttRr × ttrr

- B- TtRR × ttrr

- C- ttRR × ttrr

- D- TTRr × ttrr

**46-** Which of the following is not true about the spleen?

- A-it is the largest lymphatic organ

- B-it collects pathogens from the lymph

- C-it contains lymphocytes

- D-Both ( B + C ) are correct

**47-** Which one of the following is correct regarding the neuron when at rest(during the resting potential)?

- A-the concentration of potassium ions K<sup>+</sup> is greater inside the cell than outside

- B-the concentration of potassium ions K<sup>+</sup> is greater outside the cell than inside

- C-the concentration of negatively charged proteins is greater outside the cell than inside

- D-the concentration sodium ions Na<sup>+</sup> is greater inside the cell than outside

**48-** The pulmonary arteries and the aorta are similar in that:-

- A-their walls are composed of three layers

- B-both vessels carry oxygenated blood to the heart

- C-both vessels carry oxygenated blood away from the heart

- D-Both ( A + C ) are correct

**49-** Body hair helps humans sense touch because bending a hair stimulates large numbers of ..... found at the base of .....in the skin.

- A- thermoreceptors , the epidermis

- B- chemoreceptors , the epidermis

- C- mechanoreceptors , hair follicles

- D- chemoreceptors , hair follicles

**50-** Which of the following has a hybrid individual?

- A-a brown rabbit

- B-a pea plant that has terminal flowers

- C- a pea plant that has yellow pods

- D-None of them are correct

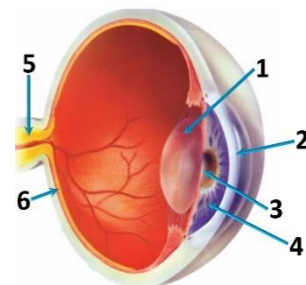
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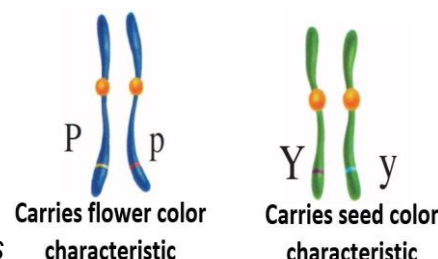
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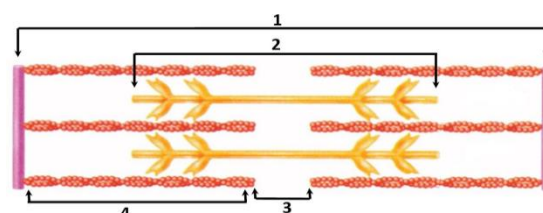
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C-vagina and urethra

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A- (AB<sup>+</sup>) → (AB<sup>-</sup>)

B- (O<sup>-</sup>) → (B<sup>+</sup>)

C- (A<sup>+</sup>) → (B<sup>+</sup>)

D-(B<sup>-</sup>) → (B<sup>-</sup>)

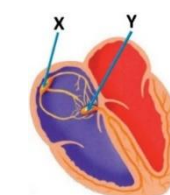
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C-1 and 2

D-2 and 3

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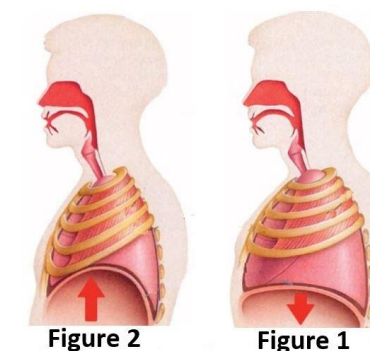
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20- Urethra is a duct:-

A-through which both urine and sperm exit the body at the same time B-through which only urine exits the body

C-in which the fluid secreted from the seminal vesicles mixes with the sperm D-Both (B + C) are correct

21- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-

A-reuptake receptors on the postsynaptic neuron

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C-receptor proteins on the postsynaptic neuron

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22- Which one of the following is correct regarding the neuron when at rest(during the resting potential)?

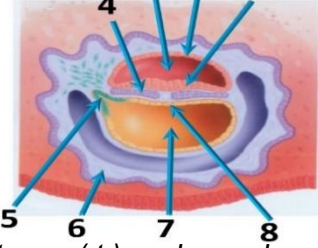
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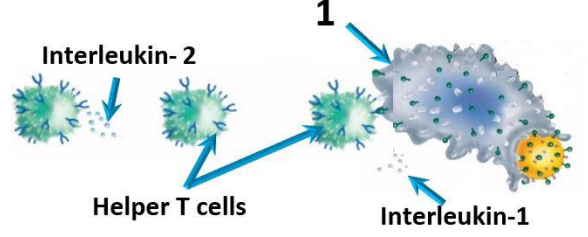
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- 23-** Both neuropeptides and neurotransmitters are secreted by the:-  
**A**-endocrine glands and are classified as hormones **B**-nervous system and are classified as hormones  
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- 25-** The pulmonary arteries and the aorta are similar in that:-  
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**A**-in the bones that develop directly into hard bone without forming cartilage first **B**-in all kind of bones  
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- 27-** Which of the following is true about oxytocin hormone ?  
**A**-stimulates flow of milk from the breasts during lactation **B**-is made by posterior pituitary  
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**A**-prostaglandins **B**-endorphins **C**-enkephalins **D**-All of them are correct
- 35-** In the adjacent figure which numbers point to the primary germ layers
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- A**-6 , 2 , 5  
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- 36-** In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed , which of the following genotypes represents the genotype of the parents for both characteristics together?

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**A**-primary immune **B**- secondary immune **C**-inflammatory **D**-temperature
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**A**-semicircular canals **B**-organ of Corti **C**-middle ear **D**-Both (A + B ) are correct
- 46-** .....it is a part of the brain that interprets touch information  
**A**-thalamus **B**-medulla oblongata **C**-cerebrum **D**-midbrain
- 47-** All of the following are part of the lymphatic system except:-  
**A**-lymphatic capillaries **B**-the vessels that carry lymph from the heart to the tissues  
**C**-lymph nodes **D**-the vessels that return lymph from the tissues to the superior vena cava
- 48-** In the adjacent figure, all of the following about the cell which is labeled 1 are correct except it.  
**A**-displays antigens **B**-is activated by interleukin 1  
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**A**-myelinated axons : gray matter of spinal cord **B**- dendrites : white matter of cerebrum  
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**A**-are secreted from the same endocrine gland **B**-have the same target cell  
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Note: choose the correct option:

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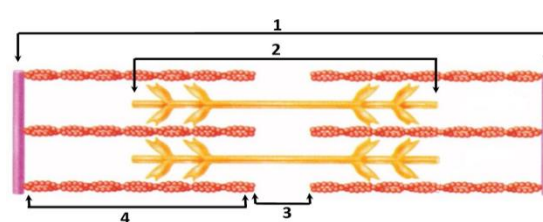
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6- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?

- A-1  
 B-2  
 C-3  
 D-4



7- Memory cells are formed for the first time in.....response.

- A-primary immune B- secondary immune C-inflammatory D-temperature

8- Which of the following is not true about the spleen?

- A-it is the largest lymphatic organ B-it collects pathogens from the lymph  
 C-it contains lymphocytes D-Both (B + C ) are correct

9- The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-

- A-menstruation B-the follicle to rupture and release its egg C-implantation D-the follicle to form

10- Which of the following is an example of integration of organ systems?

- A-nutrients from the digestive system are distributed by the cardiovascular system  
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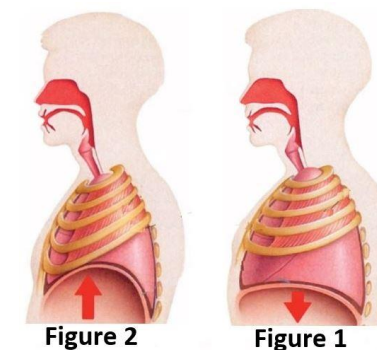


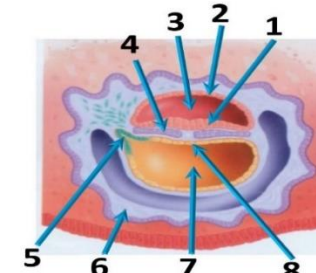
Figure 2

Figure 1

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24- Which of the following has a hybrid individual?

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 C- a pea plant that has yellow pods D-None of them are correct

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- A-endocrine glands and are classified as hormones B-nervous system and are classified as hormones  
 C-endocrine glands and act as chemical messengers . D-nervous system and act as chemical messengers



**26-** Immediately before entering trachea , the air that comes out from the lungs passes through:-  
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**27-** Urethra is a duct:-  
**A-through which both urine and sperm exit the body at the same time**    **B-through which only urine exits the body**  
**C-in which the fluid secreted from the seminal vesicles mixes with the sperm**    **D-Both ( B + C ) are correct**

**28-** Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-  
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**C-are surrounded by connective tissue that does not unite to form tendons**    **D-are multinucleate**

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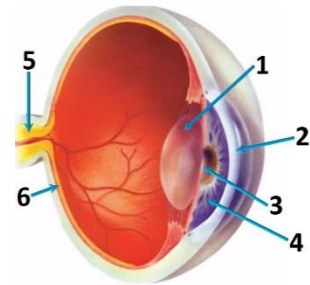
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	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
A	3	2 , 4 , 3 , 1	4	6
B	1	2 , 3 , 1	2	5
C	3	2 , 3 , 1	4	6
D	1	2 , 4 , 3 , 1	2	5



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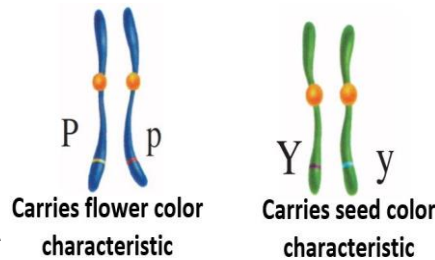
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**A-the pair of factors P and p is not separated , during the formation of gametes**

**B-the inheritance of flower color characteristic is independent from the inheritance of seed color characteristic**

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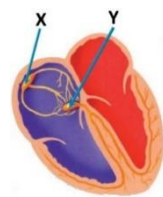
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**37-** Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.

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**C-cross pollination , stigmas**

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**A-GGBb × ggBb**

**B- Ggbb × ggBb**

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**41-** During childbirth, the fetus passes through the greatly enlarged:-

**A-cervix and vagina**    **B-fallopian tube and vagina**    **C-vagina and urethra**    **D-cervix and urethra**

**42-** Cytotoxic T cells recognize cells that have been infected by the pathogen because they have ..... on their surfaces that match the.....on the surfaces of the infected body cell.

**A-receptor proteins , antigens**

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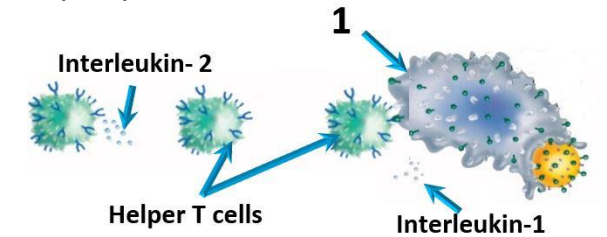
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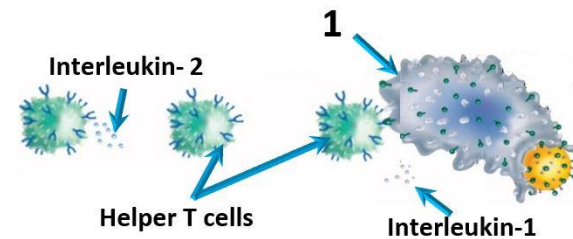
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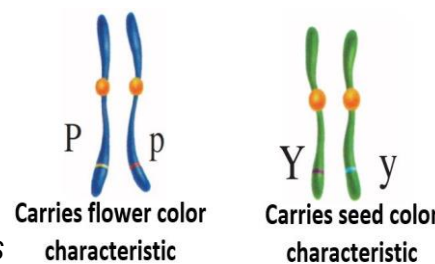
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A-cervix and vagina B-fallopian tube and vagina C-vagina and urethra

D-cervix and urethra

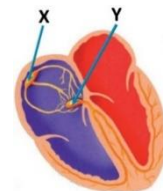
9- According to the adjacent figure,both structure X and Y

A-are two areas of specialized tissue known as nodes

B-are called pacemaker

C-every 0.8 of a second they send an electrical pulse to the walls of the atria

D-Both (A + B) are correct



10- Hair cells are located in the :-

A-semicircular canals

B-organ of Corti

C-middle ear

D-Both (A + B) are correct

11- In complete dominance the phenotype might not always indicate genotype because:-

A-two or more alleles influence the phenotype

B-some environmental factors can affect the phenotype

C-The same phenotype may appear for a homozygous dominant genotype and a hybrid genotype

D-Both (B + C) are correct

12- In which of the following crosses the phenotype ratio and the genotype ratio is not equal?

A-GGBb × ggBb

B- Ggbb × ggBb

C- GG × gg

D- Gg × gg

13- According to the information provided by the adjacent table that shows several monohybrid crosses , each cross produces 100 individuals in which cross only one of the parents can be a hybrid?

cross	Number of individuals which express the dominant trait	Number of individuals which express the recessive trait
1	74	26
2	51	49
3	100	0

A-only 1

B-only 2

C-1 and 2

D-2 and 3

14- All of the following are part of the lymphatic system except:-

A-lymphatic capillaries

B-the vessels that carry lymph from the heart to the tissues

C-lymph nodes

D-the vessels that return lymph from the tissues to the superior vena cava

15- Which of the following crosses produces a pink flowers four o'clocks?

A-red flowers four o'clocks × pink flowers four o'clocks B-red flowers four o'clocks × white flowers four o'clocks

C- pink flowers four o'clocks × pink flowers four o'clocks

D-All of them are correct

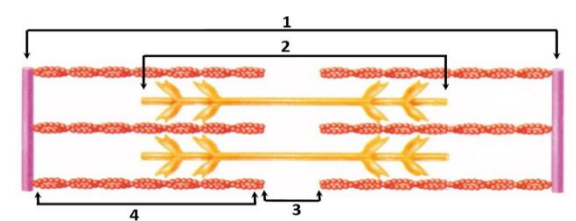
16- In the adjacent figure which number points to the region that is disappeared when the skeletal muscle is fully contracted?

A-1

B-2

C-3

D-4



17- Cytotoxic T cells recognize cells that have been infected by the pathogen because they have ..... on their surfaces that match the.....on the surfaces of the infected body cell.

A-receptor proteins , antigens

B-viral antigens , receptor proteins

C-viral antigens , antigens

D-receptor proteins , receptor proteins

18- The sharp rise in the LH level that occurs midway through the ovarian cycle causes:-

A-menstruation B-the follicle to rupture and release its egg C-implantation D-the follicle to form

19- Memory cells are formed for the first time in.....response.

A-primary immune

B- secondary immune

C-inflammatory

D-temperature

20- In which of the following blood transfusions antibodies for Rh may react with the Rh antigens?

A- (AB<sup>+</sup>) → (AB<sup>-</sup>) B- (O<sup>-</sup>) → (B<sup>+</sup>) C- (A<sup>+</sup>) → (B<sup>+</sup>) D- (B<sup>-</sup>) → (B<sup>-</sup>)

21- In the bone formation of which of the following bones ,the osteocytes are initially scattered randomly throughout the embryonic connective tissue but soon fuse into layers and become flat plates of bones?

A-in the bones that develop directly into hard bone without forming cartilage first B-in all kind of bones

C-in the bones that form cartilage first

D-only in the bones of the appendicular skeleton

22- Which of the following hormones is a steroid hormone and fat soluble?

A-thyroxine

B-triiodothyronine

C-cortisol

D-All of them are correct

23- Which one of the following leads directly to a change in the permeability of the postsynaptic membrane by affecting chemically gated ion channels during the transmission of nerve impulses at the synapse?

A-reaching the action potential to the axon terminal

B-releasing neurotransmitters into the synaptic cleft

C-the interaction of neurotransmitter and receptor molecules

D-the fusion of vesicles with the presynaptic membrane

24- Both neuropeptides and neurotransmitters are secreted by the:-

A-endocrine glands and are classified as hormones

B-nervous system and are classified as hormones

C-endocrine glands and act as chemical messengers

D-nervous system and act as chemical messengers

25- Aspirin and acetaminophen reduce fever and decrease pain by inhibiting ..... synthesis.

A-prostaglandins

B-endorphins

C-enkephalins

D-All of them are correct

26- The.....joint enables to rotate the arm in a complete circle:-

A-pivot

B-hinge

C-ball-and-socket

D-gliding

27- Urethra is a duct:-

A-through which both urine and sperm exit the body at the same time

B-through which only urine exits the body

C-in which the fluid secreted from the seminal vesicles mixes with the sperm

D-Both ( B + C ) are correct

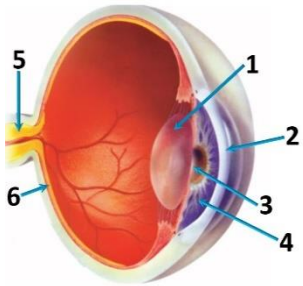


28- In normal states (mostly) the immune system does not attack the organism’s own cells because the lymphocytes that recognize and react to the body’s own cells:-

- A-are not eliminated during development      B-are not produced in the bone marrow  
C-are eliminated during development      D-the body produces antibodies to kill them

29- According to adjacent figure choose the correct answer from the following table:-

	Which structure with muscles attached to it bends the rays of the incoming light?	The structures through which light passes	Is a clear protective layer through which light passes first	Millions of axons that exit the eye, which of the following structures form?
A	3	2, 4, 3, 1	4	6
B	1	2, 3, 1	2	5
C	3	2, 3, 1	4	6
D	1	2, 4, 3, 1	2	5



30- Both testes produce:-

- A-sperm    B-sex hormones    C-the fluids that nourish and protect the sperm    D-Both (A + B) are correct  
31- Body hair helps humans sense touch because bending a hair stimulates large numbers of ..... found at the base of .....in the skin.  
A- thermoreceptors , the epidermis      B- chemoreceptors , the epidermis  
C- mechanoreceptors , hair follicles      D- chemoreceptors , hair follicles

32- In pea plants tallness ( T ) is dominant to shortness ( t ) and round seeds ( R ) is dominant to wrinkled seeds ( r ) a cross performed between a pea plant that have tall stem and round seeds with another pea plant that have short stem and wrinkled seeds the resulting plants for the seed texture were all round seeds and for the tallness half of them were long-stemmed and the other half were short-stemmed , which of the following genotypes represents the genotype of the parents for both characteristics together?  
A-ttRr × ttrr      B- TtRR × ttrr      C- ttRR × ttrr      D- TTRr × ttrr

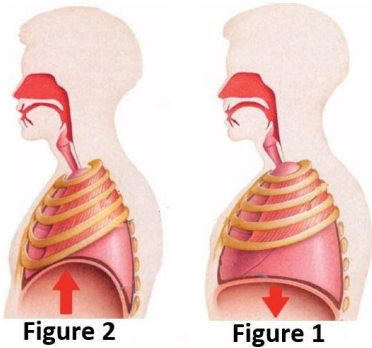
33- Which of the following options describes adjacent figures correctly?:-

	In figure.1	In figure .2
A- Diaphragm	contracts	relaxes
Rib muscles	relax	contract
Thoracic cavity	expands	contracts

	In figure.1	In figure .2
B- Diaphragm	relaxes	contracts
Rib muscles	contract	relax
Thoracic cavity	contracts	expands

	In figure.1	In figure .2
C- Diaphragm	relaxes	contracts
Rib muscles	relax	contract
Thoracic cavity	contracts	expands

	In figure.1	In figure .2
D- Diaphragm	contracts	relaxes
Rib muscles	contract	relax
Thoracic cavity	expands	contracts



34- Which of the following pairs are mismatched?

- A-myelinated axons : gray matter of spinal cord      B- dendrites : white matter of cerebrum  
C-unmyelinated axons : white matter of cerebrum      D-All of them are incorrect

35- All of the following about the first polar body and the second polar body are incorrect except both of them are:- A-haploid cells    B-produced in the fallopian tube    C-produced in the ovary    D-diploid cells

36- Both thyrotropin releasing hormone and thyroid-stimulating hormone:-

- A-are secreted from the same endocrine gland      B-have the same target cell  
C-regulate the concentration of thyroid hormones in the blood through negative feedback    D-All of them are correct

37- The presence of cocaine in the synaptic cleft blocks the reabsorption of dopamine because cocaine interferes with :-

- A-reuptake receptors on the postsynaptic neuron      B-reuptake receptors on the presynaptic neuron  
C-receptor proteins on the postsynaptic neuron      D-sodium ionic channels on the postsynaptic neuron

38- Immediately before entering trachea , the air that comes out from the lungs passes through:-

- A-larynx      B-bronchioles      C-alveoli      D-two bronchi

39- Which of the following is not true about the spleen?

- A-it is the largest lymphatic organ      B-it collects pathogens from the lymph  
C-it contains lymphocytes      D-Both (B + C ) are correct

40- Which of the following is an example of integration of organ systems?

- A-nutrients from the digestive system are distributed by the cardiovascular system  
B-The efficiency of the cardiovascular system depends on nutrients from the digestive system and oxygen from the respiratory system  
C-The endocrine system secretes hormones which regulate the activity of the reproductive system    D-All of them are correct

41- Pea plants normally reproduce through.....Mendel was able to prevent this kind of pollination by removing all of the .....from the flowers of a plant.

- A-self pollination , stigmas      B- self pollination , anthers  
C-cross pollination , stigmas      D- cross pollination , anthers

42- Which of the following is not an example of connective tissue?

- A-blood    B-the outer layer of blood vessels structure    C-the tissue that lines the trachea    D-fat tissue

43- Which of the following is correct about antigens :- A-is a substance that stimulates an immune response

- B- antigens that are normally present in a person’s body provoke no response  
C-pathogens or parts of pathogens , bacterial toxins , insect venom and pollen are various kinds of antigens  
D-All of them are correct

44- Which of the following has a hybrid individual?

- A-a brown rabbit      B-a pea plant that has terminal flowers  
C- a pea plant that has yellow pods      D-None of them are correct

45- The pulmonary arteries and the aorta are similar in that:-

- A-their walls are composed of three layers      B-both vessels carry oxygenated blood to the heart  
C-both vessels carry oxygenated blood away from the heart      D-Both (A + C ) are correct

46- .....it is a part of the brain that interprets touch information

- A-thalamus      B-medulla oblongata      C-cerebrum      D-midbrain

47- In a dyhybrid cross( hybrid×hybrid)the expected number of different genotypes and the expected number of different phenotypes are:-

- A-nine genotypes and four phenotypes      B-four genotypes and nine phenotypes  
C- four genotypes and four phenotypes      D-nine genotypes and nine phenotypes

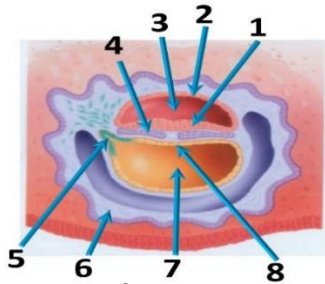
48- Smooth muscle fibers differ from skeletal muscle fibers in that smooth muscle fibers:-

- A-are not surrounded by connective tissue    B-are surrounded by connective tissue that unite to form tendons  
C-are surrounded by connective tissue that does not unite to form tendons    D-are multinucleate

49- In the adjacent figure which numbers

point to the primary germ layers

- A-6 , 2 , 5  
B-1 , 4 , 8  
C-4 , 7 , 2  
D-6 , 1 , 3



50- Which of the following is true about oxytocin hormone ?

- A-stimulates flow of milk from the breasts during lactation      B-is made by posterior pituitary  
C-stimulates milk production in breasts during lactation.      D-Both (A + B) are correct.