Mock Exam No. (10) for the General Secondary Certificate Examination

Biology

Choose the correct answer

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

1- Which of the following consists of the fewest bones?

A- The ankle. **B- The forearm.** **C- The pectoral girdle** **D- The skull.**

2 - Which of the following structures is not present in most of the joints of the vertebral column between the vertebral centra?

A- Cartilage. **B- Ligaments.** **C- Tendons.** **D- Synovial fluid.**

3- Which of the following movements depend on the movement of water between cells?

A- Sleep movement **B- Pull movement.**

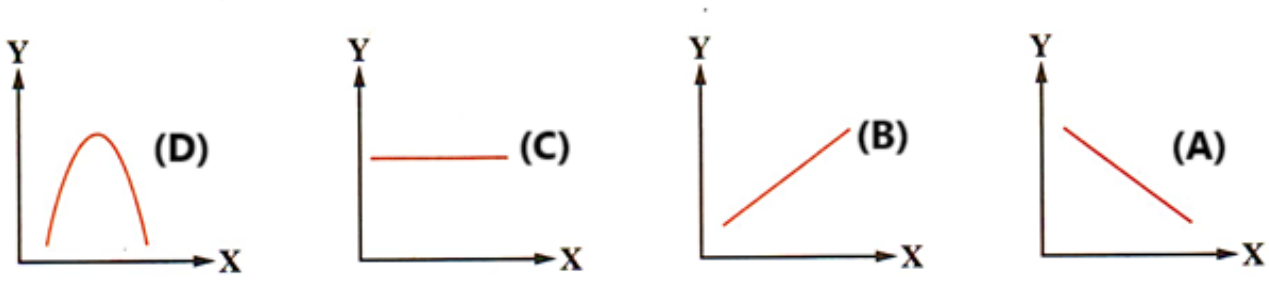
C- Tropism. **D- Cytoplasmic streaming.**

4- What is the range of the number of myofibrils found in five muscle fibers?

A- One thousand: two thousand **B- Two thousand: four thousand**

C- Five thousand: ten thousand **D- Three thousand: six thousand**

5- Which of the following graphs expresses the relationship between the concentration of ADH hormone in the blood (X) and the osmolarity of urine (Y) to maintain blood osmolarity?



The answer: B

6 - The hormones that stimulate involuntary muscle contraction are....

A- Relaxin and ADH **B- Oxytocin and relaxin**

C- Adrenaline and progesterone **D- Oxytocin and ADH**

7 - Which of the following pairs of hormones are antagonistic in their action?

A- FSH & LH. **B- Vasoconstrictor hormone & TSH.**

C- Calcitonin and parathormone. **D- Oxytocin and prolactin.**

8 - Which of the following forms of reproduction consumes the least energy?

A- Sexual reproduction in humans.

B- Scalariform conjugation in Spirogyra.

C- Binary fission in bacteria.

D- Plasmodium reproduction in the mosquito stomach.

9- The hormones with the highest concentration in the vein of the testes of an adult man are....

A- FSH and testosterone. **B- LH and androsterone.**

C- FSH and. LH **D- Testosterone and androsterone.**

10- The bean seed embryo feeds during its development on .....

A- Endosperm only.

B- Nucellus and endosperm.

C- Nucellus, receptacle and endosperm.

D- Endosperm and the food stored in the cotyledons.

11- The spores of the polypodium plant are characterized by being .....

A- Equipped with cilia. B- Large in size. C- Thin-walled. D- Thick-walled.

12- The chemical contraceptive method is (are) the .....

A- IUD. B- Pills. C- Condom. D- Surgical sterilization.

13- Which of the following sentences expresses sexual reproduction?

A- It always requires the presence of a male gamete and a female gamete.

B- It occurs only in haploid organisms.

C- There is no genetic diversity in it.

D- It can involve a single parent.

14 - Which of the following immune cells kill microbes during the inflammatory response?

A- Macrophages only.

B- Natural killer cells (NK) and macrophages.

C- Basophils and mast cells.

D- All types of non-specific white blood cells.

15- The provided figure represents one of the components of the ……	

A- axial skeleton, which produces only lymphocytes.

B- axial skeleton, which produces all types of white blood cells.

C- appendicular skeleton, which produces only lymphocytes.

D- appendicular skeleton, which produces all white blood cells except T cells.

16- Which of the following lymphoid organs belong anatomically to the digestive system?

A- Thymus gland. **B- Tonsils.** **C- Lymph nodes.** **D- Appendix.**

17- Which of the following plant's immune methods are specific?

A- Tyloses. **B- Receptors.** **C- Glycosides.** **D- Detoxifying enzymes.**

18- What did Griffith conclude through his experiments on pneumonia bacteria?

A- The genetic material of viruses is DNA.

B- The structure of DNA is a double helix.

C- The amount of thymine equals the amount of adenine in DNA structure.

D- The traits of bacteria change after introducing new genes into them.

19- In the following table, which of the choices applies to the guanine base?

Choice	Complementary base	Binds with	Number of hydrogen bonds	Number of carbon rings
A-	C	1st carbon of ribose	3	1
B-	A	3rd carbon of ribose	2	1
C-	C	1st carbon of deoxyribose	3	2
D-	G	5th carbon of deoxyribose	2	2

20- During the process of DNA replication, which of the following are separated?

A- Phosphate groups and deoxyribose sugar.

B- Cytosine and guanine.

C- Uracil and thymine.

D- Adenine and uracil.

21- Which of the following is not a characteristic of DNA found inside the nuclei of eukaryotic cells?

A- It is organized in a circular form.

B- It is associated with histones.

C- It is organized in the form of chromatin.

D- It may undergo a mutation.

22- If a mutation occurs in the DNA found in the mitochondria in the gametes of both the father and mother, which of the following parents' mutations will be transmitted to their offspring?

A- Fathers' mutations to their sons only.

B- Fathers' mutations to their sons and daughters.

C- Mothers' mutations to their daughters only.

D- Mothers' mutations to their sons and daughters.

23- What is the regulatory protein that plays a role in restoring the sarcomere to its fundamental length?

A- Actin. **B- Myosin.** **C- Acetylcholine.** **D- Cholinesterase.**

24 - What is the reason for the gradual increase in density inside the outer core with increasing depth in the interior of the Earth?

a) Gradual increase in temperature.

b) Increase in pressure affecting its components.

c) Change in chemical composition.

d) Presence of the Earth's magnetic field.

25 - The presence of old rocks surrounding younger rocks with sharp-edged gravel between them. That's an evidence for the presence of .....

a) graben **b) Anticline fold** **c) horst** **d) syncline fold**

26 - All of the following is from the economic importance of folds except .....

a) Places where oil and natural gas are formed.

b) Places where economic minerals are deposited.

c) choosing safe places to build on.

d) reservoirs for groundwater.

27 – The opposite table shows a crystal that belongs to the tetragonal system and its axes lengths.

The axis	a	b	c
The length of axis	4 cm	4 cm	8 cm

When this crystal is bisected by a horizontal symmetrical plane, a crystal is produced that is characterized by.....

a) having axes which are equal in length, but not perpendicular.

b) being the most symmetrical crystal system.

c) having a biometric vertical axis.

d) having unequal ratios between the lengths of its axes.

28- A compound mineral that has cleavage in one plane is .....

a) Calcite **b) Graphite** **c) Biotite** **d) Pyrite**

29 - What is the correct order of the following rocks according to which one melts first (biomes – micro diorites - komatiites).

a) Pumice then komatiites then microdiorite

b) komatiites then Pumice then microdiorite

c) Pumice then micro diorites then komatiites

d) komatiites then micro diorites then Pumice

30 - When deposits with a diameter of less than 50 microns are exposed to a temperature of less than 200 degree and high pressure, a rock of ..... is produced.

a) Primary non-porous crystalline.

b) crystalline with deformed fossils and non-porous.

c) Foliated with clear fossils.

<u>d) Foliated used in construction works.</u>

31 - When an igneous dyke and a laccolith are formed from the same magma, they differ in .....

a) The type of rock and the tectonic structures associated with them.

<u>b) The shape of the structure and the phenomena associated with each of them.</u>

C) The shape of the structure and the texture of their rocks.

d) The chemical composition and the occurrence of metamorphism.

32 - The presence of non-porous, foliated rocks in an inclined position and younger foliated clastic rocks are over it, is evidence of the presence of .....

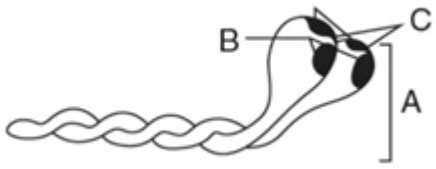
a) angular unconformity surface.

<u>b) nonconformity surface.</u>

c) Disconformity surface.

d) Cannot be determined

Questions from (33 to 44) 2 marks for each question

33- The opposite figure shows the structure of the myosin protein in the myofibil.	

Which of the parts marked with the letters A, B, C is the site at which the structure shown in the figure binds to actin filaments during muscle contraction?

A- A. **B- B.** **C- C.** **D- None of them.**

34- Which of the following hormones affect all cells in the body, including the cells that secrete them?

A- Thyroxine and insulin **B- Parathormone and calcitonin**

C- Aldosterone and ADH **D- Gastrin and adrenaline**

35- The calyx differs from the corolla in .....

A- the presence of pigments in its leaflets.

B- the number of its leaflets sometimes.

C- Its function in protecting the parts of the flower.

D- There is no difference between them.

36- The cell that contains a thick membrane and has the ability to germinate into a new individual directly is .....

A- The egg. **B- The spore.** **C- The pollen grain.** **D- The bud.**

37- Which hormone stimulates the beginning of uterine activity in an adult female?

A- FSH **B- LH** **C- Estrogen** **D- Progesterone.**

38- The blood vessels in the umbilical cord of the fetus belong to .....

A- The fetus only. **B- The mother only.**

C- The mother and the fetus. **D- The mother and the placenta.**

39- Tyloses are ……. immune methods.

A- structural and pre-existing. **B- structural and induced**

C- structural and specific. **D- structural, pre-existing and adaptive**

40- Which of the following chemicals mediate communication between immune cells and somatic cells?

A- Interleukins. **B- Cytokines.** **C- Interferons.** **D- Histamine.**

41- A researcher inserted an mRNA molecule into the nucleus of an animal cell after removing its poly-adenine tail.

Which of the following is expected to happen?

A- mRNA cannot exit the nucleus for translation.

B- The cell recognizes the absence of a poly-adenine tail in mRNA and digests it in the nucleus.

C- The mRNA molecule is digested when it leaves the nucleus.

D- The mRNA molecule binds to the ribosome and is translated, but more slowly.

42- How many types of nucleotides are similar in DNA and RNA?

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

43- Which of the following distinguishes tRNA from mRNA?

A- The presence of the ribosome binding site.

B- The presence of hydrogen bonds between some of its bases.

C- The site of transcription.

D- The site of action.

44 - From the opposite figure, what is the reason that prevents direct binding of the plasmid to the gene?	

A- Not using appropriate ligase enzymes.

B- Treating both the gene and the plasmid with different restriction enzymes.

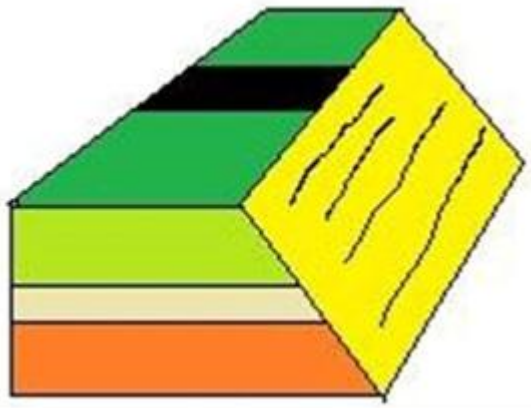
C- Both the DNA and the plasmid belong to genetically different organisms.

D- The difference in the length of the sticky ends

Essay questions (2 points for each question):

45 - A person has difficulty moving his humerus bone despite having no fractures in it. Identify two possible causes for this?

Tearing in the shoulder tendons connected to the humerus bone or tearing in the shoulder ligaments the connect the humerus to the shoulder bones or tearing in the muscles that move the humerus bone

46 - The figure in front of you is a view of the rocks of the foot wall and the the lines resulting from the friction of the rocks along the fault plane. **Mention the type of fault and explain the reason?** **Fault type: Horizontal-slip fault** **Reason: Horizontal displacement, evidenced by horizontal dents**	

End of question