Mock Exam No. (7) for the General Secondary Certificate Examination

Biology

Choose the correct answer

Questions (1-32) One point for each question:

1 - The tissues that support plants are.....

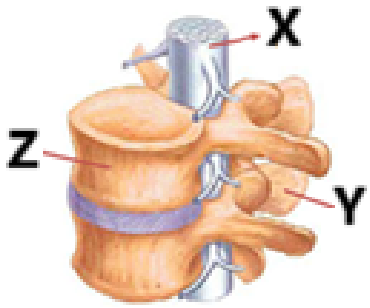
A - Stomata and sclerenchyma tissue.

B - Parenchyma and sclerenchyma tissues.

C - Collenchyma and sclerenchyma tissues.

D - Parenchyma and collenchyma tissues.

2- If the opposite figure represents a part of the human skeleton, which of the following statements is correct?



A- Part (Z) is connected anteriorly to the neural arch.

B- The part shown in the figure belongs to the pectoral girdle.

C- Part (X) passes through the vertebrae shown in the figure only.

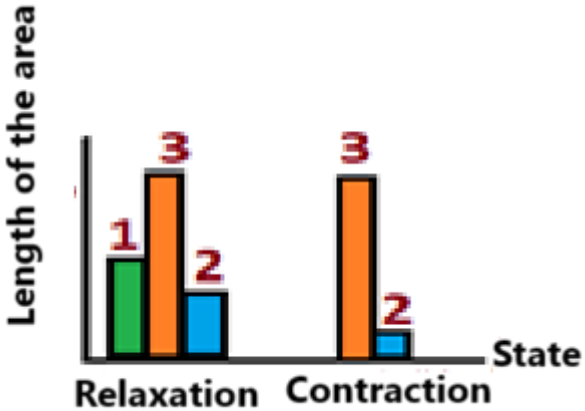
D- Part (Y) is inclined downwards and carries two inferior articulating processes.

3- What distinguishes the pulling movement in pea plants from the pulling movement in bulbs is……..

A- Dependence on auxins. **B- Support against winds.**

C- Increased food consumption rate. **D- Increased food storage rate.**

4- The provided graph shows the state of a sarcomere that is working normally. What do numbers (1-3) represent respectively?



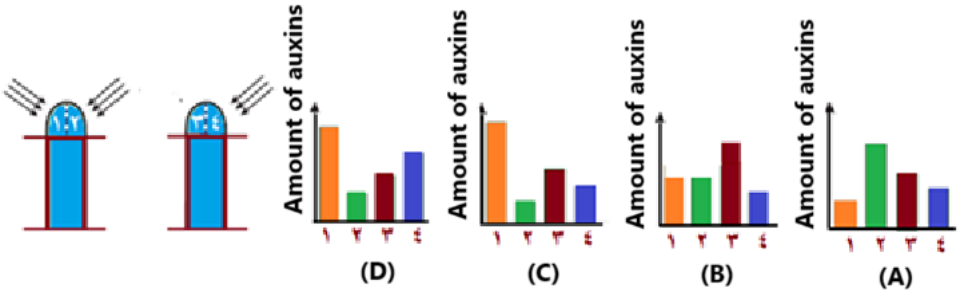
A - Dark band - Semi-lighted area – Light band.

B - Dark band – Light band - Semi-lighted area.

<u>C - Semi-lighted area – Light band - Dark band.</u>

D - Semi-lighted area - Dark band – Light band.

5- The following figure shows an experiment used to verify the effect of light on the growth of plant seedlings.



Which of the following graphs shows the possible response of the seedlings' after several days?

A - A. **<u>B - B.</u>** **C - C.** **D - D.**

6 - Which of the following hormones has the highest concentration in the mother's body during embryonic development?

A - Estrogen. **<u>B - Progesterone.</u>**

C - Prolactin. **D - Relaxin.**

7 - Which of the following can result from an increased secretion of cortisol?

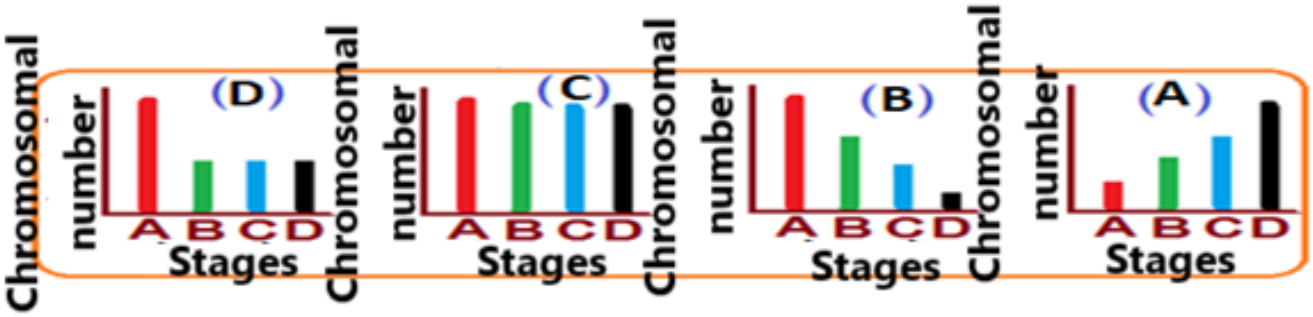
A - Decreased protein and fat synthesis.

B - Increased ACTH level in the blood.

C - Increased blood glucose level.

D - Decreased muscle glycogen level.

8- Based on studying tissue culture in tobacco plant, which of the following graphs represents the number of chromosomes during different stages of the experiment from the beginning of the process till obtaining a complete plant?



A - A. **B - B.** **C - C.** **D - D.**

9-Which of the following distinguishes asexual reproduction from sexual reproduction?

A- It depends on meiosis to increase the number of individuals.

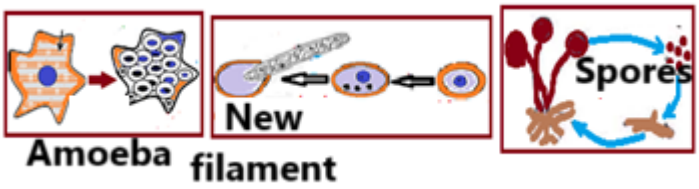
B- It causes a diversity in the genes of the resulting individuals.

C- It increases the number of species with a change in genetic traits.

D- It conserves the species with the stability of genetic traits mostly.

10- If the number of nuclei resulting from meiosis which occur before germination of the zygospore of Spirogyra algae is four, then the number of algal filaments resulting from this zygospore is .....

A - (1). **B - (2).** **C - (4).** **D - (8).**

11- Based on your study of reproduction in living organisms, **What is the similarity between the living organisms shown in the figure?**	

A - Producing individuals with similar chromosomal numbers.

<u>B - Protection from harsh conditions by forming a thick coat.</u>

C – Depending on two types of cell division when reproducing.

D - Using asexual reproduction in suitable conditions.

12 - When examining a blood sample of a person infected with malaria using a microscope,

Which of the following stages will appear upon examination?

A - Sporozoites and gametes. **B - Merozites and ookinete .**

C – Gametocytes and sporozoites. **<u>D - Gametocytes and merozoites.</u>**

13 - Which of the following statements is correct?

A - The number of pollen grains is always less than the number of fertilized eggs.

B - Two male nuclei are required to form the embryo during double fertilization.

C - Three mitotic divisions are required to form the embryo sac.

<u>D - The embryo sac results from meiotic division of a spore mother cell in the flower's ovary.</u>

14 - Which of the plant immunity mechanisms does not require the plant to be exposed to danger?

A - Receptors and detoxification enzymes.

B - Hairs and thorns.

C - Waxy layer and tyloses.

D - Deposition of gums and phenols.

15- Interferons are proteins secreted by some cells. Which of the following cells can produce them?

A- Rectal cells infected with Bilharzia.

B- Liver cells infected with Plasmodium.

C- Lung cells infected with the coronavirus.

D- Stomach cells infected with salmonella bacteria.

16- A mosquito bites a person's skin. What is likely to happen at the site of the bite?

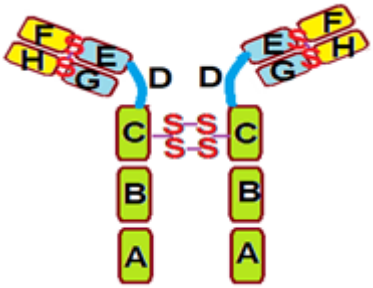
A- Mast cells secrete anti-inflammatory histamine.

B- Histamine is secreted by plasma B cells.

C- Complement production by macrophages.

D- Basophils secrete inflammation-generating substances.

17 - From the opposite diagram of the antibody, conclude the correct statement?



<u>A - From the parts of the heavy chain are (A, C, E) and from the parts of the variable chain are (H, F).</u>

B - From the parts of the heavy chain are (A, H, E) and from the parts of the constant region are (G, E).

C - From the parts of the heavy chain are (A, G, E) and from the parts of the short chain are (F, H).

D - From the parts of the heavy chain are (A, G, B) and from the parts of the variable chain are (H, F).

18 - Scientists Hershey and Chase concluded, through their experiment that the substance (substances) present in the outer surface of the phage are.....

<u>A - Radioactive sulphur only.</u>

B - Radioactive phosphorus only.

C - Both non-radioactive phosphorus and sulphur.

D - Both radioactive phosphorus and sulphur.

19 - Which of the following statements about plasmids is <u>incorrect</u>?

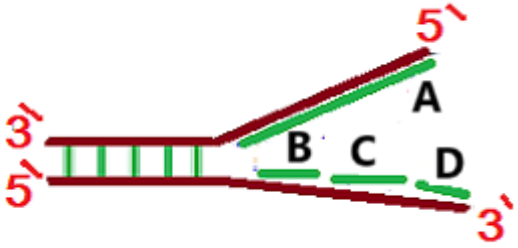
A – Are circular pieces of DNA.

B – Can moved from one cell to another.

<u>C – They do not replicate when cell division occurs.</u>

D – Are widespread in some bacterial strains.

20- During the process shown in the opposite figure, which of the following pieces are formed first?



A - (A and D).

B - (D and B).

C - (C and A).

D - (B and A).

21- All of the following proteins are regulatory ones except...

A- Immune proteins that fight pathogens.

B- Transverse links proteins in muscle fibers.

C- Proteins that activate the digestion of starch into glucose.

D- Proteins that deposit calcium in bones.

22- By completing theopposite table and using the codon table,

Deduce which amino acid is translated?

DNA	A		
mRNA		G	G
Amino acid			

A- Tryptophan.

B- Valine.

C- Glycine.

D- Alanine.

23- What is the importance of identifying defective genes in the fetus before birth?

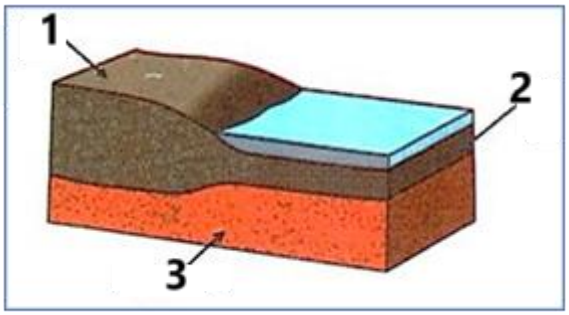
A- Studying the development of living organisms.

B- Facilitating the birth process.

C- Preparing medicines without side effects.

D- Improving the human offspring.

24 – What's the difference and similarity between the components (1) and (2) respectively?



a – The physical state – density and thickness.

b – The density – thickness and chemical composition.

c – The density and thickness – the physical state.

d – The physical state and the thickness – the density.

25- Which of the following characterizes the fault shown in the opposite figure?

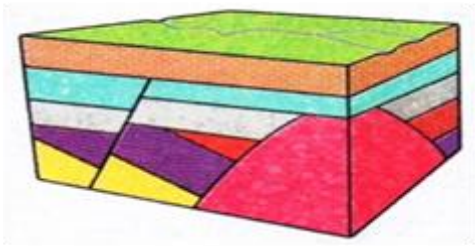
a - Displacement of rocks occurs against the direction of gravity.

b - Rocks appeared on the surface are the hanging wall rocks.

c - Rocks appeared on the surface are the foot wall rocks.

d - It leads to shrinkage of the area of rocks in that region.

26 - Which of the following statements is true about the opposite figure?



a - The reverse fault is younger than the angular unconformity and older than the discontinuity.

b - The normal fault is younger than the angular unconformity and younger than the discontinuity.

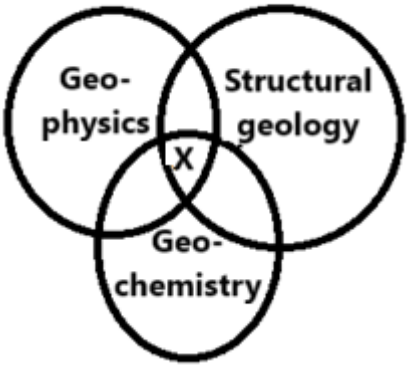
<u>c - The normal fault is younger than the angular unconformity and older than the discontinuity.</u>

d - The normal fault is older than the angular unconformity and younger than the discontinuity.

27- Which of the geological structures are represented by the letter (X) in which the three branches overlap in studying it and studying its importance?

<u>a- Folds</u> **b- Mud cracks**

c- Cross-bedding **d- Joints**



28 - Each of the following are elements of crystal symmetry when studying a crystal except .....

a - axis of symmetry. **<u>b - center of symmetry.</u>**

c - axial plane. **d – symmetrical plane**

29 - Which of the following minerals can't be scratched by topaz?

a - The mineral used in making glass.

b - The mineral that scratches apatite but does not scratches quartz.

C - The mineral used in making cement.

<u>d - The transparent carbon mineral used in decoration.</u>

30 - When the ions of the magma elements react, and the calcium plagioclase mineral turns into sodium plagioclase, it is accompanied by .....

a - a decrease in temperature. **b- an increase in temperature.**

c - not being affected by temperature. **d - stability in temperature.**

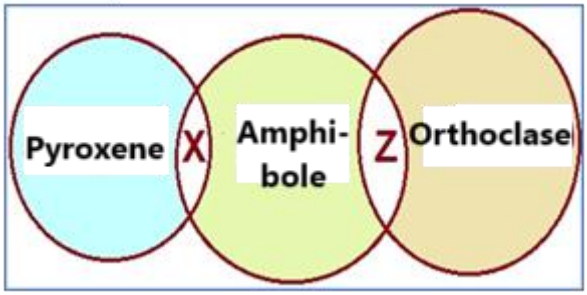
31- What are the rocks represented by the letters (X) and (Z) respectively?

a – Peridotite – obsidian

b – dolerite – diorite

c – Andesite – komatite

d – Pumice - andesite



32-mFrom the shapes of the surficial igneous rocks are.....

a - volcanic bombs and lopolith.

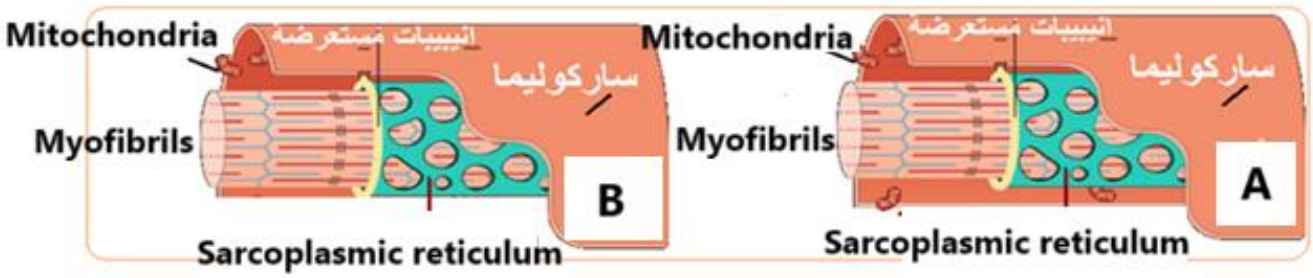
b - laccolith and volcanic breccia.

c - laccolith and batholith.

d - ropes and volcanic bombs.

Questions (33-44) Two marks for each question:

33- Which of the following statements is true about the provided two figures during muscle contraction if the two muscles have an abundance of oxygen?



A - Muscle (B) has a higher percentage of glycogen than muscle (A).

B - Muscle (A) has a lower percentage of glycogen than muscle (B).

C - Muscle (A) is less susceptible to muscle spasm than muscle (B).

D - Muscle (B) has a greater number of muscle fibers than (A).

34- The pituitary gland is connected to a network of blood vessels.

Which of the following glandular tissues is not affected when the blood vessels leaving the gland are blocked?

A- The glandular tissue cells found in the medulla of the adrenal gland.

B- The gonad cells in both males and females, which are necessary for sexual maturity.

C- The cortical cells of the gland which secrete mineralocorticoids and glucocorticoids.

D- The follicular cells that form the gland located around the trachea.

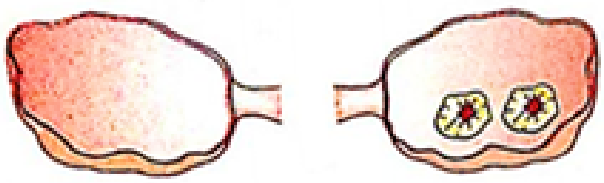
35- Which of the following predictions may occur in case of occurrence pregnancy?

A- Birth of fraternal twins.

B- Birth of identical twins.

C- Formation of a single amniotic sac.

D- Birth of Siamese twins.



36- The opposite table shows the reproductive characteristics of three organisms. Deduce the three organisms respectively?

Reproductive characters	Quick propagation	Genetic variation	Tolerance to hard conditions
Organism (X)	X	✓	X
Organims (Y)	✓	X	✓
Organism (Z)	✓	✓	✓

A - Plasmodium - Spirogyra - Frog.

B - Amoeba - Plasmodium - Spirogyra.

C - Frog - Bread mould - Polypodium

D - Plasmodium - Polypodium - Spirogyra

37- Which stage of spermatogenesis produces two chromosomally different types of cells?

A - The stage of increasing the number of cells by mitosis.

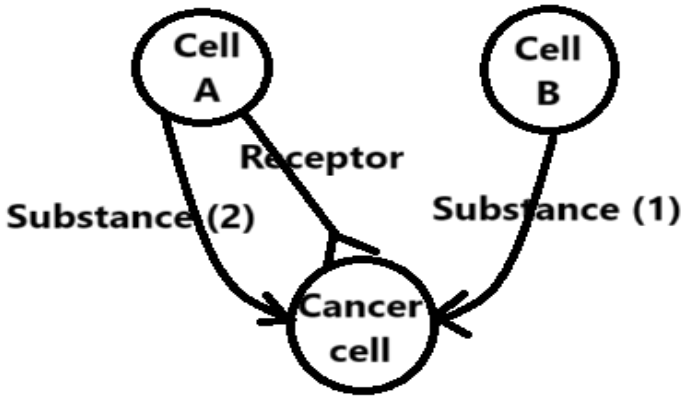
B - The stage of reducing the chromosomes to the half.

C - The stage of increasing in size by storing food.

D - The stage of final formation.

38 - By studying the opposite diagram a part of the human immune mechanisms,

Find the similarity between the two cells (A, B)?



A - Place of maturation and differentiation.

B - Both are granulocytes.

C - Number of defence lines to which they belong.

<u>D - Type of the substance that kills cancer cells.</u>

39- By studying the corresponding blood cells, **Find the similarity between them?**	

A- Place of maturation and differentiation.

B- Type of receptors.

<u>C- Place of formation.</u>

D- Nature of cytoplasm.

40- If the chemical formula of the sugar molecule in the opposite figure is $C_5H_{10}O_4$, which of the following statements is a correct description of the opposite figure?	

A - A building block of a ribonucleic acid.

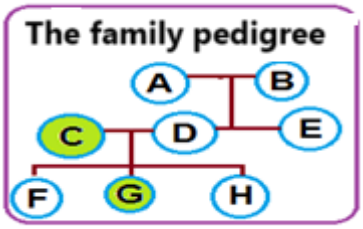
B - A nitrogenous base that distinguishes RNA.

C - A purine base that distinguishes DNA from RNA.

<u>D - A building block of deoxyribonucleic acid.</u>

41- The opposite diagram represents the pedigree of a family.

The individuals shaded in the figure have undergone a mutation, what is the possible type of this mutation?



A - True genetic mutation.

B - False chromosomal mutation.

C - True somatic mutation.

D - False genetic mutation.

42- Pairing of nucleotides (ACG) with (UGC) can occur in the case of .....

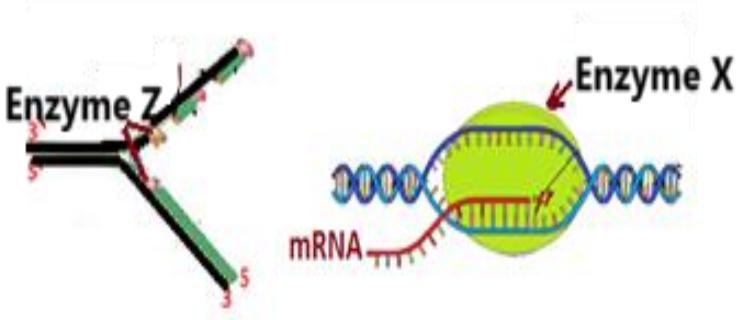
A - binding of rRNA to mRNA codon.

B – nucleic acid hybridization technique.

C - DNA molecule.

D - mRNA molecule.

43 - By studying the opposite figures, conclude what can distinguish enzyme (X) from enzyme (Z)?



A - The building blocks used to build the growing strand.

B - The type of single-ringed bases in the nucleotides of the new growing strand.

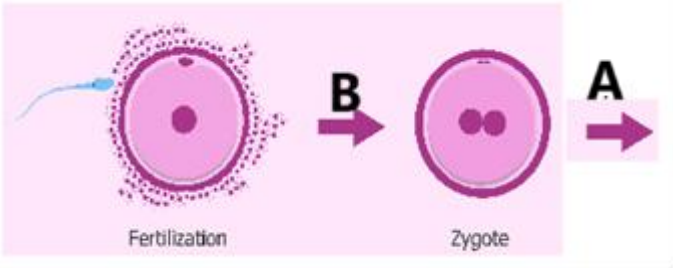
C - The type of double- ringed bases in the nucleotides of the new growing strand.

D - The direction of adding nucleotides in the new growing strand.

44- The mudstone that exhibits foliation as a result of the compression of its components is represented by.....

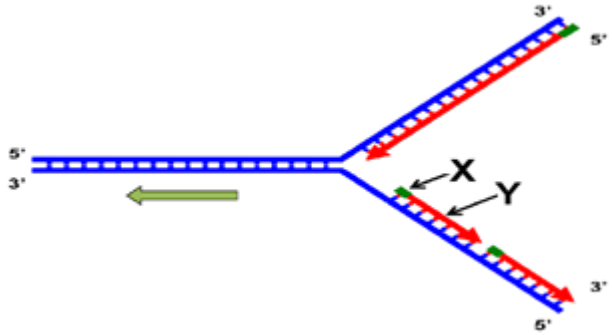
a – shale **b - mudstone** **c – kerogen** **d - reservoir rocks.**

Essay questions: (two points for each question)

45- Using the opposite diagram, mention the two cell divisions represented by the letters (A) and (B), and mention their importance?	

Division (A) is mitosis which occurs for the zygote to develop into a new individual.

Division (B) is the 2nd meiotic division which occurs during the penetration of the sperm to the ovum and before the completion of the fertilization process.

46 -What is the chemical difference between the structures (X) and (Y) shown in the opposite figure? **Structures (X) are primers which are built from RNA nucleotides, but structures(Y) are DNA fragments which are built from DNA nucleotides.**	

End of questions