
	BOTANY DEPARTMENT - TANTA UNIVERSITY - FACULTY OF SCIENCE		
	EXAMINATION FOR SENIORS (FOURTH YEAR) SPECIAL MICROBIOLOGY STUDENTS		
COURSE TITLE:	GENETIC ENGINEERING ANALYSIS	COURSE CODE: BO4222	
29 DEC., 2020	TERM: SUMMER	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

ANSWER THE FOLLOWING QUESTIONS

1. There are different types of cuts of Type II restriction enzymes Explain. **(18 Marks)**

2. A virus isolated from unicorns was digested with the restriction endonucleases *Bam*HI and *Eco*RI and each digest was subjected to electrophoresis. Undigested virus was also included on the gel. Use these results to answer the questions below: untreated virus: 10 kb, *Bam*HI: 5 kb, 5 kb, *Eco*RI: 5.5 kb, 3 kb, 1.5 kb and *Bam*HI + *Eco*RI: 3.5 kb, 3 kb, 2 kb, 1.5 kb.
 - a. Is the virus genome linear or circular? Based on what evidence(s)? **(15 Marks)**
 - b. Draw a map of the virus genome showing the positions of the *Bam*HI and *Eco*RI sites. **(15 Marks)**

3. Compare between the following: **(30 Marks: 10 Marks each)**
 - a. Cloning using one and two restriction enzymes.
 - b. pUC19 and pBR322 plasmids.
 - c. Transformation using electroporation and gene gun.

4. Write short notes on the following: **(27 Marks: 9 Marks each)**
 - a. α -complementation.
 - b. Gene shuffling between plasmids.
 - c. cDNA libraries.

With all my Best Wishes

EXAMINERS	PROF. DR. REDA GAAFAR	PROF. DR. ADEL ELSHANSHOURY
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BOTANY DEPARTMENT - TANTA UNIVERSITY - FACULTY OF SCIENCE

Examination / Fourth Level /Biophysics Students

Course Title:

Bioinformatics

Course Code: BP4284



29 Dec., 2020

Term: **Second**

Total assessment marks: **100**

Time Allowed: **2 hours**

ANSWER THE FOLLOWING QUESTIONS

1. Table below shows a distance matrix of viral isolates (A, B, C and D), based on multiple sequences alignment:

	A	B	C
B	0.40	--	
C	0.35	0.45	--
D	0.60	0.70	0.55

- a. Construct the phylogenetic tree based on UPGMA method, numerate the steps. **(20 Marks)**
- b. Explain what UPGMA stands for? **(5 Marks)**
- c. Give **one** important difference between UPGMA trees and Neighbor-Joining trees. **(5 Marks)**
2. There are two types of Gap penalties used in scoring system in bioinformatics.
- a. What are the two types of gaps? **(5 Marks)**
- b. What is Affine gap penalty? **(5 Marks)**
- c. Explain how Affine gap can be calculated. **(5 Marks)**
3. Compare between the following:-
- a. Nucleotide databases. **(10 Marks)**
- b. Alignment algorithms (local and global). **(5 Marks)**
- c. Orthologs and Paralogs. **(5 Marks)**
- d. Web-based and command-line tools. **(5 Marks)**

Turn Over the Page

4. The figure below shows a dynamic programming scoring matrix for two sequences:

	0	T	A	C	T	A	A
0	0	-2	-4	-6	-8	-10	-12
T	-2	1	-1	-3	-5	-7	-9
A	-4	-1	2	0	-2	-4	-6
A	-6	-3	0	1	-1	-1	-3
T	-8	-5	-2	-1	2	0	-2
A	-10	-7	-4	-3	0	3	1

2

- A. Determine the scoring scheme for match, mismatch and gap used to construct this matrix. **(6 Marks)**
- B. Explain what the arrows in the figure indicate. **(5 Marks)**
- C. Is this a global or local alignment? Why? **(6 Marks)**
- D. Explain how you would proceed to find the optimal alignment. **(8 Marks)**
- D. How many optimal alignments could be obtained? Explain. **(5 Marks)**

With my best wishes

EXAMINERS	PROF. DR. REDA GAAFAR	
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TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF BOTANY

EXAMINATION FOR SENIORS (FOURTH YEAR) BOTANY SPECIAL STUDENTS

COURSE TITLE:	Biotechnology and Plant Breeding		COURSE CODE: BO4204	
DATE:	29-12-2020	TERM: SECOND	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

ANSWER THE FOLLOWING QUESTIONS

1- Complete the following sentences: (35 marks)

- 1- The plant breeding is.....
- 2- The consideration for selecting breeding objectives.....,.....,.....
- 3- Advantage of plant breeding:.....
- 4- Shull inwho the first one introduced the term of
- 5- Plant breeding have three different operations
- 6- The types of variation among plants.....and.....
- 7- Plant breeding isand.....to change the plant heredity for human health.
- 8- The types of plant breeding approachesand.....
- 9- The first produced the artificial hybrid..... In..... by using with
- 10- Activities in plant breeding
- 11- Linnaeus - Publishedfor binomial nomenclature of plant taxonomy in
- 12- In 1801 given through inheritance of acquired characters .
- 13- Emasculation is
- 14- Dr Venkatraman have Nobilization in Plant.

2- Discuss in the following sentences in detail (45 marks).

- 1- Plant breeding objectives.
- 2- Future Prospects of Plant Breeding.
- 3- Plant breeding has several undesirable effects.


3- Answer the following questions true or false with the reason in two cases (40 marks)

- 1- Stadler in 1982 - Described the mutagenic effects of X-rays in maize.
- 2- The main problem to plant breeder, increasing population.
- 3- Biffen on his inheritance studies to disease resistance; found that stripe rust resistance was due to more genes in 1903
- 4- Plant breeding has only desirable effects on crop plants.
- 5- 1950 Muller Described the Ac-Ds system of transposable elements in wheat.
- 6- Hybridization is the secondary technique for creating variability in flowering species.
- 7- Only seeds are stored at a germplasm bank.
- 8- Breeding has not ability to tackles the problems of energy production

4- Clarify the following point (45 marks)

- 1- The Challenges before Plant Breeder.
- 2- plant breeding is an art science and a technology
- 3- Plant Breeding have many important role.

Marwa Hamouda

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF BOTANY		
	EXAMINATION FOR (FOURTH YEAR) STUDENTS OF SPECIAL MICROBIOLOGY		
COURSE TITLE:	Economic Uses of Algae		COURSE CODE: BO4210
DATE:	31 DECEMBER, 2020	TERM: SECOND	TOTAL ASSESSMENT MARKS: 100
			TIME ALLOWED: 2 HOURS

Question One: Complete the following sentences:..... (30 marks)

- 1- Alginates are composed of and
- 2- Functions of algal crust are,.....and.....
(3 points only).
- 3- Uses of kelps are.....and.....
(3 points only).
- 4- Seaweed sources of carrageenans are,and
(3 points only).
- 5- General attributes of microalgae used in aquaculture.....
(4 points only).
- 6- Applications of agar are.....and.....
(3 points only).

Question two: Explain the following:..... (20 marks)

- 1- Use of blue green algae as biofertilizers
- 2- Define : Transesterification

Question three:(20 marks)


- 1- Define: Diatomaceous earth.
- 2- Mention therapeutic applications of *Spirulina*

Question four: Write short notes on the following:..... (30 marks)

- 1- Vermifuge activity of algae.
- 2- Role of microalgae in aquaculture.
- 3- Advantages of algal biodiesel over other biodiesel and petroleum diesel.

With all the best



Examiners:	
Ass. Prof. Saly F. Gheda	Dr. Rania A. El-Shenody

	Tanta University - Faculty of Science - Botany Department			
	EXAMINATION FOR JUNIOR (4th YEAR SPECIAL BOTANY)			
Course Title	الكتابة العلمية والعروض		Course Code: BO 4113	
Date	Jan 2021	Term: First	Total Assessment: 100 Marks	Time Allowed: 2 Hours

أجب على كل من الأسئلة التالية (المجموع الكلي ١٠٠ درجة)

- ١- أذكر أهم أنواع الكتابة العلمية (٧ درجات).
- ٢- ما المقصود بالكلمات المفتاحية وما الهدف منها (٧ درجات).
- ٣- أذكر ثلاثة من أهم مميزات العنوان الجيد (٧ درجات).
- ٤- أذكر ثلاثة من أهم مميزات الملخص الجيد (٧ درجات).
- ٥- ما هو الهدف الأساسي من مقدمة أي نوع من الكتابة العلمية (٧ درجات).
- ٦- أذكر ثلاثة من أهم ما يجب مراعاته عند الشروع في كتابة النتائج (٧ درجات).
- ٧- وضح كيف تعد المناقشة أصعب الأجزاء في الكتابة العلمية (٧ درجات).
- ٨- ماهي أشهر الطرائق المستخدمة في كتابة المراجع (٧ درجات).
- ٩- ما الذي يجب أن تحتويه كلمة الشكر (٦ درجات).
- ١٠- متى يجب ومتى لا يجب كتابة تفاصيل الطرائق المستخدمة في إعداد البحث العلمي (٧ درجات).
- ١١- متى يكون عرض النتيجة كشكل أفضل من عرضها كجدول (٧ درجات).
- ١٢- أعط مثال للأخطاء الشائعة في الجداول (٦ درجات).
- ١٣- أذكر ثلاثة مما يجب مراعاته عند اختيار الصور لوضعها في البحث أو الكتاب العلمي (٦ درجات).
- ١٤- ما المقصود بمعجم الاصطلاحات، ومتى يجب كتابته (٦ درجات).
- ١٥- ترتيب ورقة الخطأ والتصويب بعدة طرق، أذكر إحداها (٦ درجات).

Examiners: Dr. Kamal Shaltout & Dr. Shima Abd El-Hamid

	Tanta University, Faculty of Science, Department of Botany			
	Final Examination for (Fourth Year) Students of Botany/Chemistry			
	COURSE TITLE:		COURSE	
	Plants and Nitrogen (Nitrogen metabolism)		CODE:BO4118	
DATE: 20 FEBREWARY, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2HOURS	

I- **Define each of the following:** (25 Degree, 12.5 for each)

- a- Volatilization of ammonia.
- b- Calcicoles.

II- **Write on the following:** (45 Degree, 15 for each)



- a- Factors affecting the rate of nitrification process.
- b- Biosynthesis of amino acids by transamination.
- c- Disadvantages of ammonium and nitrate nutrition.

III- **Discuss the following:** (30 Degree, 15 for each)

- a- The importance of the charges on the amino acid molecules.
- b- The glutamate dehydrogenase pathway in ammonia assimilation.

With best wishes

Examiner: Prof. Dr. Afaf Atef Nessim

	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF BOTANY			
	FINAL EXAM (JANUARY 2021) FOR THE FORTH YEARS TUDENTS (SPECIAL BOTANY BO4103 & CHEMISTRY/BOTANY BO4131)			
	COURSE TITLE	GENETIC ENGINEERING	COURSE CODE	
DATE:	JAN. 9, 2021	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS	

Answer the following questions:

- 1) Write on only three the followings (30 marks)
- Explain the use of binary vectors for gene delivery.
 - Explain the functions of *Vir* genes.
 - Explain different types of promoters.
 - Explain the problems encountered with gene expression in prokaryotes.

- 2) Compare between only four of the followings: (20 marks)
- Insertion and replacement cloning
 - Prokaryotic and Eukaryotic expression vectors
 - Selectable markers genes and reporter genes with examples.
 - Electroporation and Microinjection
 - Cosmids and plasmids.



- 3) Give reasons for: (20 marks)
- Agrobacterium* can not infect monocotyledous plants.
 - Genomic clones cannot be expressed in prokaryotic expression vectors.
 - Use of Gold metal and Helium gas in Biolistic Gun.
 - Chemical methods are not commonly used for gene transfer.

- 4) Complete the followings: (10 marks)
- Features of cloning plasmids are:
 - Functions of Opine genes are:

- 5) With labeled drawings only illustrate the followings: (20 marks)
- Ti*-plasmid.
 - Diagrammatic representation of the Biolistic Gun.

Best wishes

Examiner committee:
Prof. Dr. Ashraf Haider
Prof. Dr. Hanan Ibraheem

	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF BOTANY			
	FINAL EXAM (JANUARY 2021) FOR THE FORTH YEARS TUDENTS (SPECIAL BOTANY BO4103& CHEMISTRY/BOTANY BO4131)			
	COURSETITLE	GENETIC ENGINEERING	COURSE CODE	
DATE:	JAN. 9, 2021	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS	

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-
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5) With labeled drawings only illustrate the followings: (20 marks)


- a) *Ti*-plasmid.
- b) Diagrammatic representation of the Biolistic Gun.

Best wishes

Examiner committee:



Prof. Dr. Ashraf Haider

Prof. Dr. Hanan Ibraheem

	Tanta University - Faculty of Science - Botany Department			
	Examination for Junior (4th Year Botany + Micro)			
	Course Title	التنوع الحيوى وصون الحياة الفطرية		Course Code: BO 4105
Date	Jan 2021	Term: First	Total Assessment: 100 Marks (BO 4105)	Time Allowed: 2 Hr

- ١- قارن بين الفطرة الأولى والفطرة الثانية؟
- ٢- ماهو اكبر مسبب لانقراض الأنواع؟
- ٣- ماهى ميررات صون التنوع الحيوى؟
- ٤- أيها أفضل: المحميات المفردة كبيرة الحجم أم المحميات العديدة صغيرة الحجم، ولماذا؟
- ٥- وضح كيف أن بعض الأنواع تشارك أكثر من غيرها فى التنوع الحيوى لمنطقة ما؟
- ٦- ما الفرق بين إسترجاع وإعادة تأهيل المجتمعات النباتية؟
- ٧- وضح باختصار المقصود بمقياس التصنع كأحد مقاييس الحالة الفطرية للبيئات الطبيعية؟
- ٨- ماهو المقصود بمراكز التنوع النباتى، وكيف يتم اختيارها طبقا للإتحاد الدولى لصون الطبيعة (IUCN)؟
- ٩- ما المقصود بمحمية المحيط الحيوى؟
- ١٠- ماالفرق بين القيمة التعليمية والقيمة العلمية للمحميات الطبيعية؟
- ١١- ما المقصود بخاصية القابلية للإحلال أو الإيجاد؟
- ١٢- قارن بين خاصية التفرد وخاصية الندرة؟
- ١٣- ماهى ظاهرة الدفينة، وما أهم الأسباب المؤدية إليها؟
- ١٤- ما المقصود بالهشاشة البيئية؟
- ١٥- عرف التنوع الحيوى؟
- ١٦- قارن بين محمية المعزل الطبيعى و محمية الموارد الطبيعية؟

مع تمنياتنا لكم بالتوفيق
المتحن: أ.د. كمال شلتوت

	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF BOTANY			
	FINAL EXAM (FIRST TERM, JAN. 2021) FOR THE FOURTH YEAR (BOTANY CHEMISTRY)			
	COURSE TITLE	PLANT MOLECULAR SYSTEMATICS	COURSE CODE: BO4105	
	JAN. 2021	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HRS	

Please answer all the following questions:

1) Compare between the following: (30 marks)

- a) RFLP and SSR markers
- b) Nuclear and plastid genomes

2) Define the following scientific terms: (20 marks)

- a) Gene pool
- b) Plant molecular phylogenetics
- c) DNA structure

3) Complete the following: (20 marks)

- a) Purines include the nucleotide bases and
- b) Plant genome is defined as
- c) A protein is composed of a string of
- d)is a mathematical structure used to model the actual evolutionary history of a group of sequences or organisms.



4) Write briefly on the following: (30 marks)

- a) Polymerase chain reaction
- b) DNA function
- c) RAPD markers

Best wishes,

Examiner:

Dr. Mohamed El-Esawi

	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF BOTANY			
	FINAL EXAM (FIRST TERM, JAN. 2021) FOR THE FOURTH YEAR (BOTANY SPECIAL)			
	COURSE TITLE	PLANT MOLECULAR SYSTEMATICS	COURSE CODE: BO4107	
	JAN. 2021	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HRS	

Please answer all the following questions:

1) Complete the following: (20 marks)

- a) Gene pool is defined as
- b) All of the genes within a cell are called
- c) Pyrimidines include the nucleotide bases and
- d) DNA code is read and converted to protein in two steps called and

2) Define the following scientific terms: (20 marks)

- a) Plant molecular systematics
- b) Phylogenetic tree
- c) DNA function

3) Compare between the following: (30 marks)

- a) RAPD and RFLP markers
- b) Plastid and mitochondrial genomes



4) Write briefly on the following: (30 marks)

- a) Nuclear genome
- b) SSR markers
- c) Polymerase chain reaction (PCR)
- d) DNA code

Best wishes,

Examiner:

Dr. Mohamed El-Esawi

 1969	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF BOTANY			
	FINAL EXAM (FIRST TERM, JAN. 2021) FOR THE FOURTH YEAR (BOTANY CHEMISTRY)			
	COURSE TITLE	MUTATIONS AND GENOME CHANGES		COURSE CODE: BO4131
	JAN. 2021	TOTAL ASSESSMENT MARKS: 100		TIME ALLOWED: 2 HRS

Please answer all the following questions:

1) Complete the following: (30 marks)

- a) Metacentric centromere is
- b) The function of centromere is
- c) Chromonemata is
- d) Telomere is defined as

2) Define the following scientific terms: (20 marks)

- a) Function of chromosomes
- b) Satellites (SAT-chromosome)
- c) Frameshift mutation

3) Compare between the following: (20 marks)

- a) Telocentric and acrocentric centromeres
- b) Missense mutation and nonsense mutation

4) Write briefly on the following: (30 marks)

- a) Inversion and deletion
- b) Chromosome structure
- c) Base excision repair

Best wishes,

Examiner:

Dr. Mohamed El-Esawi



TANTA UNIVERSITY
FACULTY OF SCIENCE
BOTANY DEPARTMENT



Final First Exam for 4th Level (Botany)

Course Title:	Environmental Issue	Course Code: Bo 4111
23, Jan. 2021	Term: First	Total assessment marks: 100
		Time Allowed: 2hour

السؤال الأول: أكمل العبارات التالية (٢٠ درجة)

- ١- تمتاز الطبقة السفلية من الغلاف الجوي ب..... (٤ درجات)
- ٢- يتم تنقية مياه الشرب باستخدام..... (٤ درجات)
- ٣- الطاقة الغير متجددة الأكثر ضررا للبيئة هي..... (٤ درجات)
- ٤- تعرف الغازات الدفيئة بأنها..... (٤ درجات)
- ٥- النظام البيئي يتكون من..... (٤ درجات)

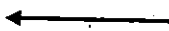
السؤال الثاني: ضع علامة (✓) أو (x) أمام العبارات التالية، مع تصويب الخطأ (٢٠ درجة)

- ١- يتميز البحر الأبيض المتوسط بتنوع الأحياء البحرية وأهمها الشعاب المرجانية () (٤ درجات)
- ٢- من أسباب التصحر البشرية الرعي الجائر والاحتطاب () (٤ درجات)
- ٣- الطاقة التي يطلق عليها طاقة الفقراء هي طاقة الرياح () (٤ درجات)
- ٤- تؤدي زيادة معدل اضافة الشبة لتنقية المياه إلى زيادة تركيز الكبريت في المياه () (٤ درجات)
- ٣- تخزن الطاقة في صورة كهربية في مغناطيسات حلقيه توضع تحت الأرض تحت تبريد () (٤ درجات)

السؤال الثالث: تخير الإجابة الصحيحة (٣٠ درجة)

- ١- طاقة الهيدروجين تعرف بالطاقة (٦ درجات)
 - أ- طاقة الفقراء
 - ب- الطاقة الوفيرة
 - ج- الطاقة الحيوية
 - د- الطاقة الغير متجددة
- ٢- من أسباب زيادة واتساع ثقب الأوزون (٦ درجات)
 - أ- الفريون
 - ب- الأوكاسيد النيتروجينية
 - ج- السحب الركامية
 - د- كل ماسبق
- ٤- من الغازات الدفيئة الغير طبيعية (٦ درجات)
 - أ- الفريون
 - ب- بخار الماء
 - ج- ثاني أكسيد الكربون
 - د- الأوكسجين
- ٥- من أنواع المياه (٦ درجات)
 - أ- مياه مالحة
 - ب- المياه العذبة
 - ج- المياه الحوفية
 - د- كل ماسبق

أنظر بقية الأسئلة خلف الورقة



السؤال الرابع: أجب على إحدى المجموعتين (٣٠ درجة)

المجموعة الأولى: ناقش كلا من ١- مشكلة التصحر مع اقتراح حلول للمشكلة. (١٥ درجة)

٢- طرق تخزين الطاقة للحفاظ عليها وعدم إهدارها (١٥ درجة)

المجموعة الثانية: ١- مشكلة تلوث بيئة العمل مع اقتراح حلول للمشكلة. (١٥ درجة)

٢- سلبيات الطاقة النووية (١٥ درجة)

تمنيتي بالتوفيق والنجاح

لجنة الممتحنين والمصححين: أ.د. داليا عبد العظيم أحمد - أ.د. عاطف أبوشادي - أ.د. أنور البدرى - أ.د. نسمة الزواوي


TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF BOTANY				
EXAMINATION FOR JUNIOR (4TH YEAR MICROBIOLOGY)				
	COURSE TITLE:	Physiology of Algae		COURSE CODE: BO4123
DATE:	JANUARY, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME: 2 HOURS

1 - Write short account on the following:

- A) Role of carotenoid in algae**
- B) Role of Magnesium, Nitrogen and silicon in algae growth**
- C) Different kinds of algae nutrition**
- D) Differences between glycolate pathway in algae and higher plants**

2- Write short notes on the following:

- A) Advantages of continuous culture over batch culture**
 - B) Plastid structure and thylakoids arrangements in Chromophyta**
 - C) Reasons of entering algae to decline phase**
 - D) Indices of growth of algae**
-

	Tanta University - Faculty of Science - Botany Department			
	Examination for Junior (4th Year Chem - Micro)			
Course Title	التنوع الحيوى وصون الحياة الفطرية		Course Code: BO 4123	
Date	Jan 2021	Term: First	Total Assessment: 50 Marks	Time Allowed: 2 Hr

درجتان ونصف لكل نقطة

- ١- ما المقصود بمحمية المحيط الحيوى؟
 - ٢- قارن بين القيمة التعليمية والقيمة العلمية للمحميات الطبيعية؟
 - ٣- ما المقصود بخاصية القابلية للإحلال أو الإيجاد؟
 - ٤- قارن بين خاصية التفرد وخاصية الندرة؟
 - ٥- عرف ظاهرة الدفينة، وما أهم الأسباب المؤدية إليها؟
 - ٦- ما المقصود بالهشاشة البيئية؟
 - ٧- عرف التنوع الحيوى؟
 - ٨- ما الفرق بين محمية المعزل الطبيعى و محمية الموارد الطبيعية؟
 - ٩- قارن بين الندرة الطبيعية والندرة المكتسبة؟
 - ١٠- أيها أفضل: المحميات المفردة كبيرة الحجم أم المحميات العديدة صغيرة الحجم، ولماذا؟
 - ١١- قارن بين الفطرة الأولى والفطرة الثانية؟
 - ١٢- ما هو اكبر مسبب لانقراض الأنواع؟
 - ١٣- ما هو المقصود بمراكز التنوع النباتى، وكيف يتم اختيارها طبقا للإتحاد الدولى لصون الطبيعة (IUCN)؟
 - ١٤- ما هي مبررات صون التنوع الحيوى؟
 - ١٥- وضح باختصار المقصود بمقياس التصنع كأحد مقاييس الحالة الفطرية للبيئات الطبيعية؟
 - ١٦- وضح كيف أن بعض الأنواع تشارك أكثر من غيرها فى التنوع الحيوى لمنطقة ما؟
- مع تمنياتنا لكم بالتوفيق
- الممتحن: أ.د. كمال شلتوت



TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF BOTANY

EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF BIOLOGY-SPECIAL BOTANY

COURSE TITLE:	BIOGENETICS	COURSE CODE:	BO4101				
DATE:	27-1-2021	TERM:	FIRST	TOTAL ASSESSMENT MARKS:	100	TIME ALLOWED:	2H

Answer the following questions

Question 1. Choose the right answer (10 Marks; 2 each):

1. Number of $FADH_2$ produced in citric acid cycle is: 2, 3, 1, 7
2. Enthalpy is defined as: total energy, usable energy, unusable energy, free energy
3. NADH is oxidized in mitochondrial: cytosol, inner, outer, inter
4. Number of carbon atoms of oxaloacetate is: 5, 4, 2, 1
5. Number of ATP consumed in investing reactions of glycolysis is: 4, 1, 2, 3

Question 2. Compare between (15 Marks; 5 each):

1. Exergonic and endergonic reactions
2. NADH-Q reductase and succinate dehydrogenase
3. Role of mitochondria in lipid metabolism and ATP synthase in glucose metabolism

Question 3. (10 Marks; 5 each):

1. Does cellular respiration produce a fixed number of ATP molecules? Why?
2. Calculate the energy produced by the oxidation of stearic acid?

Question 4. Complete the following statements (35 Marks; 2 each):



1. In glycolysis, conversion of glucose to glucose-6-p requires an enzyme called.....
2. Each turn of fatty acid oxidation reduces its length by carbon atoms
3. Butyryl-ACP + malonyl-ACP produces and
4. Fatty acyl CO_A synthase is present in organelles called and this enzyme converts into which is the initial substrate for a process called
5. Pyruvate is imported into mitochondria and carries a reaction called ... yielding
6. In the electron transport chain, structure of ubiquinone Q is
7. The oleosome is stabilized by specific proteins called function to
8. In the electron transport chain, role of cytochrome c is
9. Oxidation of NADH yields energy enough to synthesize about ... molecules of ATP
10. In glycolysis, phosphofructokinase catalysis conversion of to

Question 5. Write short notes on (30 Marks; 5 each):

1. Biosynthesis of fatty acids in plants
2. Citric acid cycle
3. Proton motive force across inner mitochondrial membrane
4. The relationship between enthalpy and entropy
5. Glyoxalate cycle
6. β -oxidation

Best Wishes

Prof. Dr. Fatma El-Shintinawy

	Tanta University, Faculty of Science, Department of Botany			
	Final Examination for (4th Year) Students of Microbiology			
	COURSE TITLE:	<u>Microbial genetics</u>	COURSE CODE:	
DATE: 24/3/2021	February: 2021	TOTAL ASSESSMENT MARKS: 100	TERM: First	Time allowed: Two hours

Answer the following questions:

Question1: The directional flow of information from DNA → RNA → protein is known as the central dogma of molecular biology. (30 marks)

- Mention the name of the process of going from DNA to RNA.
- Define each of the following: Anticodon- Codon.
- Name the four major types of RNA.
- Compare between each of the following: Nucleotides and Nucleosides – Antisense codon and Sense codon.
- Write briefly on structure and function of tRNA.
- What do you know about the 64 codons in genetic code table?

Question2: Mutation can affect anywhere from a single DNA building block (base pair) to a large segment of a chromosome. (25 marks)

- Define De-novo mutation.
- What are the types of mutation according to individual survival?
- Tay-Sachs is a genetic disorder. "Prove this statement"
- Compare between autosomal recessive and dominant disorders.
- Mention the difference of mutation between down syndrome and cat's cry syndrome.

Question3: Different kinds of mutation. (25 marks)

- Write the complementary mRNA strand and translate the amino acid sequence that will be produced from the normal and mutated DNA sequences below using genetic code.

Normal DNA sequence
TACGTAGTCAGCTAATGGATC

Mutated 1 DNA sequence
TACGTAGTCATCTAATGGATC

Mutated 2 DNA sequence
TACGTAGTCACCTAATGGATC

Mutated 3 DNA sequence
TACGTAGTCAGTTAATGGATC

		Second Letter											
		U			C			A			G		
1st letter	U	UUU	Phe	UCU	Ser	UAU	Tyr	UGU	Cys	U	C	A	G
		UUC		UCC		UAC		UGC					
		UUA	Leu	UCA		UAA	Stop	UGA	Stop				
		UUG		UCG		UAG	Stop	UGG	Trp				
1st letter	C	CUU	Leu	CCU	Pro	CAU	His	CGU	Arg	U	C	A	G
		CUC		CCC		CAC		CGC					
		CUA		CCA		CAA	Gln	CGA					
		CUG		CCG		CAG		CGG					
1st letter	A	AUU	Ile	ACU	Thr	AAU	Asn	AGU	Ser	U	C	A	G
		AUC		ACC		AAC		AGC					
		AUA		ACA		AAA	Lys	AGA	Arg				
		AUG	Met	ACG		AAG		AGG					
1st letter	G	GUU	Val	GCU	Ala	GAU	Asp	GCU	Gly	U	C	A	G
		GUC		GCC		GAC		GCC					
		GUA		GCA		GAA	Glu	GCA					
		GUG		GCG		GAG		GCG					

Please, continue to the following paper sheet

- b) Mention type of mutation in each sequence.
- c) Which mutant do you think will work the most like normal protein? Why?
- d) Which mutant will change protein function?

Question 4: Mutagens and Carcinogens (20 marks)

- a) Mention the virulence factors of *H. pylori* as a biological mutagen and carcinogen.
- b) Compare between initiators and promoters carcinogens.
- c) Nitrous acid and 5- bromouracil are considered as chemical mutagens. "Prove this statement"
- d) Describe briefly how host cells infected by RNA carcinogenic viruses.

Best Wishes

Assistant Prof. Dr. Nessma El Zawawy