



Answer the following questions: (two marks for each correct choice)

SN: 000001

1. When an extensor muscle relaxes, **A. the Insertion point will not move.** **B. the joint will bend.**
C. the origin point will move. **D. the Joint will straighten.**

2., like the ligaments, connect bone to bone
A. Fascicles. **B. Tendons.** **C. Long strands of cartilage.** **D. Solid matrix connective tissues.**

3. Which of the following is used as a source of energy?
A. Yellow bone marrow **B. Glycogen** **C. Fat** **D. All of the answers are correct**

4. The membrane that is present in the joint
A. protects fixed joints. **B. increases friction.** **C. holds muscles in the joint** **D. secretes synovial fluid.**

5. Which cavity contains the esophagus and trachea?
A. the thoracic cavity **B. the abdominal cavity**
C. the spinal cavity **D. None of these**

6. Use the adjacent figure to find the correct choice;

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
A.	5	4	3	2
B.	1	4	2	5
C.	4	5	2	3
D.	3	5	4	1



7. As the ventricles pump, blood pressure closes the to prevent blood from flowing backward into the.....
A. Semilunar valves - Ventricles. **B. Atrioventricular valves - Atria.**
C. Pulmonary valve - Atria **D. Aortic valve - Ventricles.**

8. The reaction of platelet clotting enzymes with essential clotting proteins in the plasma causes.....
A. antibody production **B. fibrin production** **C. albumin production** **D. blood vessel dilation**

9. If a person loses consciousness from holding their breath, the takes control and normal breathing resumes. **A. heart** **B. diaphragm** **C. rib muscles** **D. brain stem**

10. The blood supply to the heart is reduced or cut off by:
A. atherosclerosis **B. dying of heart wall muscles** **C. a blood clot** **D. (A and C) are correct**

11. Both the lymphatic vessels and the veins:
A. belong to the cardiovascular system **B. have valves**
C. carry blood toward the heart **D. (B and C) are correct**

12. The figure shows:
A. an inactive platelet
B. an activated platelet
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13. Which of the following release histamine?
A. some of the damaged cells **B. injured cells**
C. cells that are exposed to the antigen **D. All of the answers are correct**

14. The complement system becomes active by: **A. antigen-antibody binding** **B. a lack of cytokines**
C. encountering certain pathogens **D. (A and C) are correct**

15. Fever can be triggered by: **A. some pathogens** **B. some prostaglandins**
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16. The adjacent figure illustrates:
A. the lining of the respiratory passages
B. the humoral immune response
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17. An example of an opportunistic infection is: **A. Pneumocystis pneumonia** **B. type 1 diabetes**
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C. Midbrain and Pons. **D. Cerebellum**

20. In response to overstimulation by cocaine, the postsynaptic cell.....
A. decreases the number of its protein receptors **B. increases the number of its protein receptors**
C. reabsorbs dopamine **D. returns the dopamine levels to normal**

21. The correct order of the bones of the middle ear from the outside to the inside is:
A. hammer-anvil-stirrup **B. stirrup-hammer-anvil**
C. anvil-hammer-stirrup **D. anvil-stirrup-hammer**

22. When a dendrite or cell body of a neuron is stimulated, the membrane at the point of stimulation.....
A. suddenly changes its permeability **B. becomes permeable to K⁺ ions**
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23. Touch and speech: **A. Temporal lobe and Parietal lobe** **B. Occipital lobe and Temporal lobe**
C. Parietal lobe and Frontal lobe **D. Frontal lobe and Parietal lobe**

24. The interiors of the semicircular canals are lined with hair cells that have tiny particles of on top of them. **A. calcium phosphate** **B. neurotransmitters**
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25. The physical abnormalities shown by this child are a result of.....
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26. Which of the following is an antagonistic hormone to insulin?
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27. Which of the following needs a second messenger to initiate changes inside the target cell?
A. Triiodothyronine **B. Thyroxine** **C. Thymosin** **D. (A and B) are correct**

28. Which of the following has to do with pain?
A. Acetaminophen **B. Endorphins** **C. Enkephalins** **D. all the answers**

29. During the1..... of the ovarian cycle, the elevated2..... level acts via a positive feedback mechanism to stimulate the anterior pituitary to secrete3.....

	1	2	3
A.	Luteal phase	Estrogen	Luteinizing hormone (LH)
B.	Ovulation phase	Progesterone	Estrogen hormone
C.	Follicular phase	Estrogen	Luteinizing hormone (LH)
D.	Luteal phase	Progesterone	Estrogen hormone

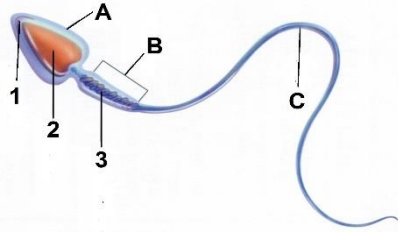
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	Melatonin	Thyroxine	Interferon
A.	Weight loss	Goiter	Bronchitis
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C.	Asthma	Hyperthyroidism	Cretinism
D.	Sleep patterns	Goiter	Viral infections

31. is an autoimmune disease that mainly affects young adults, and affects nervous system
A. Rheumatoid arthritis B. Psoriasis C. Multiple sclerosis D. Osteoarthritis

32. Which letter and number in the figure indicates the part that contains the cell's genetic material?

- A. B and 3
B. 2 and A
C. 3 and 2
D. B and C



33. Sperm cells use secretions from which of the following as a source of energy?
A. The seminal vesicles B. Bulbourethral glands (Cowper's glands)
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34. The egg cell gets nutrients
A. just from its cytoplasm
B. just from surrounding follicle cells
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36. By....., the fetus's bones have hardened, lanugo has disappeared, and body fat is developing.
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37. High levels of.....cause the uterus to contract and the amniotic sac to break.
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38. In Mendel's first experiments with pea plants, the ratio of contrasting traits in the F1 generation was:
A. 3:1 B. 1:1 C. 2:1 D. 1:0

39. Which of Mendel's laws explains the formation of gametes?
A. Law of Independent Assortment B. Law of Division
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40. The phenotype of a heterozygous individual exhibiting incomplete dominance is:
A. the same as the dominant parent. B. the same as the recessive parent.
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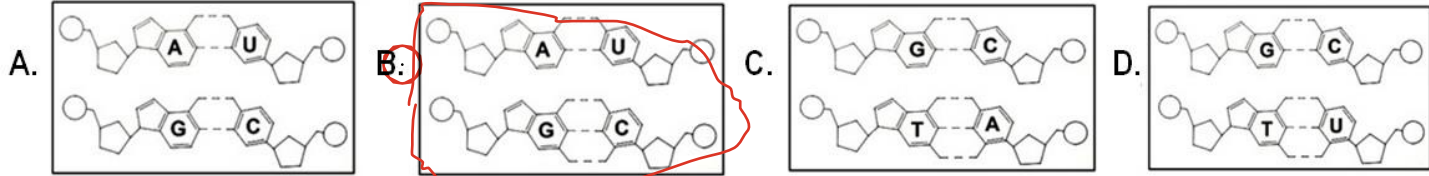
41. How many different genotypes and phenotypes result from a cross between two heterozygous individuals for a codominant trait?
A. two genotypes and two phenotypes B. Three genotypes and three phenotypes
C. Four genotypes and three phenotypes D. Three genotypes and two phenotypes

42. In pea plants, yellow seed color (Y) is dominant over green seed color (y), and round seed shape (R) is dominant over wrinkled seed shape (r). If a plant heterozygous for both traits (YyRr) is crossed with a plant homozygous dominant for the seed color and homozygous recessive for seed shape, what are the expected numbers and the ratios of the different phenotypes and genotypes?

	Genotypes	Genotypic Ratios	Phenotypes
A.	4	1:1:1:1	2
B.	2	1:1	4
C.	4	9:3:3:1	2
D.	2	1:1	2

43. The study of the structure and function of chromosomes and genes is known as:
A. Bioinformatics B. Molecular genetics C. Genome D. Gene activation

44. Which of the following can be found in the (short double-stranded sections) of nucleic acids?



45. Which of the following is a function of DNA polymerase during DNA replication?
A. Separating the double-stranded DNA. B. Repairing replication errors.
C. Binding to the gene promoters. D. Joining gaps in the newly synthesized strand.

46. Which result is incompatible with the steps of Griffith's experiment?

	Experimental Procedure	Result
A.	A mouse injected with live S cells	
B.	A mouse injected with live R cells	
C.	A mouse injected with heat-killed S cells	
D.	A mouse injected with a mixture of live R and heat-killed S cells	

47. Use the adjacent codon table to find the correct answer:

The protein synthesized from the DNA sequence (TAC AAT GAG GAC GCG GCC ACT) consists of types of amino acids.

- A. Five B. Four
C. Three D. Six

Methionine	Leucine	Proline	Arginine	Glycine
AUG	CUU	CCU	CGU	GGU
	CUC	CCC	CGC	GGC
	CUA	CCA	CGA	GGA
	CUG	CCG	CGG	GGG
	UUA		AGA	
	UUG		AGG	

48. Which of the following is an anticodon in tRNA that can bind to one of the codons transcribed from the DNA sequence (TAC, ACT, ATC, ATT)? A. ACU B. UAC C. AUC D. AUU

49. In a DNA molecule, if the percentage of cytosine is 23%, then the percentage of guanine will be:
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50. The order of nitrogenous bases along a strand of DNA is called the:
A. base sequence B. base-pairing rules C. complementary base pairs D. purine-pyrimidine pairing

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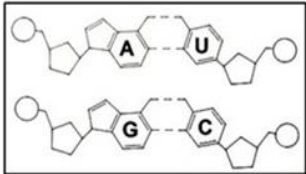
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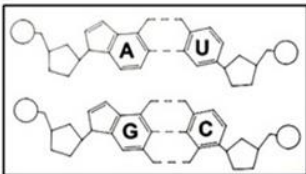
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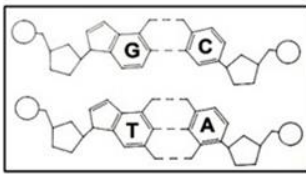
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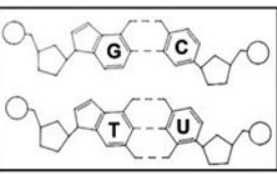
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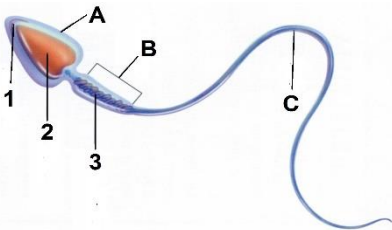
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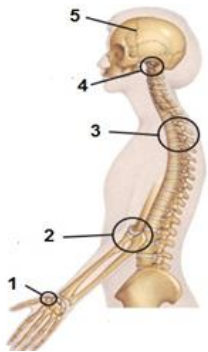
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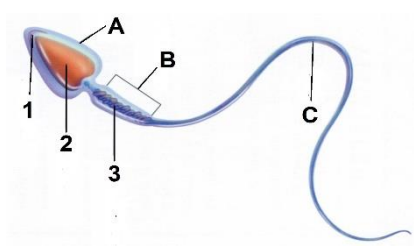
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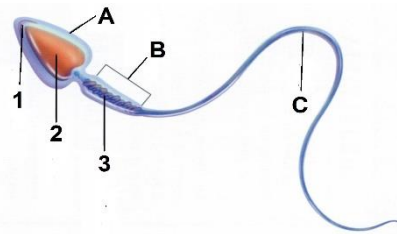
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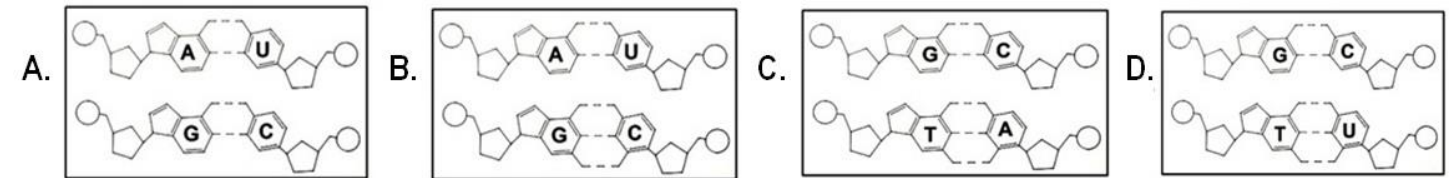
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- The diagram shows a cross-section of a sperm cell. Label 'A' points to the head, 'B' points to the midpiece, and 'C' points to the tail. Number '1' points to the nucleus in the head, '2' points to the mitochondria in the midpiece, and '3' points to the flagellum (tail).



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	Genotypes	Genotypic Ratios	Phenotypes
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28. The figure shows:

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29. Which of the following have a role in the maintenance of homeostasis?

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Methionine	Leucine	Proline	Arginine	Glycine
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C.	4	5	2	3
D.	3	5	4	1



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Answer the following questions: (two marks for each correct choice)

SN: 000005

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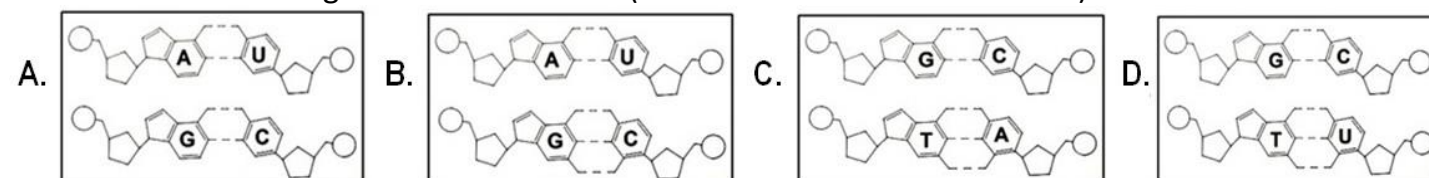
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 B. just from surrounding follicle cells
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A. The seminal vesicles B. Bulbourethral glands (Cowper's glands)
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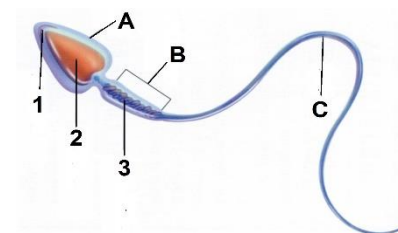
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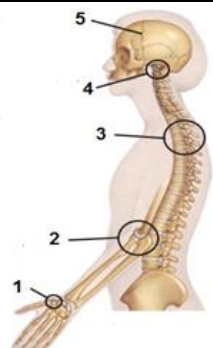
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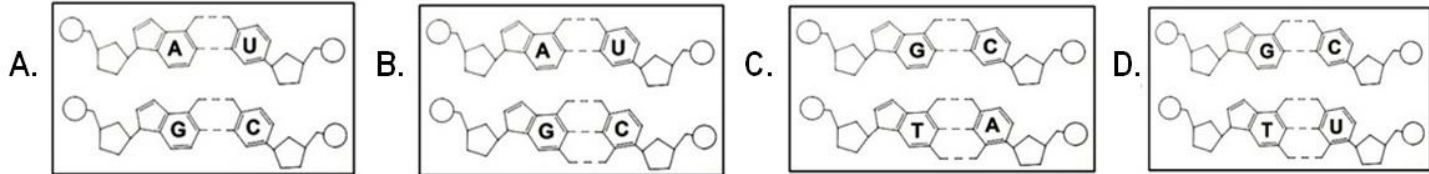
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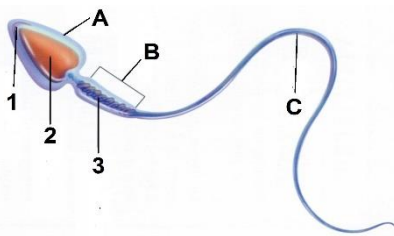
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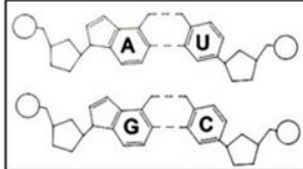
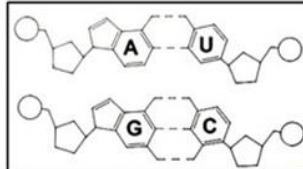
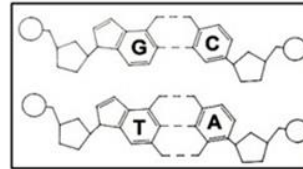
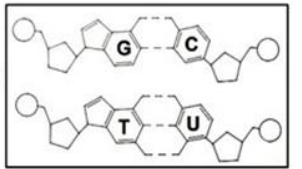
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 SN: 000007
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| A. | 5 | 4 | 3 | 2 |
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 - B. Three genotypes and three phenotypes
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- A. Semilunar valves - Ventricles.
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39. Which of the following can be found in the (short double-stranded sections) of nucleic acids?
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|----|------------------|--------------|--------------------------|
| A. | Luteal phase | Estrogen | Luteinizing hormone (LH) |
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45. Which of the following have a role in the maintenance of homeostasis?
- A. Thalamus and Hypothalamus
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47. In a DNA molecule, if the percentage of cytosine is 23%, then the percentage of guanine will be:
- A. 23%
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48. Use the adjacent codon table to find the correct answer: The protein synthesized from the DNA sequence (TAC AAT GAG GAC GCG GCC ACT) consists of types of amino acids.
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|------------|---------|---------|----------|---------|
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49. is an autoimmune disease that mainly affects young adults, and affects nervous system
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Answer the following questions: (two marks for each correct choice)

SN: 000008

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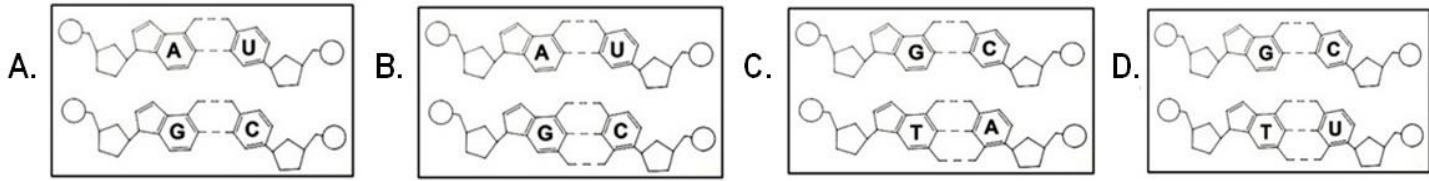
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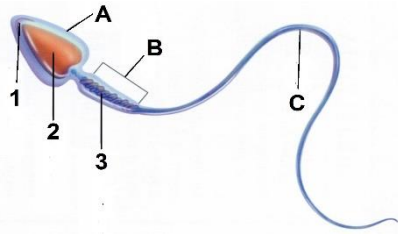
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SN: 000009

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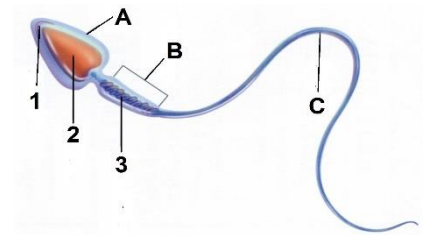
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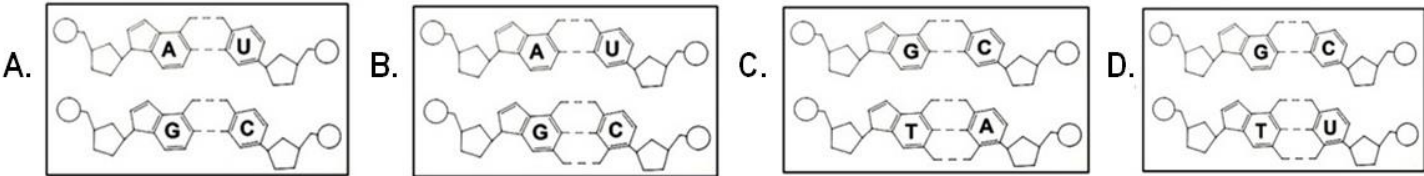
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	1	2	3
A.	Luteal phase	Estrogen	Luteinizing hormone (LH)
B.	Ovulation phase	Progesterone	Estrogen hormone
C.	Follicular phase	Estrogen	Luteinizing hormone (LH)
D.	Luteal phase	Progesterone	Estrogen hormone

35. Which of the following needs a second messenger to initiate changes inside the target cell?

- A. Triiodothyronine
- B. Thyroxine
- C. Thymosin
- D. (A and B) are correct

36. Which of the following have a role in the maintenance of homeostasis?

- A. Thalamus and Hypothalamus
- B. Medulla oblongata and Hypothalamus
- C. Midbrain and Pons.
- D. Cerebellum

37. The physical abnormalities shown by this child are a result of.....

- A. fetal alcohol syndrome
- B. erythroblastosis fetalis
- C. maternal tobacco addiction during pregnancy
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38. In a DNA molecule, if the percentage of cytosine is 23%, then the percentage of guanine will be:

- A. 23%
- B. 27%
- C. 54%
- D. 77%

39. If a person loses consciousness from holding their breath, the takes control and normal breathing resumes.

- A. heart
- B. diaphragm
- C. rib muscles
- D. brain stem

40. Both the lymphatic vessels and the veins:

- A. belong to the cardiovascular system
- B. have valves
- C. carry blood toward the heart
- D. (B and C) are correct

41. The correct order of the bones of the middle ear from the outside to the inside is:

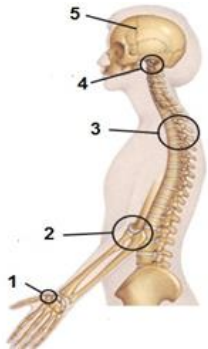
- A. hammer-anvil-stirrup
- B. stirrup-hammer-anvil
- C. anvil-hammer-stirrup
- D. anvil-stirrup-hammer

42. Touch and speech:

- A. Temporal lobe and Parietal lobe
- B. Occipital lobe and Temporal lobe
- C. Parietal lobe and Frontal lobe
- D. Frontal lobe and Parietal lobe

43. Use the adjacent figure to find the correct choice;

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
A.	5	4	3	2
B.	1	4	2	5
C.	4	5	2	3
D.	3	5	4	1



44. An example of an opportunistic infection is:

- A. Pneumocystis pneumonia
- B. type 1 diabetes
- C. emphysema
- D. type 2 diabetes

45. How many different genotypes and phenotypes result from a cross between two heterozygous individuals for a codominant trait?

- A. two genotypes and two phenotypes
- B. Three genotypes and three phenotypes
- C. Four genotypes and three phenotypes
- D. Three genotypes and two phenotypes

46. Which of the following release histamine?

- A. some of the damaged cells
- B. injured cells
- C. cells that are exposed to the antigen
- D. All of the answers are correct

47. Fertilization results in the production of a zygote, but cleavage results in the production of.....

- A. an ovum
- B. a blastocyst
- C. a morula
- D. (A and B) are correct

48. Use the adjacent codon table to find the correct answer:

The protein synthesized from the DNA sequence (TAC AAT GAG GAC GCG GCC ACT) consists of types of amino acids.

- A. Five
- B. Four
- C. Three
- D. Six

Methionine	Leucine	Proline	Arginine	Glycine
AUG	CUU	CCU	CGU	GGU
	CUC	CCC	CGC	GGC
	CUA	CCA	CGA	GGA
	CUG	CCG	CGG	GGG
	UUA		AGA	
	UUG		AGG	

49. The adjacent figure illustrates:

- A. the lining of the respiratory passages
- B. the humoral immune response
- C. the cell-mediated immune response
- D. trapped lymphocytes



50. Which of the following is a function of DNA polymerase during DNA replication?

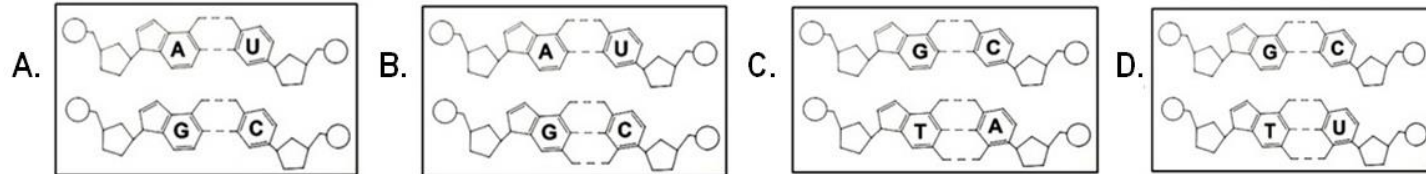
- A. Separating the double-stranded DNA.
- B. Repairing replication errors.
- C. Binding to the gene promoters.
- D. Joining gaps in the newly synthesized strand.

SN: 000010

1. The conditions shown in sequence can be treated by taking melatonin, thyroxine, and interferon.

	Melatonin	Thyroxine	Interferon
A.	Weight loss	Goiter	Bronchitis
B.	Allergies	Depression	Systemic lupus erythematosus
C.	Asthma	Hyperthyroidism	Cretinism
D.	Sleep patterns	Goiter	Viral infections

- In a DNA molecule, if the percentage of cytosine is 23%, then the percentage of guanine will be:
A. 23% **B.** 27% **C.** 54% **D.** 77%
- When a dendrite or cell body of a neuron is stimulated, the membrane at the point of stimulation.....
A. suddenly changes its permeability **B.** becomes permeable to K⁺ ions
C. becomes permeable to Na⁺ ions **D.** (A and C) are correct
- The egg cell gets nutrients **A.** just from its cytoplasm
 B. just from surrounding follicle cells
 C. from both its cytoplasm and surrounding follicle cells
 D. from the degeneration of the corpus luteum
- Which of the following can be found in the (short double-stranded sections) of nucleic acids?



- Which cavity contains the esophagus and trachea?
 - the thoracic cavity
 - the abdominal cavity
 - the spinal cavity
 - None of these
 - The blood supply to the heart is reduced or cut off by:
 - atherosclerosis
 - dying of heart wall muscles
 - a blood clot
 - (A and C) are correct
 - Which of the following is an anticodon in tRNA that can bind to one of the codons transcribed from the DNA sequence (TAC, ACT, ATC, ATT)?
 - ACU
 - UAC
 - AUC
 - AUU
 - Which of the following have a role in the maintenance of homeostasis?
 - Thalamus and Hypothalamus
 - Medulla oblongata and Hypothalamus
 - Midbrain and Pons.
 - Cerebellum
 - The figure shows:
 - an inactive platelet
 - an activated platelet
 - a phagocyte
 - an antibody
- 



- 11.** The physical abnormalities shown by this child are a result of.....



- A. fetal alcohol syndrome**
B. erythroblastosis fetalis
C. maternal tobacco addiction during pregnancy
D. (A and C) are correct

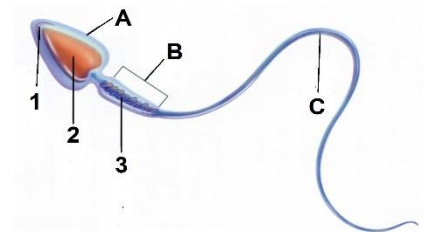
- 12.** How many different genotypes and phenotypes result from a cross between two heterozygous individuals for a codominant trait?
- A.** two genotypes and two phenotypes **B.** Three genotypes and three phenotypes
C. Four genotypes and three phenotypes **D.** Three genotypes and two phenotypes
- 13.** Which of the following release histamine?
- A.** some of the damaged cells **B.** injured cells
C. cells that are exposed to the antigen **D.** All of the answers are correct
- 14.** When an extensor muscle relaxes,
- A.** the Insertion point will not move. **B.** the joint will bend.
C. the origin point will move. **D.** the Joint will straighten.
- 15.** In response to overstimulation by cocaine, the postsynaptic cell.....
- A.** decreases the number of its protein receptors **B.** increases the number of its protein receptors
C. reabsorbs dopamine **D.** returns the dopamine levels to normal
- 16.** In pea plants, yellow seed color (Y) is dominant over green seed color (y), and round seed shape (R) is dominant over wrinkled seed shape (r). If a plant heterozygous for both traits (YyRr) is crossed with a plant homozygous dominant for the seed color and homozygous recessive for seed shape, what are the expected numbers and the ratios of the different phenotypes and genotypes?

	Genotypes	Genotypic Ratios	Phenotypes
A.	4	1:1:1:1	2
B.	2	1:1	4
C.	4	9:3:3:1	2
D.	2	1:1	2

17. Fertilization results in the production of a zygote, but cleavage results in the production of.....
A. an ovum B. a blastocyst C. a morula D. (A and B) are correct
18. Which of the following is used as a source of energy?
A. Yellow bone marrow B. Glycogen C. Fat D. All of the answers are correct
19. Which of the following is a function of DNA polymerase during DNA replication?
A. Separating the double-stranded DNA. B. Repairing replication errors.
C. Binding to the gene promoters. D. Joining gaps in the newly synthesized strand.
20. Which of Mendel's laws explains the formation of gametes?
A. Law of Independent Assortment B. Law of Division
C. Law of Segregation D. (A and C) are correct
21. Which of the following needs a second messenger to initiate changes inside the target cell?
A. Triiodothyronine B. Thyroxine C. Thymosin D. (A and B) are correct

- 22.** Which letter and number in the figure indicates the part that contains the cell's genetic material?

- A. B and 3**
B. 2 and A
C. 3 and 2
D. B and C

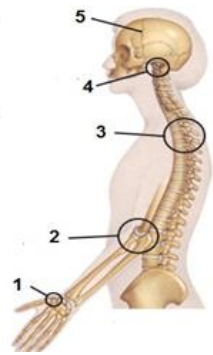


- 23.** The reaction of platelet clotting enzymes with essential clotting proteins in the plasma causes.....
A. antibody production **B.** fibrin production **C.** albumin production **D.** blood vessel dilation
- 24.**, like the ligaments, connect bone to bone
A. Fascicles. **B.** Tendons. **C.** Long strands of cartilage. **D.** Solid matrix connective tissues.
- 25.** is an autoimmune disease that mainly affects young adults, and affects nervous system
A. Rheumatoid arthritis **B.** Psoriasis **C.** Multiple sclerosis **D.** Osteoarthritis

26. Both the lymphatic vessels and the veins:
A. belong to the cardiovascular system
B. have valves
C. carry blood toward the heart
D. (B and C) are correct
27. Touch and speech:
A. Temporal lobe and Parietal lobe
B. Occipital lobe and Temporal lobe
C. Parietal lobe and Frontal lobe
D. Frontal lobe and Parietal lobe
28. The order of nitrogenous bases along a strand of DNA is called the:
A. base sequence
B. base-pairing rules
C. complementary base pairs
D. purine-pyrimidine pairing
29. In Mendel's first experiments with pea plants, the ratio of contrasting traits in the F1 generation was:
A. 3:1
B. 1:1
C. 2:1
D. 1:0
30. HIV begins to reproduce:
A. when AIDS is diagnosed
B. shortly after infection
C. months after infection
D. in phase 2
31. The phenotype of a heterozygous individual exhibiting incomplete dominance is:
A. the same as the dominant parent.
B. the same as the recessive parent.
C. a mix of the parents' phenotypes.
D. both parents' phenotypes separately.

32. Use the adjacent figure to find the correct choice;

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
A.	5	4	3	2
B.	1	4	2	5
C.	4	5	2	3
D.	3	5	4	1



33. Which of the following is an antagonistic hormone to insulin?
A. Calcitonin
B. Glucagon
C. Aldosterone
D. Androgens
34. Sperm cells use secretions from which of the following as a source of energy?
A. The seminal vesicles
B. Bulbourethral glands (Cowper's glands)
C. The prostate gland
D. (A and C) are correct
35. The interiors of the semicircular canals are lined with hair cells that have tiny particles of on top of them.
A. calcium phosphate
B. neurotransmitters
C. sodium and potassium
D. calcium carbonate
36. During the1..... of the ovarian cycle, the elevated2..... level acts via a positive feedback mechanism to stimulate the anterior pituitary to secrete3.....
- | | 1 | 2 | 3 |
|----|------------------|--------------|--------------------------|
| A. | Luteal phase | Estrogen | Luteinizing hormone (LH) |
| B. | Ovulation phase | Progesterone | Estrogen hormone |
| C. | Follicular phase | Estrogen | Luteinizing hormone (LH) |
| D. | Luteal phase | Progesterone | Estrogen hormone |
37. Which of the following has to do with pain?
A. Acetaminophen
B. Endorphins
C. Enkephalins
D. all the answers
38. If a person loses consciousness from holding their breath, the takes control and normal breathing resumes.
A. heart
B. diaphragm
C. rib muscles
D. brain stem

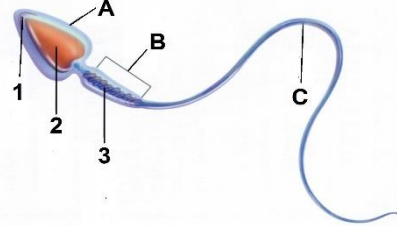
39. Which result is incompatible with the steps of Griffith's experiment?

	Experimental Procedure	Result
A.	A mouse injected with live S cells	
B.	A mouse injected with live R cells	
C.	A mouse injected with heat-killed S cells	
D.	A mouse injected with a mixture of live R and heat-killed S cells	

40. By....., the fetus's bones have hardened, lanugo has disappeared, and body fat is developing.
A. Month 8
B. Week 12
C. Week 21
D. None of these
41. Fever can be triggered by:
A. some pathogens
B. some prostaglandins
C. macrophage chemicals
D. All of the answers are correct
42. Use the adjacent codon table to find the correct answer:
The protein synthesized from the DNA sequence (TAC AAT GAG GAC GCG GCC ACT) consists of types of amino acids.
A. Five
B. Four
C. Three
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- | Methionine | Leucine | Proline | Arginine | Glycine |
|------------|---------|---------|----------|---------|
| AUG | CUU | CCU | CGU | GGU |
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| | CUA | CCA | CGA | GGA |
| | CUG | CCG | CGG | GGG |
| | UUA | | AGA | |
| | UUG | | AGG | |
43. As the ventricles pump, blood pressure closes the to prevent blood from flowing backward into the.....
A. Semilunar valves - Ventricles.
B. Atrioventricular valves - Atria.
C. Pulmonary valve - Atria
D. Aortic valve - Ventricles.
44. The membrane that is present in the joint
A. protects fixed joints.
B. increases friction.
C. holds muscles in the joint
D. secretes synovial fluid.
45. The correct order of the bones of the middle ear from the outside to the inside is:
A. hammer-anvil-stirrup
B. stirrup-hammer-anvil
C. anvil-hammer-stirrup
D. anvil-stirrup-hammer
46. The study of the structure and function of chromosomes and genes is known as:
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C. the cell-mediated immune response
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- 

50. The complement system becomes active by:
A. antigen-antibody binding
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C. encountering certain pathogens
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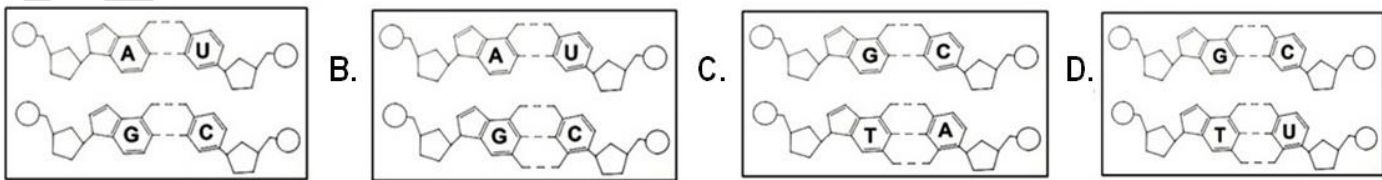
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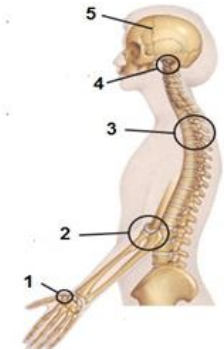
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 - antibody production
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Answer the following questions: (two marks for each correct choice)

SN: 000012

1. The interiors of the semicircular canals are lined with hair cells that have tiny particles of on top of them.
 A. calcium phosphate B. neurotransmitters
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- A. Five B. Four
 C. Three D. Six

3. The reaction of platelet clotting enzymes with essential clotting proteins in the plasma causes.....
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4. The correct order of the bones of the middle ear from the outside to the inside is:

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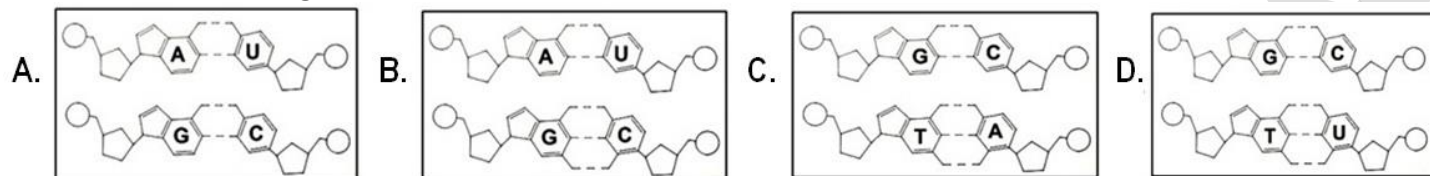
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- breathing resumes. A. heart B. diaphragm C. rib muscles D. brain stem

22. When a dendrite or cell body of a neuron is stimulated, the membrane at the point of stimulation.....

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23. High levels of.....cause the uterus to contract and the amniotic sac to break.

- A. Estrogen B. Oxytocin C. Prostaglandins D. All of the answers

24. HIV begins to reproduce:

- A. when AIDS is diagnosed B. shortly after infection
 C. months after infection D. in phase 2

25. The study of the structure and function of chromosomes and genes is known as:

- A. Bioinformatics B. Molecular genetics C. Genome D. Gene activation

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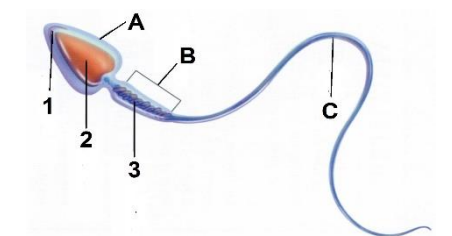
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D. Cerebellum

	Experimental Procedure	Result
A.	A mouse injected with live <i>S</i> cells	
B.	A mouse injected with live <i>R</i> cells	
C.	A mouse injected with heat-killed <i>S</i> cells	
D.	A mouse injected with a mixture of live <i>R</i> and heat-killed <i>S</i> cells	





Answer the following questions: (two marks for each correct choice)

SN: 000013

1. Use the adjacent figure to find the correct choice;

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
A.	5	4	3	2
B.	1	4	2	5
C.	4	5	2	3
D.	3	5	4	1



2. Which cavity contains the esophagus and trachea?

- A. the thoracic cavity
B. the abdominal cavity
C. the spinal cavity
D. None of these

3. Which of the following needs a second messenger to initiate changes inside the target cell?

- A. Triiodothyronine
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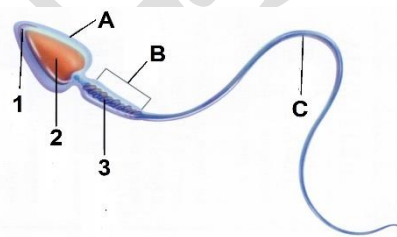
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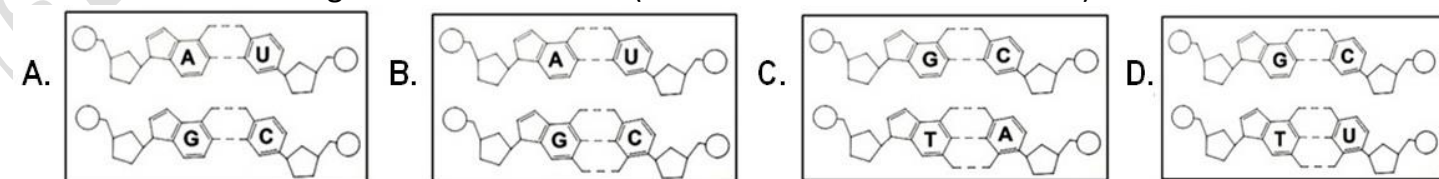
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The protein synthesized from the DNA sequence (TAC AAT GAG GAC GCG GCC ACT) consists of types of amino acids.

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Methionine	Leucine	Proline	Arginine	Glycine
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Answer the following questions: (two marks for each correct choice)

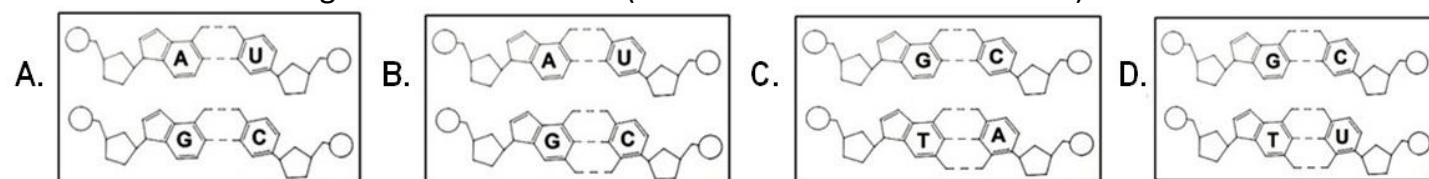
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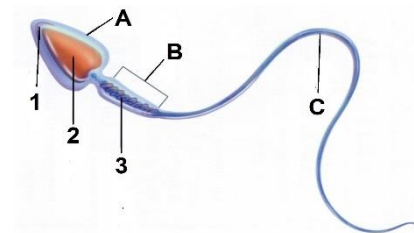
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	Melatonin	Thyroxine	Interferon
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C.	Asthma	Hyperthyroidism	Cretinism
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SN: 000015

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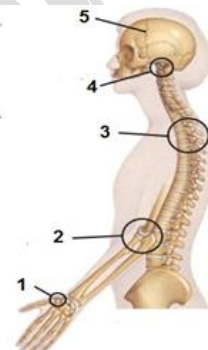
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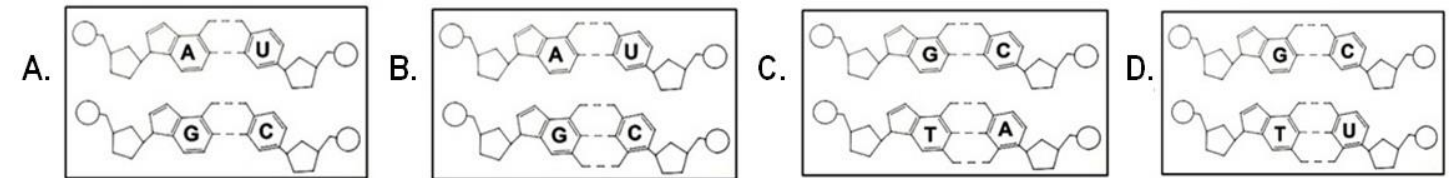
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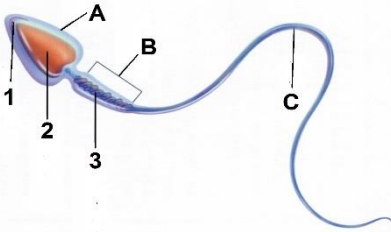
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D. Aortic valve - Ventricles.

25. Use the adjacent codon table to find the correct answer:
The protein synthesized from the DNA sequence (TAC AAT GAG GAC GCG GCC ACT) consists of types of amino acids.

Methionine	Leucine	Proline	Arginine	Glycine
AUG	CUU	CCU	CGU	GGU
	CUC	CCC	CGC	GGC
	CUA	CCA	CGA	GGA
	CUG	CCG	CGG	GGG
	UUA		AGA	
	UUG		AGG	

- A. Five
B. Four
C. Three
D. Six
26. The egg cell gets nutrients
A. just from its cytoplasm
B. just from surrounding follicle cells
C. from both its cytoplasm and surrounding follicle cells
D. from the degeneration of the corpus luteum

27. Which of the following is a function of DNA polymerase during DNA replication?
A. Separating the double-stranded DNA.
B. Repairing replication errors.
C. Binding to the gene promoters.
D. Joining gaps in the newly synthesized strand.

28. The membrane that is present in the joint
A. protects fixed joints.
B. increases friction.
C. holds muscles in the joint
D. secretes synovial fluid.

29. When a dendrite or cell body of a neuron is stimulated, the membrane at the point of stimulation.....
A. suddenly changes its permeability
B. becomes permeable to K⁺ ions
C. becomes permeable to Na⁺ ions
D. (A and C) are correct

30. Fertilization results in the production of a zygote, but cleavage results in the production of.....
A. an ovum
B. a blastocyst
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31. Which cavity contains the esophagus and trachea?
A. the thoracic cavity
B. the abdominal cavity
C. the spinal cavity
D. None of these

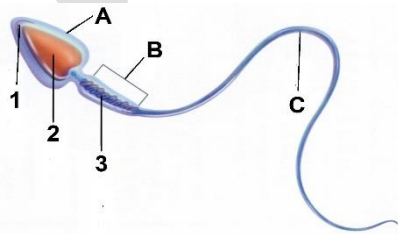
32. By....., the fetus's bones have hardened, lanugo has disappeared, and body fat is developing.
A. Month 8
B. Week 12
C. Week 21
D. None of these

33. How many different genotypes and phenotypes result from a cross between two heterozygous individuals for a codominant trait?
A. two genotypes and two phenotypes
B. Three genotypes and three phenotypes
C. Four genotypes and three phenotypes
D. Three genotypes and two phenotypes

34. The adjacent figure illustrates:
A. the lining of the respiratory passages
B. the humoral immune response
C. the cell-mediated immune response
D. trapped lymphocytes



35. Which letter and number in the figure indicates the part that contains the cell's genetic material?



- A. B and 3
B. 2 and A
C. 3 and 2
D. B and C
36. Which of the following is used as a source of energy?
A. Yellow bone marrow
B. Glycogen
C. Fat
D. All of the answers are correct

37. Both the lymphatic vessels and the veins:
A. belong to the cardiovascular system
B. have valves
C. carry blood toward the heart
D. (B and C) are correct

38. In Mendel's first experiments with pea plants, the ratio of contrasting traits in the F1 generation was:
A. 3:1
B. 1:1
C. 2:1
D. 1:0

39. High levels of.....cause the uterus to contract and the amniotic sac to break.
A. Estrogen
B. Oxytocin
C. Prostaglandins
D. All of the answers

40. The order of nitrogenous bases along a strand of DNA is called the:
A. base sequence
B. base-pairing rules
C. complementary base pairs
D. purine-pyrimidine pairing

41. If a person loses consciousness from holding their breath, the takes control and normal breathing resumes.
A. heart
B. diaphragm
C. rib muscles
D. brain stem

42. Fever can be triggered by:
A. some pathogens
B. some prostaglandins
C. macrophage chemicals
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44. Which of the following release histamine?
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B. injured cells
C. cells that are exposed to the antigen
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A. Law of Independent Assortment
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B. the joint will bend.
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D. the Joint will straighten.

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A. hammer-anvil-stirrup
B. stirrup-hammer-anvil
C. anvil-hammer-stirrup
D. anvil-stirrup-hammer

48. Which of the following is an antagonistic hormone to insulin?
A. Calcitonin
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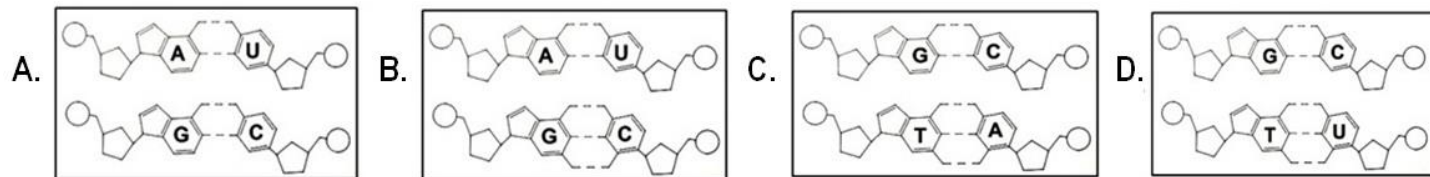
50. The interiors of the semicircular canals are lined with hair cells that have tiny particles of on top of them.
A. calcium phosphate
B. neurotransmitters
C. sodium and potassium
D. calcium carbonate



Answer the following questions: (two marks for each correct choice)

SN: 000017

1. Which of the following can be found in the (short double-stranded sections) of nucleic acids?



2. During the1..... of the ovarian cycle, the elevated2..... level acts via a positive feedback mechanism to stimulate the anterior pituitary to secrete3.....

	1	2	3
A.	Luteal phase	Estrogen	Luteinizing hormone (LH)
B.	Ovulation phase	Progesterone	Estrogen hormone
C.	Follicular phase	Estrogen	Luteinizing hormone (LH)
D.	Luteal phase	Progesterone	Estrogen hormone

3. Which of the following needs a second messenger to initiate changes inside the target cell?

A. Triiodothyronine B. Thyroxine C. Thymosin D. (A and B) are correct

4. Which of the following release histamine?

A. some of the damaged cells B. injured cells
 C. cells that are exposed to the antigen D. All of the answers are correct

5. The study of the structure and function of chromosomes and genes is known as:

A. Bioinformatics B. Molecular genetics C. Genome D. Gene activation

6. Fertilization results in the production of a zygote, but cleavage results in the production of.....

A. an ovum B. a blastocyst C. a morula D. (A and B) are correct

7. Fever can be triggered by:

A. some pathogens B. some prostaglandins
 C. macrophage chemicals D. All of the answers are correct

8. The blood supply to the heart is reduced or cut off by:

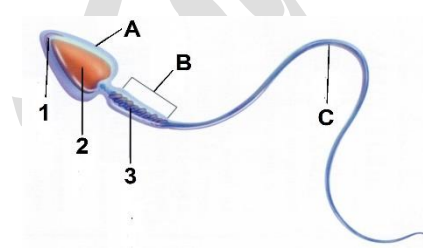
A. atherosclerosis B. dying of heart wall muscles C. a blood clot D. (A and C) are correct

9. When an extensor muscle relaxes,

A. the Insertion point will not move. B. the joint will bend.
 C. the origin point will move. D. the Joint will straighten.

10. Which letter and number in the figure indicates the part that contains the cell's genetic material?

A. B and 3
 B. 2 and A
 C. 3 and 2
 D. B and C



11. Use the adjacent figure to find the correct choice;

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
A.	5	4	3	2
B.	1	4	2	5
C.	4	5	2	3
D.	3	5	4	1



12. Both the lymphatic vessels and the veins:

A. belong to the cardiovascular system B. have valves
 C. carry blood toward the heart D. (B and C) are correct

13. An example of an opportunistic infection is:

A. Pneumocystis pneumonia B. type 1 diabetes
 C. emphysema D. type 2 diabetes

14. The complement system becomes active by:

A. antigen-antibody binding B. a lack of cytokines
 C. encountering certain pathogens D. (A and C) are correct

15. The physical abnormalities shown by this child are a result of.....

A. fetal alcohol syndrome
 B. erythroblastosis fetalis
 C. maternal tobacco addiction during pregnancy
 D. (A and C) are correct



16. Which result is **incompatible** with the steps of Griffith's experiment?

	Experimental Procedure	Result
A.	A mouse injected with live <i>S</i> cells	
B.	A mouse injected with live <i>R</i> cells	
C.	A mouse injected with heat-killed <i>S</i> cells	
D.	A mouse injected with a mixture of live <i>R</i> and heat-killed <i>S</i> cells	

17., like the ligaments, connect bone to bone

A. Fascicles. B. Tendons. C. Long strands of cartilage. D. Solid matrix connective tissues

18. Which of the following is used as a source of energy?

A. Yellow bone marrow B. Glycogen C. Fat D. All of the answers are correct

19. Which of the following is a function of DNA polymerase during DNA replication?

A. Separating the double-stranded DNA. B. Repairing replication errors.
 C. Binding to the gene promoters. D. Joining gaps in the newly synthesized strand.

20. The adjacent figure illustrates:

A. the lining of the respiratory passages
 B. the humoral immune response
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 D. trapped lymphocytes



21. If a person loses consciousness from holding their breath, the takes control and normal breathing resumes.

A. heart B. diaphragm C. rib muscles D. brain stem

22. The conditions shown in sequence can be treated by taking melatonin, thyroxine, and interferon.

	Melatonin	Thyroxine	Interferon
A.	Weight loss	Goiter	Bronchitis
B.	Allergies	Depression	Systemic lupus erythematosus
C.	Asthma	Hyperthyroidism	Cretinism
D.	Sleep patterns	Goiter	Viral infections

23. Which of the following has to do with pain?

A. Acetaminophen B. Endorphins C. Enkephalins D. all the answers



Answer the following questions: (two marks for each correct choice)

SN: 000018

- Which of Mendel's laws explains the formation of gametes?
A. Law of Independent Assortment
B. Law of Division
C. Law of Segregation
D. (A and C) are correct
- Which of the following is a function of DNA polymerase during DNA replication?
A. Separating the double-stranded DNA.
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- Fertilization results in the production of a zygote, but cleavage results in the production of.....
A. an ovum
B. a blastocyst
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D. (A and B) are correct
- Sperm cells use secretions from which of the following as a source of energy?
A. The seminal vesicles
B. Bulbourethral glands (Cowper's glands)
C. The prostate gland
D. (A and C) are correct
- Touch and speech:
A. Temporal lobe and Parietal lobe
B. Occipital lobe and Temporal lobe
C. Parietal lobe and Frontal lobe
D. Frontal lobe and Parietal lobe
- Which cavity contains the esophagus and trachea?
A. the thoracic cavity
B. the abdominal cavity
C. the spinal cavity
D. None of these
- In a DNA molecule, if the percentage of cytosine is 23%, then the percentage of guanine will be:
A. 23%
B. 27%
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- Use the adjacent figure to find the correct choice;

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
A.	5	4	3	2
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- The correct order of the bones of the middle ear from the outside to the inside is:
A. hammer-anvil-stirrup
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- In Mendel's first experiments with pea plants, the ratio of contrasting traits in the F1 generation was:
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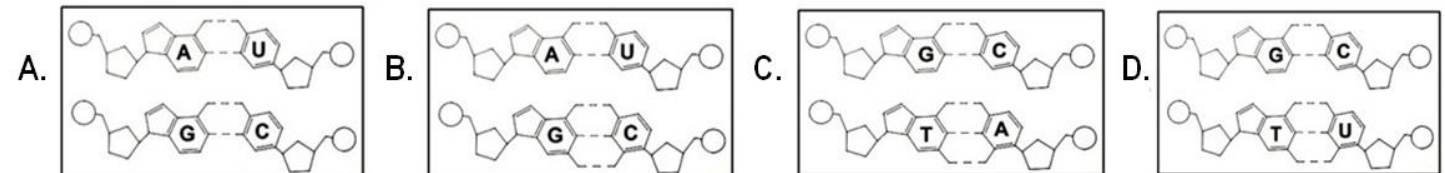
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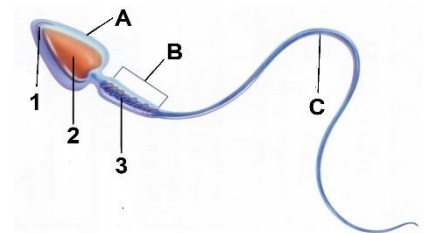
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- During the1..... of the ovarian cycle, the elevated2..... level acts via a positive feedback mechanism to stimulate the anterior pituitary to secrete3.....

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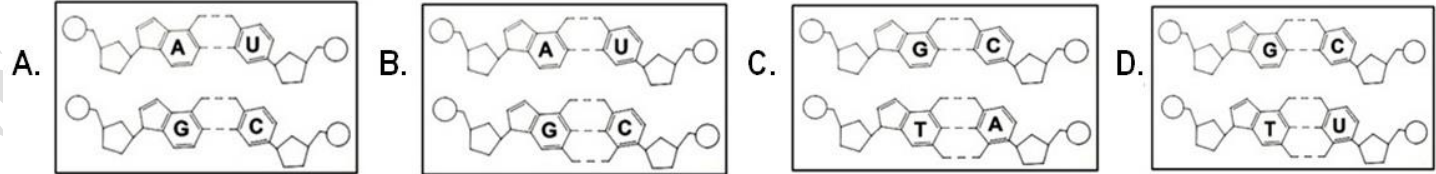


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47. By....., the fetus's bones have hardened, lanugo has disappeared, and body fat is developing.

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Answer the following questions: (two marks for each correct choice)

SN: 000020

- In response to overstimulation by cocaine, the postsynaptic cell.....
 A. decreases the number of its protein receptors B. increases the number of its protein receptors
 C. reabsorbs dopamine D. returns the dopamine levels to normal
- Which of the following is an anticodon in tRNA that can bind to one of the codons transcribed from the DNA sequence (TAC, ACT, ATC, ATT)? A. ACU B. UAC C. AUC D. AUU
- By....., the fetus's bones have hardened, lanugo has disappeared, and body fat is developing.
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- An example of an opportunistic infection is: A. Pneumocystis pneumonia B. type 1 diabetes
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- is an autoimmune disease that mainly affects young adults, and affects nervous system
 A. Rheumatoid arthritis B. Psoriasis C. Multiple sclerosis D. Osteoarthritis

- Use the adjacent figure to find the correct choice;

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
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- The figure shows:

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 D. an antibody



- The reaction of platelet clotting enzymes with essential clotting proteins in the plasma causes.....
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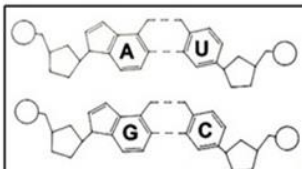
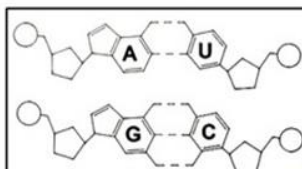
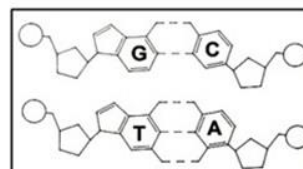
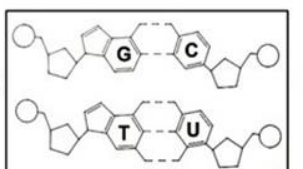
A. Triiodothyronine B. Thyroxine C. Thymosin D. (A and B) are correct

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34. The phenotype of a heterozygous individual exhibiting incomplete dominance is:
A. the same as the dominant parent. B. the same as the recessive parent.
C. a mix of the parents' phenotypes. D. both parents' phenotypes separately.
35. In pea plants, yellow seed color (Y) is dominant over green seed color (y), and round seed shape (R) is dominant over wrinkled seed shape (r). If a plant heterozygous for both traits (YyRr) is crossed with a plant homozygous dominant for the seed color and homozygous recessive for seed shape, what are the expected numbers and the ratios of the different phenotypes and genotypes?
- | | Genotypes | Genotypic Ratios | Phenotypes |
|----|-----------|------------------|------------|
| A. | 4 | 1:1:1:1 | 2 |
| B. | 2 | 1:1 | 4 |
| C. | 4 | 9:3:3:1 | 2 |
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36. The blood supply to the heart is reduced or cut off by:
A. atherosclerosis B. dying of heart wall muscles C. a blood clot D. (A and C) are correct
37. The interiors of the semicircular canals are lined with hair cells that have tiny particles of on top of them. A. calcium phosphate B. neurotransmitters
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38. Which letter and number in the figure indicates the part that contains the cell's genetic material?
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43. Both the lymphatic vessels and the veins:
A. belong to the cardiovascular system B. have valves
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44. When a dendrite or cell body of a neuron is stimulated, the membrane at the point of stimulation.....
A. suddenly changes its permeability B. becomes permeable to K⁺ ions
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45. The order of nitrogenous bases along a strand of DNA is called the:
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46. Use the adjacent codon table to find the correct answer:
The protein synthesized from the DNA sequence (TAC AAT GAG GAC GCG GCC ACT) consists of types of amino acids.
A. Five B. Four
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|------------|---------|---------|----------|---------|
| AUG | CUU | CCU | CGU | GGU |
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47. Which result is **incompatible** with the steps of Griffith's experiment?
- | | Experimental Procedure | Result |
|----|---|---|
| A. | A mouse injected with live <i>S</i> cells |  |
| B. | A mouse injected with live <i>R</i> cells |  |
| C. | A mouse injected with heat-killed <i>S</i> cells |  |
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50. In Mendel's first experiments with pea plants, the ratio of contrasting traits in the F1 generation was:
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Answer the following questions: (two marks for each correct choice)

SN: 000021

1. In pea plants, yellow seed color (Y) is dominant over green seed color (y), and round seed shape (R) is dominant over wrinkled seed shape (r). If a plant heterozygous for both traits (YyRr) is crossed with a plant homozygous dominant for the seed color and homozygous recessive for seed shape, what are the expected numbers and the ratios of the different phenotypes and genotypes?

	Genotypes	Genotypic Ratios	Phenotypes
A.	4	1:1:1:1	2
B.	2	1:1	4
C.	4	9:3:3:1	2
D.	2	1:1	2

2. Which cavity contains the esophagus and trachea?

A. the thoracic cavity B. the abdominal cavity
C. the spinal cavity D. None of these

3. The phenotype of a heterozygous individual exhibiting incomplete dominance is:

A. the same as the dominant parent. B. the same as the recessive parent.
C. a mix of the parents' phenotypes. D. both parents' phenotypes separately.

4. Sperm cells use secretions from which of the following as a source of energy?

A. The seminal vesicles B. Bulbourethral glands (Cowper's glands)
C. The prostate gland D. (A and C) are correct

5. Which of Mendel's laws explains the formation of gametes?

A. Law of Independent Assortment B. Law of Division
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6. Both the lymphatic vessels and the veins:

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A. suddenly changes its permeability B. becomes permeable to K⁺ ions
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8. Which of the following have a role in the maintenance of homeostasis?

A. Thalamus and Hypothalamus B. Medulla oblongata and Hypothalamus
C. Midbrain and Pons. D. Cerebellum

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10. The reaction of platelet clotting enzymes with essential clotting proteins in the plasma causes.....

A. antibody production B. fibrin production C. albumin production D. blood vessel dilation

11. Which of the following has to do with pain?

A. Acetaminophen B. Endorphins C. Enkephalins D. all the answers

12. By....., the fetus's bones have hardened, lanugo has disappeared, and body fat is developing.

A. Month 8 B. Week 12 C. Week 21 D. None of these

13. Which of the following is an anticodon in tRNA that can bind to one of the codons transcribed from the DNA sequence (TAC, ACT, ATC, ATT)? A. ACU B. UAC C. AUC D. AUU

14. is an autoimmune disease that mainly affects young adults, and affects nervous system

A. Rheumatoid arthritis B. Psoriasis C. Multiple sclerosis D. Osteoarthritis

15. During the1..... of the ovarian cycle, the elevated2..... level acts via a positive feedback mechanism to stimulate the anterior pituitary to secrete3.....

	1	2	3
A.	Luteal phase	Estrogen	Luteinizing hormone (LH)
B.	Ovulation phase	Progesterone	Estrogen hormone
C.	Follicular phase	Estrogen	Luteinizing hormone (LH)
D.	Luteal phase	Progesterone	Estrogen hormone

16., like the ligaments, connect bone to bone

A. Fascicles. B. Tendons. C. Long strands of cartilage. D. Solid matrix connective tissues

17. The physical abnormalities shown by this child are a result of.....

A. fetal alcohol syndrome B. erythroblastosis fetalis
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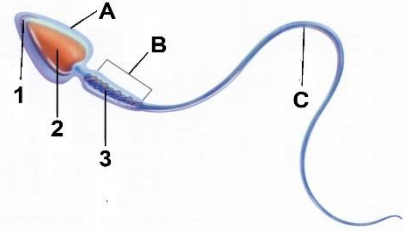


18. The adjacent figure illustrates:

A. the lining of the respiratory passages B. the humoral immune response
C. the cell-mediated immune response D. trapped lymphocytes



19. Which letter and number in the figure indicates the part that contains the cell's genetic material?



A. B and 3 B. 2 and A
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20. As the ventricles pump, blood pressure closes the to prevent blood from flowing backward into the.....

A. Semilunar valves - Ventricles. B. Atrioventricular valves - Atria.
C. Pulmonary valve - Atria D. Aortic valve - Ventricles.

21. The order of nitrogenous bases along a strand of DNA is called the:

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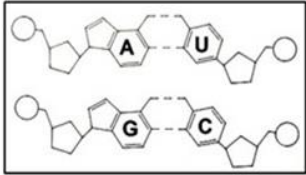
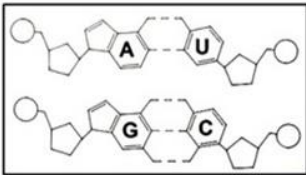
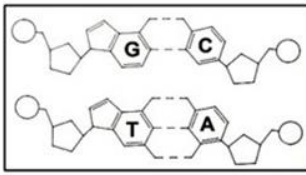
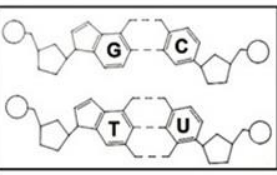
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25. Which of the following is used as a source of energy?

A. Yellow bone marrow B. Glycogen C. Fat D. All of the answers are correct

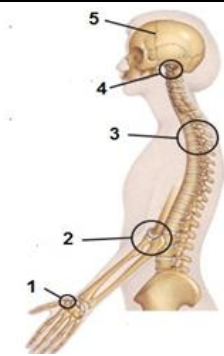
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 - from both its cytoplasm and surrounding follicle cells
 - from the degeneration of the corpus luteum
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 - diaphragm
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29. In response to overstimulation by cocaine, the postsynaptic cell.....
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- 23%
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41. Use the adjacent figure to find the correct choice;

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
A.	5	4	3	2
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42. In Mendel's first experiments with pea plants, the ratio of contrasting traits in the F1 generation was:
- 3:1
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43. Touch and speech:
- Temporal lobe and Parietal lobe
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44. HIV begins to reproduce:
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45. The study of the structure and function of chromosomes and genes is known as:
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48. The conditions shown in sequence can be treated by taking melatonin, thyroxine, and interferon.
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- Separating the double-stranded DNA.
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- an ovum
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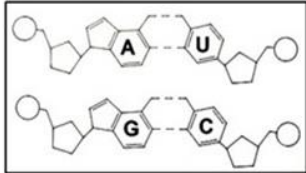
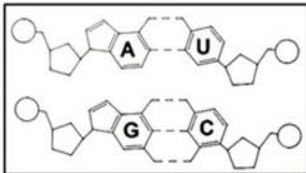
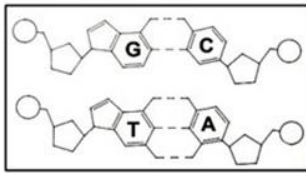
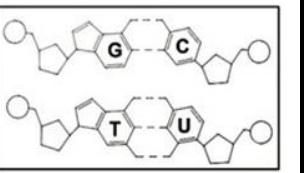
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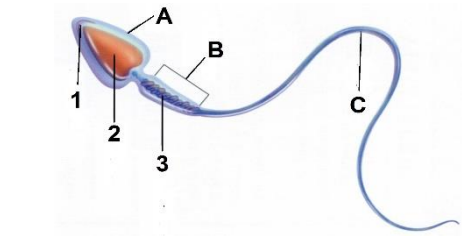
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SN: 000023

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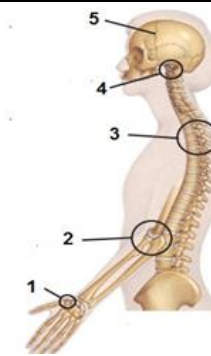


	Experimental Procedure	Result
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- 12.** Which of the following needs a second messenger to initiate changes inside the target cell?
A. Triiodothyronine **B.** Thyroxine **C.** Thymosin **D.** (A and B) are correct
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- 14.** Use the adjacent figure to find the correct choice;

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
A.	5	4	3	2
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C.	4	5	2	3
D.	3	5	4	1



15. The membrane that is present in the joint
A. protects fixed joints. B. increases friction. C. holds muscles in the joint D. secretes synovial fluid.
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17., like the ligaments, connect bone to bone
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- 19.** Use the adjacent codon table to find the correct answer:

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- A.** Five
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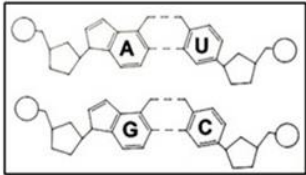
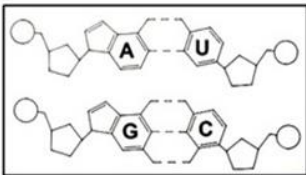
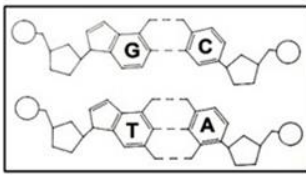
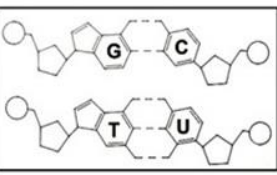
	Methionine	Leucine	Proline	Arginine	Glycine
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	CUC	CCC	CGC	GGC	
	CUA	CCA	CGA	GGA	
	CUG	CCG	CGG	GGG	
	UUA		AGA		
	UUG		AGG		

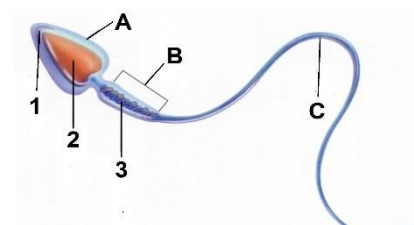
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- 23.** In pea plants, yellow seed color (Y) is dominant over green seed color (y), and round seed shape (R) is dominant over wrinkled seed shape (r). If a plant heterozygous for both traits (YyRr) is crossed with a plant homozygous dominant for the seed color and homozygous recessive for seed shape, what are the expected numbers and the ratios of the different phenotypes and genotypes?

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A.	4	1:1:1:1	2
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C.	4	9:3:3:1	2
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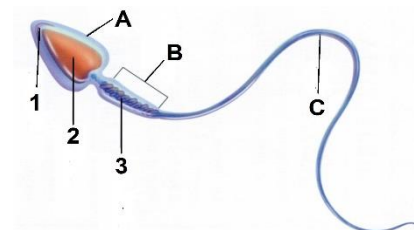
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- | | 1 | 2 | 3 |
|----|------------------|--------------|--------------------------|
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40. High levels of.....cause the uterus to contract and the amniotic sac to break.
A. Estrogen **B.** Oxytocin **C.** Prostaglandins **D.** All of the answers
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- A. B and 3
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A diagram of the human skeletal system in profile, showing the five major regions of the skeleton. The regions are numbered 1 through 5, each with a circle around the corresponding area and a line pointing to it. 1. Arm (hand and forearm), 2. Forearm (upper arm), 3. Trunk (torso), 4. Neck, and 5. Head.

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
A.	5	4	3	2
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A. Calcitonin **B. Glucagon** **C. Aldosterone** **D. Androgens**

A. hammer-anvil-stirrup
B. stirrup-hammer-anvil
C. anvil-hammer-stirrup
D. anvil-stirrup-hammer

A. the same as the dominant parent.

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A. protects fixed joints. **B.** increases friction. **C.** holds muscles in the joint **D.** secretes synovial fluid.

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4. Which of the following is an anticodon in tRNA that can bind to one of the codons transcribed from the DNA sequence (TAC, ACT, ATC, ATT)? **A.** ACU **B.** UAC **C.** AUC **D.** AUU

5. The interiors of the semicircular canals are lined with hair cells that have tiny particles of on top of them.

A. calcium phosphate	B. neurotransmitters
C. sodium and potassium	D. calcium carbonate

A. Month 8 **B. Week 12** **C. Week 21** **D. None of these**

7. An example of an opportunistic infection is:

A. Pneumocystis pneumonia B. type 1 diabetes
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3. Touch and speech: **A. Temporal lobe and Parietal lobe** **B. Occipital lobe and Temporal lobe**
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D. HIV begins to reproduce:

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C. months after infection	D. in phase 2

A. the thoracic cavity **B.** the abdominal cavity
C. the spinal cavity **D.** None of these

A. decreases the number of its protein receptors **B.** increases the number of its protein receptors
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A. Bioinformatics **B. Molecular genetics** **C. Genome** **D. Gene activation**

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A. Fascicles. **B. Tendons.** **C. Long strands of cartilage.** **D. Solid matrix connective tissues.**

Figure 1 consists of four panels, A, B, C, and D, each showing a schematic representation of a DNA/RNA duplex. The duplexes are composed of two strands, each with a sugar-phosphate backbone. The bases are represented by letters: A (Adenine), T (Thymine), G (Guanine), and C (Cytosine). Dashed lines indicate base pairing between the strands. In panel A, the top strand has A and U, and the bottom strand has T and C. In panel B, the top strand has A and U, and the bottom strand has G and C. In panel C, the top strand has G and C, and the bottom strand has T and A. In panel D, the top strand has G and C, and the bottom strand has T and U.

A. antibody production **B.** fibrin production **C.** albumin production **D.** blood vessel dilation

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Answer the following questions: (two marks for each correct choice)

SN: 000025

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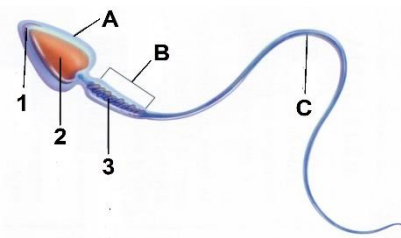
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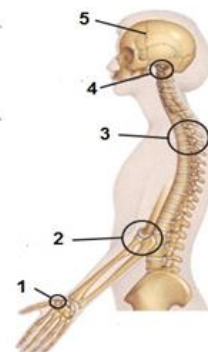


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5. Use the adjacent figure to find the correct choice;

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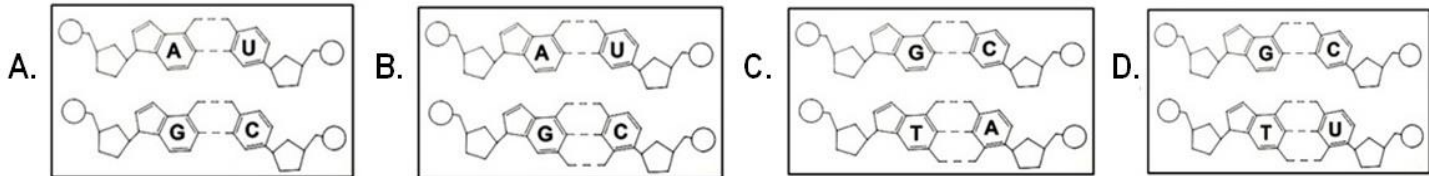
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C. Law of Segregation **D.** (A and C) are correct

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- A.** 23% **B.** 27% **C.** 54% **D.** 77%

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- A.** just from its cytoplasm
B. just from surrounding follicle cells
C. from both its cytoplasm and surrounding follicle cells
D. from the degeneration of the corpus luteum



Answer the following questions: (two marks for each correct choice)

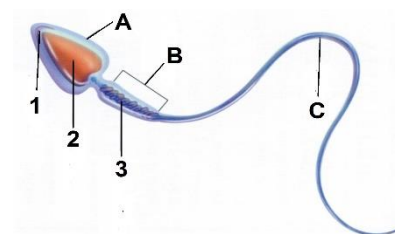
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- is an autoimmune disease that mainly affects young adults, and affects nervous system
A. Rheumatoid arthritis B. Psoriasis C. Multiple sclerosis D. Osteoarthritis
- The phenotype of a heterozygous individual exhibiting incomplete dominance is:
A. the same as the dominant parent. B. the same as the recessive parent.
C. a mix of the parents' phenotypes. D. both parents' phenotypes separately.
- The physical abnormalities shown by this child are a result of.....
A. fetal alcohol syndrome B. erythroblastosis fetalis
C. maternal tobacco addiction during pregnancy D. (A and C) are correct
- High levels of.....cause the uterus to contract and the amniotic sac to break.
A. Estrogen B. Oxytocin C. Prostaglandins D. All of the answers
- The membrane that is present in the joint
A. protects fixed joints. B. increases friction. C. holds muscles in the joint D. secretes synovial fluid.
- Which result is **incompatible** with the steps of Griffith's experiment?

	Experimental Procedure	Result
A.	A mouse injected with live <i>S</i> cells	
B.	A mouse injected with live <i>R</i> cells	
C.	A mouse injected with heat-killed <i>S</i> cells	
D.	A mouse injected with a mixture of live <i>R</i> and heat-killed <i>S</i> cells	

- Which of the following is a function of DNA polymerase during DNA replication?
A. Separating the double-stranded DNA. B. Repairing replication errors.
C. Binding to the gene promoters. D. Joining gaps in the newly synthesized strand.
- Fertilization results in the production of a zygote, but cleavage results in the production of.....
A. an ovum B. a blastocyst C. a morula D. (A and B) are correct

- Which letter and number in the figure indicates the part that contains the cell's genetic material?



- B and 3
- 2 and A
- 3 and 2
- B and C
- Sperm cells use secretions from which of the following as a source of energy?
A. The seminal vesicles B. Bulbourethral glands (Cowper's glands)
C. The prostate gland D. (A and C) are correct
- Which of the following is an antagonistic hormone to insulin?
A. Calcitonin B. Glucagon C. Aldosterone D. Androgens
- The complement system becomes active by:
A. antigen-antibody binding B. a lack of cytokines
C. encountering certain pathogens D. (A and C) are correct
- Which of the following have a role in the maintenance of homeostasis?
A. Thalamus and Hypothalamus B. Medulla oblongata and Hypothalamus
C. Midbrain and Pons. D. Cerebellum
- Which cavity contains the esophagus and trachea?
A. the thoracic cavity B. the abdominal cavity
C. the spinal cavity D. None of these
- Touch and speech:
A. Temporal lobe and Parietal lobe B. Occipital lobe and Temporal lobe
C. Parietal lobe and Frontal lobe D. Frontal lobe and Parietal lobe
- Which of the following release histamine?
A. some of the damaged cells B. injured cells
C. cells that are exposed to the antigen D. All of the answers are correct
- Which of the following is used as a source of energy?
A. Yellow bone marrow B. Glycogen C. Fat D. All of the answers are correct
- By....., the fetus's bones have hardened, lanugo has disappeared, and body fat is developing.
A. Month 8 B. Week 12 C. Week 21 D. None of these
- Which of the following needs a second messenger to initiate changes inside the target cell?
A. Triiodothyronine B. Thyroxine C. Thymosin D. (A and B) are correct
- The order of nitrogenous bases along a strand of DNA is called the:
A. base sequence B. base-pairing rules C. complementary base pairs D. purine-pyrimidine pairing
- The reaction of platelet clotting enzymes with essential clotting proteins in the plasma causes.....
A. antibody production B. fibrin production C. albumin production D. blood vessel dilation
- The blood supply to the heart is reduced or cut off by:
A. atherosclerosis B. dying of heart wall muscles C. a blood clot D. (A and C) are correct
- Both the lymphatic vessels and the veins:
A. belong to the cardiovascular system B. have valves
C. carry blood toward the heart D. (B and C) are correct
- The adjacent figure illustrates:
A. the lining of the respiratory passages
B. the humoral immune response
C. the cell-mediated immune response
D. trapped lymphocytes



29. When a dendrite or cell body of a neuron is stimulated, the membrane at the point of stimulation.....
A. suddenly changes its permeability
B. becomes permeable to K⁺ ions
C. becomes permeable to Na⁺ ions
D. (A and C) are correct
30. An example of an opportunistic infection is:
A. Pneumocystis pneumonia
B. type 1 diabetes
C. emphysema
D. type 2 diabetes
31. Use the adjacent codon table to find the correct answer:
The protein synthesized from the DNA sequence (TAC AAT GAG GAC GCG GCC ACT) consists of types of amino acids.
A. Five
B. Four
C. Three
D. Six
- | Methionine | Leucine | Proline | Arginine | Glycine |
|------------|---------|---------|----------|---------|
| AUG | CUU | CCU | CGU | GGU |
| | CUC | CCC | CGC | GGC |
| | CUA | CCA | CGA | GGA |
| | CUG | CCG | CGG | GGG |
| | UUA | | AGA | |
| | UUG | | AGG | |
32. If a person loses consciousness from holding their breath, the takes control and normal breathing resumes.
A. heart
B. diaphragm
C. rib muscles
D. brain stem
33. During the1..... of the ovarian cycle, the elevated2..... level acts via a positive feedback mechanism to stimulate the anterior pituitary to secrete3.....
- | | 1 | 2 | 3 |
|----|------------------|--------------|--------------------------|
| A. | Luteal phase | Estrogen | Luteinizing hormone (LH) |
| B. | Ovulation phase | Progesterone | Estrogen hormone |
| C. | Follicular phase | Estrogen | Luteinizing hormone (LH) |
| D. | Luteal phase | Progesterone | Estrogen hormone |
34. The egg cell gets nutrients
A. just from its cytoplasm
B. just from surrounding follicle cells
C. from both its cytoplasm and surrounding follicle cells
D. from the degeneration of the corpus luteum
35. The interiors of the semicircular canals are lined with hair cells that have tiny particles of on top of them.
A. calcium phosphate
B. neurotransmitters
C. sodium and potassium
D. calcium carbonate
36. In pea plants, yellow seed color (Y) is dominant over green seed color (y), and round seed shape (R) is dominant over wrinkled seed shape (r). If a plant heterozygous for both traits (YyRr) is crossed with a plant homozygous dominant for the seed color and homozygous recessive for seed shape, what are the expected numbers and the ratios of the different phenotypes and genotypes?
- | | Genotypes | Genotypic Ratios | Phenotypes |
|----|-----------|------------------|------------|
| A. | 4 | 1:1:1:1 | 2 |
| B. | 2 | 1:1 | 4 |
| C. | 4 | 9:3:3:1 | 2 |
| D. | 2 | 1:1 | 2 |
37. Fever can be triggered by:
A. some pathogens
B. some prostaglandins
C. macrophage chemicals
D. All of the answers are correct
38. The correct order of the bones of the middle ear from the outside to the inside is:
A. hammer-anvil-stirrup
B. stirrup-hammer-anvil
C. anvil-hammer-stirrup
D. anvil-stirrup-hammer

39. The conditions shown in sequence can be treated by taking melatonin, thyroxine, and interferon.

	Melatonin	Thyroxine	Interferon
A.	Weight loss	Goiter	Bronchitis
B.	Allergies	Depression	Systemic lupus erythematosus
C.	Asthma	Hyperthyroidism	Cretinism
D.	Sleep patterns	Goiter	Viral infections

40. The figure shows:
A. an inactive platelet
B. an activated platelet
C. a phagocyte
D. an antibody



41. Which of Mendel's laws explains the formation of gametes?
A. Law of Independent Assortment
B. Law of Division
C. Law of Segregation
D. (A and C) are correct
42. How many different genotypes and phenotypes result from a cross between two heterozygous individuals for a codominant trait?
A. two genotypes and two phenotypes
B. Three genotypes and three phenotypes
C. Four genotypes and three phenotypes
D. Three genotypes and two phenotypes
43. In a DNA molecule, if the percentage of cytosine is 23%, then the percentage of guanine will be:
A. 23%
B. 27%
C. 54%
D. 77%
44. Which of the following is an anticodon in tRNA that can bind to one of the codons transcribed from the DNA sequence (TAC, ACT, ATC, ATT)?
A. ACU
B. UAC
C. AUC
D. AUU
45. When an extensor muscle relaxes,
A. the Insertion point will not move.
B. the joint will bend.
C. the origin point will move.
D. the Joint will straighten.
46. HIV begins to reproduce:
A. when AIDS is diagnosed
B. shortly after infection
C. months after infection
D. in phase 2

47. Use the adjacent figure to find the correct choice;

	Develops directly into hard bone	Allows side-to-side head rotation	Is a joint separated by discs	Is a hinge joint
A.	5	4	3	2
B.	1	4	2	5
C.	4	5	2	3
D.	3	5	4	1



48. In Mendel's first experiments with pea plants, the ratio of contrasting traits in the F1 generation was:
A. 3:1
B. 1:1
C. 2:1
D. 1:0
49., like the ligaments, connect bone to bone
A. Fascicles.
B. Tendons.
C. Long strands of cartilage.
D. Solid matrix connective tissues.
50. Which of the following has to do with pain?
A. Acetaminophen
B. Endorphins
C. Enkephalins
D. all the answers