ARAB REPUBLIC OF EGYPT [٨١] ث.ع / أول / ج
Ministry of Education
General Secondary Education Certificate Examination, 2011
[First Session]
BIOLOGY (For the First and Second Stages) **Time: 3 Hours**

الأحـــيـاء [باللـغـة الإنجـلـيـزية]

تنبيه هام : يسلم الطالب ورقة امتحانية باللغة العربية مع الورقة المترجمة **[الأسئلة فى أربع صفحات]**

Answer FIVE questions only of the following:

Question One:

A) Choose the correct answer for each of the following, then write it only in your answer paper :

1. During spermatogenesis, the meiosis I occurs in ..... phase.
a) multiplication **b) growth** **c) maturation** **d) metamorphosis**

2. The ratio between the quantity of **DNA** in uterus cells and kidneys' cells is ..... .
a) 2 : 1 **b) 1 : 1** **c) 3 : 1** **d) 1 : 2**

3. High concentration of auxins causes ..... .
a) Increase of root cells elongation
b) Increase of stem and root cells elongation
c) inhibition of stem cells elongation
d) inhibition of root cells elongation

4. If the concentration of K^+ ions in the swamp water is **1.2×10^3 ion/liter**, so its concentration in the cell sap of *Nitella* alga is ..... **ion/liter**.
a) 1.2×10^3 **b) 0.8×10^3** **c) 0.12×10^3** **d) 2.1×10^3**

5. Blood pressure is the highest in .....
a) left arm veins **b) right arm arteries**
c) renal arteries **d) left leg artery**

6. When a molecule of pyruvic acid converts into acetyl **co-A**,..... are released.
a) ATP + CO_2 **b) 2ATP + CO_2** **c) 2NADH + CO_2** **d) NADH + CO_2**

7. The theory suggested by **Huxely** depends on the fine structure of the ..... .
a) nerve fibers **b) muscle fibers**
c) spinal cord **d) nerve endings**

8. All **tRNA** molecules are similar in the ..... .
a) chemical structure **b) general shape**
c) the amino acid carried by them **d) bases of anticodon**

B) Draw a fully labelled diagram shows the steps to form **2** molecules of pyruvic acid starting with glucose-**6-**phosphate.

C) 1. Which of the following is haploid or diploid:
a) Zygospore of *Spirogyra* **b)** Ciliated sperms of *Polypodium*
c) Body cells in drones of honey bee

2. How can you tell whether the repeated **AGAAG** sequence exists in *Drosophila*?

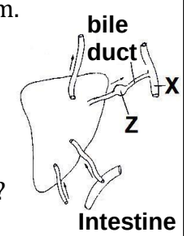
[بقية الأسئلة فى الصفحة الثانية]

Question Two:

A) Write the scientific term that is expressed by each of the following statements:

1. Openings exist in the cork layer which covers the woody trees stem.
2. A hormone stimulates the absorption of monosaccharides from the small intestine.
3. They are formed by **DNA** wounded around clusters of histones.
4. Two compounds represent a link between light and dark reactions.
5. The link between the nervous system and the endocrine system.
6. A method by which the oocyst divides to produce sporozoites.

B) 1. The opposite figure represents the liver and the vessels assocciated to it :



a) Follow the path of absorbed substances by the intestine until they reach the inferior vena cava.
b) Why are the contents of **(Z)** consider as undigestive juice?
c) Write the name of the structure indicated by letter **(X)**.
d) Give an example for an anabolic process occurs inside the liver.

2. When mating occurred between a grey-long winged male *Drosophila* and a black-short winged female, the offspring produced are looked like their parents by the ratio (**1 : 1**). **Explain** on genetic bases.

C) 1. Compare between the two sounds of the heart beats.

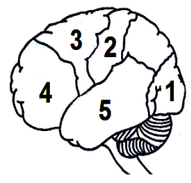
2. What is the importance of each of the following ....**?**
a) The releasing factor **b)** The polyadenine tail

Question Three:

A) Give reasons for each of the following:

1. It is impossible to repair damages that occur at the same position of both **DNA** strands, at the same time.
2. Wide-eyed parents may give birth a narrow-eyed son.
3. The human placenta is considered as an endocrine gland.
4. Corms always remain at a suitable distance from the soil surface.

B) 1. From the opposite figure, state the number that indicates each of the following:

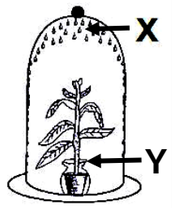


a) Memory center.
b) Hearing center.
c) Center of skin heat sensation.

2. Where is the fifth lobe in the brain ?
3. What is the function of meningies ?

[بقية الأسئلة فى الصفحة الثالثة]

C) 1. Study the opposite figure which represents an experiment, and answer:



a) What is the purpose of carrying out this experiment ?
b) How can you detect the substance **(X)** ?
c) What does the letter **(Y)** indicate?

2. What are the consequences for each of the following …….. **?**
a) Thyroid gland stops the secretion of calcitonin hormone.
b) Hyposecretion of insulin hormone.
c) Iodine deficiency in food, water and air.
d) Hypersecretion of parathormone hormone.

Question Four:

A) Write the following statements after correcting the underlined words:
1. The gene responsible for the formation of insulin is located on the **ninth** chromosome.
2. Products of digestion which pass into the lymphatic route are empty into the **hepatic portal vein**.
3. The nerve bundle is formed of a group of nerve fibers connected by **epithelial tissues**.
4. The egg inside the embryo sac is located between the **antipodal** cells.
5. In higher plants, water and mineral salts are transported by means of specialized **medullary** tissues.
6. Antigens are present **in plasma** of the human blood.

B) What is the difference between each two of the following …….. ?
1. Lipase and peptidase **(in terms of the site of secretion and function)**.
2. Natural and artificial parthenogenesis **(in terms of the concept and an example for each)**.

C) 1. Show with a labelled diagram only the structure of a human bony vertebra.
2. What is your explanation for the constant remaining of a part of the air inside the lungs after the end of expiration?

Question Five:

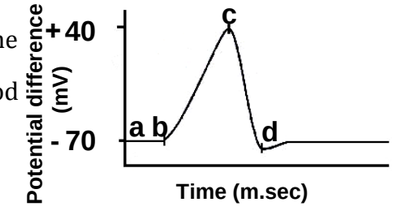
A) Mention the site and function for each of the following:
1) The site **CCA** **2)** The starch sheath

B) 1. What do you expect in each of the following cases ……. ?
a) Occurance of triploidy in the human fertilized egg.
b) Presence of an insufficient amount of the co-enzyme **NADP** in a plant.
c) A person with blood group **(A)** received blood of **(AB)**group.
d) Rapid evaporation of guttation water.
2. Mendel was able to distinguish between two pea plants with pink flowers, one of them was hybrid and the other was pure. **Explain** this on genetic bases.

[بقية الأسئلة فى الصفحة الرابعة]

C) 1. Transportation in the phloem is an active process needs more **ATP** molecules. **Show where ATP** molecules are exist and **how** they are transferred through the phloem tissue.

2. The opposite graph illustrates a nerve impulse through a nerve fiber. **Show** :



a) The state of the nerve cell membrane during the period from **(b)** to **(c)** and the ions which inflow inside in this period.
b) The changes that occur during the period from **(c)** to **(d)**.
c) Concentration of **(+ve)** ions during the period from **(a)** to**(b)**.

Question Six:

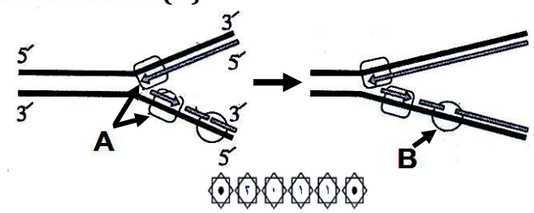
A) Choose from the column (B) what suits in column (A) and write the complete statements in your answer paper:

Column (A)	Column (B)
1. *Spirogyra* alga reproduces	- by sporogony.
2. Aphid insect reproduces	- by binary fission.
3. Star fish reproduces	- by budding.
4. Mushroom fungus reproduces	- by conjugation.
	- by parthenogenesis.
	- by regeneration.

B) Explain each of the following:
1. The sickle-cell anaemia diseased individual usually dies before maturity.
2. The lymphatic system is considered as the immune system.
3. Shivering the body during winter.
4. Shedding the leaves of some plants might be useful in excretion.
5. The pituitary gland has the ability to control the amount of urine.

C) 1. The opposite figure represents a piece of **DNA** molecule and a plasmid. **Show with a fully labelled diagram only** how to splice this piece of **DNA** into the plasmid.

2. The following figure represents one of the processes within the cell :
a) What is the name of this process?
b) Write what is indicated by letter **(A)**.
c) What is the function of **(B)**?



[انتهت الأسئلة]