المستوى الأول - جامعي البيولوجي - علم / كلية التربية ٢٠١٤

Mansoura University **Faculty of science** **Zoology Department** **Subject: Zoology** **Course(s):Principals of cell biology, histology and genetics (Z101)**		**Educational year: 2013-2014** **Programs: Chemistry- Zoology, Chemistry- Botany, Microbiology, Environmental science** **Date: 29/12/2013** **Time Allowed: 2 hours** **Full Mark: 60 Mark**

Part 1. Cytology: (20 Mark)

A-Make a labeled diagram for each of the following:- **(10 Marks)**

1- Mitochondria. 2- Plasma membrane.

3-Golgi apparatus 4-Nucleus

B- Choose the correct answer:- **(6 Marks)**

1-In ....., cell receptors on the cell membrane determine which substances to pass and which to be stopped.

a- Selective transport b- Sodium-Potassium pump c- Active transport.

2- .....connects the plasma membrane with the nuclear membrane.

a- Microtubules b- RER c- cytoplasmic matrix

3- In ....., the lysosomal membrane is ruptured and the released enzymes digest the cell itself

a- starvation b- Autophagy c- Autolysis

4- ..... helps maintain shape, support nerve cell extentions, and attach cells together.

a- Intermediate filaments b-Microfilaments. c- Microtubules

5- .....is a colloid protein solution in which the chromatin is suspended

a- cytosol b- Nuclear sap c-Nucleolus

6- .....membranes contains enzymes for a calcium pump in relation to muscular contraction and relaxation.

a- Lysosomes b- Golgi apparatus c- SER

C- Match each description below with the most appropriate organelle **(4 Marks)**

A)- Mitochondria B)- Lysosomes

C)- Both D)- Neither

i- membranous organelles.

ii- contain enzymes for ATP synthesis

iii- functionally related to the rough endoplasmic reticulum

iv- contain many hydrolytic enzymes

Part 2. Genetics: (20 Marks)

A- Mark correct (√) or wrong (X): (1/2 Mark each)

1) Nucleotides are attached to each other in two different strands through Hydrogen bonds. ( )
2) The end product of replication process is multiple copies of the same gene. ( )
3) Aminoacyl synthetases is the enzyme responsible for amino acid binding to rRNA. ( )
4) The main function of class I releasing factor is to recognize the stop codon and trigger the release of polypeptide chain. ( )
5) If DNA fragments are placed in an electric field at the same time they will travel from positive electrode to negative electrode. ( )
6) FISH karyotyping is used for detection of specific gene translocation. ( )
7) Down syndrome is an example of numerical disorder. ( )
8) Ampicillin is used in plasmid cloning to induce a discerning selection of the transfected clones( )
9) T-banding is a karyotyping technique used to visualize telomeres. ( )
10) Nucleoside structure consists of nitrogenous base attached to sugar-phosphate backbone. ( )
11) Heterochromatin is the less compact form of DNA that contains expressed genes. ( )
12) Spectral karyotyping is a technique used to quantify the number of DNA copies. ( )
13) Cri du chat is an example of Chromosomal structural aberration. ( )
14) Antibiotic resistance gene of plasmids acts as a selectable marker for the cloned vector. ( )
15) Protein quaternary structure is a packing of the secondary structures to give a protein's overall structure. ( )
16) Prokaryotes have three different types of RNA polymerase enzyme responsible for the transcriptions of different types of RNA such as miRNA and snRNA. ( )
17) The presence of poly-Adenyl sequence signal for splicing of introns sequence. ( )
18) P-site of rRNA is the site at which the unchargerd tRNA exits. ( )
19) 5'-----3' strand of DNA act as a template strand for the transcription process. ( )
20) The technique of DNA sequencing is used to separate different forms of Nucleic acids according to their molecular weight and shape. ( )

B-Choose the correct answer (1 mark each)

1) **.....structures of proteins are Interactions between the individual amino acids to create larger order structures of α-helices and β-sheets.**
a) Primary b) Secondary c) Tertiary

2) **.....temperature is the temperature at which two strands of the double helix are separated from each other by heating the solution above physiological temperature.**
a) Melting b) Denaturation c) Anneling

3) **The process of 5' capping of mRNA involves all of the following <u>except</u>**
a) Polyadenylation b) Addition of GMP c) Methylation of GMP

4) **.....is a type of banding at which Giemsa stains the euchromatin with dark colour and heterchromatic regions with bright colour.**
a) Q-banding b) R-banding c) C-banding

5) The stage of cell division at which the daughter chromosomes are split away from each other towards cell poles is…….

a) Anaphase b) Metaphase c) Prophase

6) ……. is the enzyme responsible for RNA splicing

a) RNA polymerase I b) Spliceosome c) RNA polymerase II

7) ……Is a phenomena stating that duplex DNA absorbs less ultraviolet light than do individual DNA chains

a) Hybridization b) Renaturation c) Hyperchromisity

8) …….. stain is used to visualize DNA samples during gel electrophoresis

a)Et Br b) H_2O_2 c) Trypan blue

9) Polymerase chain reaction technique requires the use of ……. Primers.

a) two b) three c) four

10) ……. Sequence is the one that identifies thetranslation starting codon.

a)Watson-crick b) Oswald c) Kozak

Part 3. Histology: (20 Mark)

A) Write short notes on:

1- The contractile unit of the muscular tissue. **(3 Marks)**
2- Types of nerve cells. **(3 Marks)**
3- Draw a diagram showing the different types of covering epithelium. **(4 Marks)**

B) Complete the following sentences; (5 Marks)

1- The glandular epithelium is divided according to mode of secretion into ……., ……. and …….
2- The taste bud is formed of …….. and …… cells.
3- Mast cells have large granules that contain ……. and …… .
4- A collagen fiber of 80 µm can be stretched to a maximum size of …….. µm.
5- Fibrous astrocytes are found in …….. while protoplasmic astrocytes are found in ……..

C) Write (√) or (X) in front of the following sentences: (5 Marks)

1- The muscular tissue is ectodermal in origin.
2- The epithelial tissue has rich blood supplement.
3- Loose connective tissue contains collagen and elastic fibers.
4- Dendrites conduct the nerve impulse away from the cell body.
5- Blood represent 7% of human's body weight.

Best wishes,

Dr. Doaa A. Sakr, Dr. Mohamed E. Abdraboh, Dr. Elsayed Elbaz

المستوى الأول - لغة انجليزية

Mansoura University
ESP Center
Time: 2 hrs.

Faculty of Science
First Year
January 2014

English Language Exam

Section One: Reading Comprehension: (30 Marks)

Read the following passage and then answer the questions that follow:

Vaccines are prepared from harmful viruses or bacteria and administered to patients to provide immunity to specific diseases. The various types of vaccines are classified according to the method by which they are derived.

The most basic class of vaccines actually contains disease-causing microorganisms that have been killed with a solution containing formaldehyde. In this type of vaccine, the microorganisms are dead and therefore cannot cause disease; however, the antigens found in and on the microorganisms can still stimulate the formation of antibodies. Examples of this type of vaccine are the ones that fight influenza, typhoid fever, and cholera.

A second type of vaccine contains the toxin produced by the microorganisms rather than the microorganisms themselves. This type of vaccine is prepared when the microorganisms itself does little damage but the toxin within the microorganisms is extremely harmful. For example, the bacteria that cause diphtheria can thrive in the throat without much harm, but when toxins are released from the bacteria, muscles can become paralyzed and death can ensue.

A final type of vaccine contains living microorganisms that have been rendered harmless. With this type of vaccine, a large number of antigen molecules are produced and the immunity that results is generally longer lasting than the immunity from other types of vaccines. The Sabin oral antipolio vaccine and the BCG vaccine against tuberculosis are examples of this type of vaccine.

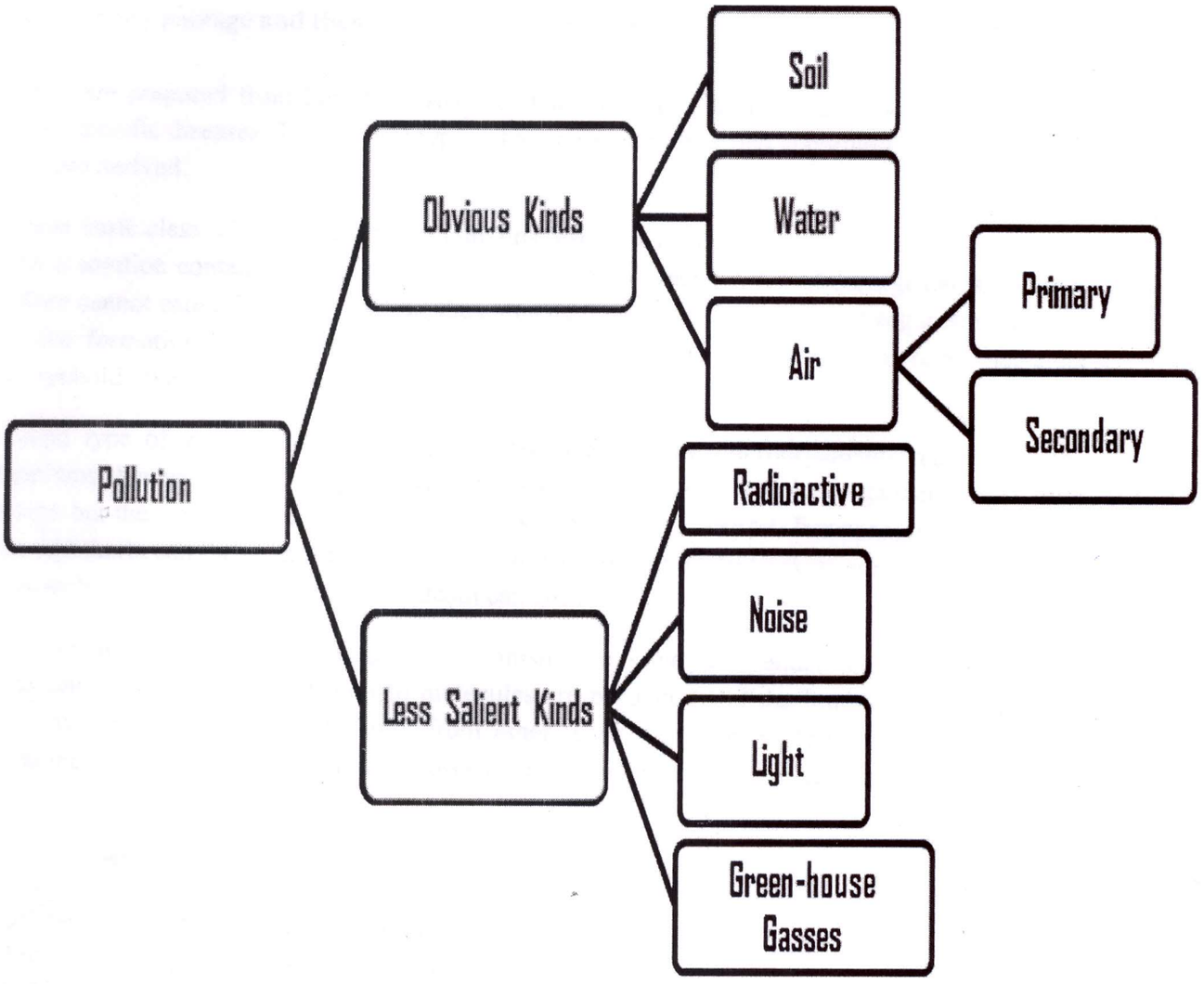
1. How are vaccines prepared?
2. What is the importance of vaccines?
3. What are the diseases that vaccines can cure?
4. What does the basic class of vaccines contain?
5. Suggest a title for the passage.

II-Read these sentences and say whether they are true or false and justify your answer:

1-Vaccines cannot provide immunity to diseases ( )
2-There are four types of vaccines presented in the passage ( )
3-Vaccines contain disease causing microorganisms ( )
4-Vaccines are derived in different ways ( )
5-Cholera is an example of vaccine that contains living microorganisms ( )

Section Four: Writing Skills: (20 Marks)

Look at the following diagrammatic classification; write a paragraph on the different kinds of pollution:



GOOD LUCK

المستوى : الأول المادة : جبر وهندسة كود المادة : (ر111)	كلية العلوم – قسم الرياضيات	دور: يناير 2014 الزمن : ساعتان التاريخ : 2014/1/15

البرامج: كيمياء-الكيمياء الحيوية- كيمياء وحيوان- ميكروبيولوجى- كيمياء ونبات-علوم بيئة- جيولوجيا- جيوفيزيقا

أجب عن الأسئلة الآتية: **الدرجة الكلية :** 80 درجة

السؤال الأول:

أ –استخدم مبدأ الاستنتاج الرياضي فى اثبات أنه لاى عدد طبيعى $n \in N$ فان:

(n^2+n+2) يقبل القسمة على 2. *(10 درجات)*

ب – حلل الكسر $\frac{x^3}{(x-2)(x^2-4)}$ إلى كسوره الجزيئية . *(10 درجات)*

السؤال الثاني:

أ – عين معادلة القطع المكافىء الذى رأسه (3 , 1-) و بؤرته (2 , 1-) ثم اوجد طول الوتر البؤرى العمودى وكذلك معادلتى المحور والدليل مع الرسم. *(12 درجة)*

ب - ضع العدد المركب $z=\frac{1+7i}{(2-i)^2}$ فى الصورة المثلثية ثم اوجد $z^{\frac{4}{3}}$. *(8 درجات)*

السؤال الثالث:

أ- باستخدام طريقة كرامر اوجد حل المعادلات الآتية:

$x-y-2z+1=0$, $5x+4y+2z-4=0$, $2x+3y+z+2=0$ *(10 درجات)*

ب- ارسم القطع $x^2+4y^2+16y+6x+21=0$

موضحا جميع المعلومات الخاصة به. *(10 درجات)*

السؤال الرابع :

أ- اوجد نقطة تقاطع المستقيمين $4x-y-3=0$, $2x-y-1=0$ والزاوية بينهما

ثم اوجد معادلة المستقيم الذي يمر بنقطة التقاطع ويوازى المستقيم $x-2y+5=0$

(10 درجات)

ب – باستخدام نظرية ديموافر اوجد مفكوك $\sin 4\theta$, $\cos 4\theta$ بدلالة قوى $\sin\theta$, $\cos\theta$ *(10 درجات)*

مع أطيب التمنيات بالتوفيق: اسرة التدريس

Mansoura University
Faculty of Science
Botany Department
El-Mansoura, Egypt

جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Educational Year: First Level | **Final Examination in Botany** | **Subject: Botany**

Course: Plant Systematic | **First Term: Jan. 2014** | **Program: Microbiology, Chemistry and Botany, Chemistry and Zoology, Environmental Sciences, Biochemistry and Geology.**

Code: B 101 **Time: 2 hours** **Date: 12/1/2014** **Full Mark: 60** **Question Mark:15**

Answer the following questions: (الإمتحان في صفحتين)

Q1 A- Complete the following:

1- Plants with gametophyte as dominant phase of life cycle are grouped under.....
2- In filicophyta, the female organ is known as.....
3- Developed seed bearing structures include cones and .....

B- Choose the correct answer:

1- Dicot plants are characterized by three of the following except:

a. Pollen grain has only one opening
b. Seed is composed of 2 cotyledons
c. Vascular bundles are arranged in a ring
d. Have tap roots

2- Gymnosperms reproduce mainly by:

a. Spores
b. Enclosed seeds
c. Exposed seeds
d. a+b

3- In primitive plants, spores are produced inside:

a. Cones
b. Somatic cells
c. Archegonia
d. Capsules

C- Answer the following:

1- Mention only one diagnostic character of bryophytes, filicophytes, gymnosperms and angiosperms.
2- Moist habitats are important for the reproduction of moss plants. Explain.

Q2 A-Explain *Chlamydomonas* life history with the help of labeled diagrams.

B- Complete the following:

1) The female sex organ in red algae is called.....while in brown algae is called.....
2) The diatom cell wall is called.....and is composed of.....but in green algae their cell wall is composed of.....
3) The reserve food material in phaeophyceae is .....while in chlorophyceae is.....and in rhodophyceae is.....
4) .....developed the Binomial System of nomenclature of organisms, the first name is called.....while the second name is called.....

C- In a Table, compare between the five kingdoms in Robert Whittaker's system of classification of living organisms.

فضلا تابع التالي

Q3 A- Complete each of the following sentences with suitable word(s):

1) *Dermatophilius* is characterized by.....where, other strains that can fix nitrogen are belonging to family.....
2) Cell wall chemistry is very important tool for actinobacterial classification as.....
3) Cell walls of fungi are composed primarily of.....

B- Choose the best answer:

1) Zygomycete hyphae are unique in that

a-have dolipore septa b-are monokaryotic c-are dikaryotic d-lack septa

2) When hyphae of basidiomycetes fuse in sexual reproduction, the resulting cell can best be called a:

a-Monokaryon b-Dikaryon c-Homokaryon d-None of these

3) Which of the following is not in the phylum actinobacteria:

a-*Salmonella* b-*Streptomyces* c-*Nocardia* d-*Frankia*

4) Most endomycorrhizae are:

a-Ascomycetes b-Zygomycetes c-Actinomycetes d-Oomycetes

C- With the help of labeled diagram, discuss the life cycle of sac fungi?

Q4 A- True or False and correct the false one(s):

1) Presence of photosynthetic lamellae is a common character found in Cyanobacteria and Eubacteria ( )
2) Bacteria without flagella are known as Lophotrichous ( )
3) Bacterial plasmids are a self-replicating pieces of DNA ( )
4) Capsid is the outer layer of virus structure which derived from the host cell ( )

B- Choose the best answer:

1- During sexual reproduction in bacteria, which of the following occurs?

(A) DNA is taken across the bacterial membrane (B) Viruses transfer genes from one bacterium to another
(C) DNA from one bacterium is transferred through a tube (pilus) to another (D) The bacterium divides by fission or budding

2- The heat-resistant structure in bacteria is the

(A) Flagella (B) Endospore (C) Anaerobes (D) Fimbriae

3- .....bacteria save farmers millions of dollars every year in fertilizer costs.

(A) Pathogenic (B) Aerobic (C) Nitrogen-Fixing (D) Methanogens

4- Which of the following is not present in Bacteria?

(A) RNA (D) Mitochondria (B) Cell Wall (C) Cytoplasm

Examiners:

Prof. Dr. Salah M. ElDohlob **Dr. Ahmed M. El-Shobaky**