	Final- Exam 2017	
Botany & Microbiology Department	**Molecular biology (212B) Second Level (Credit hours)**	**Time: 2 hours**

Q1) Choose the correct answer: ***(20 Marks)***

1- Which of the following would produce blue colonies?

a) bacterial cells without plasmids
b) bacterial cells containing non cloning plasmids
c) bacterial cells containing plasmids with the gene of interest
d) bacterial cells containing plasmids with inserts, but not the gene of interest

2- Synthesis of mRNA is

a) in the 5' to 3' direction with new nucleotides being added to the 5' end of the mRNA molecule.
b) in the 3' to 5' direction with new nucleotides being added to the 5' end of the mRNA molecule.
c) in the 5' to 3' direction with new nucleotides being added to the 3' end of the mRNA molecule.
d) in the 3' to 5' direction with new nucleotides being added to the 3' end of the mRNA molecule.

3- Transcription begins when RNA polymerase binds to the

a) terminator on DNA
b) promoter on DNA
c) promoter on RNA

4- The single-stranded ends of DNA molecules can be joined together by

a) restriction endonucleases
b) DNA ligase
c) DNA polymerase
d) Primase

5- Translation is the synthesis of

a) mRNA from DNA
b) mRNA from proteins
c) proteins from DNA
d) proteins from mRNA

6- Which of the following were required to produce the recombinant plasmid?

a) restriction endonuclease
b) DNA ligase
c) DNA polymerase
d) A and B
e) All of the above

7- Transcription is characterized by...

a) a messenger RNA molecule synthesized from the DNA molecule in the nucleus
b) a transfer RNA molecule synthesized from the DNA molecule in the nucleus
c) a ribosomal RNA molecule synthesized from the DNA molecule in the nucleus.
d) the blueprint of the RNA molecule used to bind amino acids together to form proteins.

8- Translation is terminated when a stop codon is presented at the _____ site.

a) A
b) P
c) E
d) either A or B

9-Splicing joins together

a) two introns b) two exons c) an intron and an exon. d) any two RNA

10-The enzyme _____ unzips and unwinds the DNA molecule

a) DNA polymerase b) helicase c) primase d) DNA ligase

11- The first step in cloning a gene is to

a) insert a plasmid into a bacterium
b) isolate the DNA from the organism that contains the desired gene
c) plate cells on agar
d) treat plasmids with restriction enzymes

12- Plasmids are put into bacterial cells by

a) restriction enzymes
b) DNA ligase
c) binding of cohesive sticky ends
d) transformation

13- The lac-z gene marker codes for

a) galactosidase, which splits x-gal
b) galactosidase, which makes x-gal resistant to splitting
c) ampicillin resistance
d) white colonies

14- The purpose of the Southern Blot test is to

a) look for a specific nucleotide sequence in the DNA being tested
b) determine how closely two organisms are related
c) amplify the size of the fragment that contains the sequence
d) All of the above

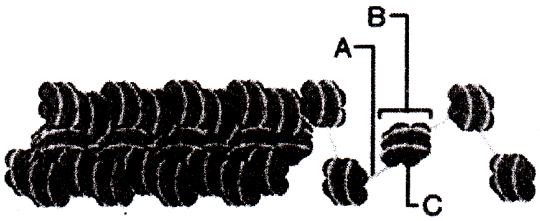
15- Which of the following is true of ribosomes?

a) Ribosomes consist of DNA and Protein
b) Ribosomes consist of a single unit
c) Ribosomes have 3 binding sites (A,P and E)
d) Ribosomes are the site of DNA replication

16- In bacteria, a small circular piece of DNA found outside the main chromosome is called a

a) Plasmid b) cDNA c) RFLP d) PCR

17- The letter B indicates _____.



a) Supercoils c) a DNA double helix
b) a nucleosome d) histones

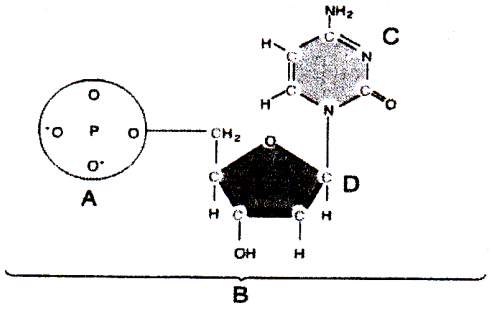
18- How many nitrogenous bases are needed to specify three amino acids

a) 3 b) 9 c) 6 d) 12

19- At the beginning of each cycle the temperature of the PCR reaction is raised in order to ___.

a) elongate the primer
b) renature the double DNA strands
c) attach the primer
d) polymerize the DNA
e) denature the double DNA strands

20-A nitrogenous base is indicated by the letter _____.



a) b) c) d)

21- Which of the following is <u>not</u> required for a PCR reaction?

a) dNTPs
b) a target sequence
c) a primer
d) *Taq* polymerase
e) RNA transcriptase

22- Which of the following vector can maintain the largest fragment of foreign DNA?

a) YAC b) Cosmid c) Bacteria d) Plasmid

Q2) 1.Write the function of the following enzymes: ***(6 Marks)***

DNA Helicase	
DNA ligase	
Restriction endonuclease	
DNA polymerase	
Reverse transcriptase	
Topoisomerase	

2. Define <u>four</u> only: ***(4 Marks)***

Introns	
DNA replication	
Okazaki fragments	
Insert	
Ligation	

Q3) What are the long names of the following abbreviations and mention the specific role of: ***(5 marks)***

m-RNA ……………………………………………………………………………………………

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cDNA

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PCR

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SSB

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RAPD

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Q4) Write a short note on <u>five</u> of the following: ***(10 Marks)***

a) The steps involved in the Southern Blot test
b) Requirements of DNA –replication
c) Processing of pre- mRNA
d) Nucleosome
e) Long PCR
f) Abortive transcription

Q5) Differentiate between <u>two</u> of the following: ***(5 Marks)***

a) Leading strand and lagging strand.

b) Promoter structure in prokaryotic and eukaryotic organisms.

c) Primary and secondary structures of DNA.

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Best wishes

Dr. Nesmat *Dr. Abeer Radi*

Faculty of Science Botany and Microbiology Department		كلية العلوم قسم النبات والميكروبيولوجى
Second Term Exam. 2016/2017 Systematic Mycology 1, (262 B) Second Level (Credit hours)		Exam. Date: 30/5/2017 Time Allowed: 2 hours الأمتحان فى ثلاث صفحات

Section A: (25 Marks)

FIRSTLY: ANSWER ONE QUESTION ONLY: **(9 MARKS)**

1-(A) What is diplanetism. Describe with drawing various methods of asexual reproduction of any diplanetic fungus living as a parasite on fish. Suggest some measures for controlling and treatment of the disease caused by this fungus.

(B) Enumerate the various classes of fungi. Give two distinctive features of each class.

2-(A) What is heterothallism. Name sex hormones secreted by any heterothallic fungus, showing its role in the development of sex organs of this fungus.

(B) Write short notes on various modes of nutrition in fungi, giving examples.

SECONDLY: ANSWER ALL THE FOLLOWING QUESTIONS:- **(16 MARKS)**

1. Classify Order Peronosporales, showing the basis of classification. Write an account of evolutionary concept of this order comparing with Order Saprolegniales. (5 Marks)
2. Enumerte the various methods of plasmogamy in fungi. Describe with drawing modes of plasmogamy in zoosporic fungi only. (4 Marks)
3. A-Name the pathogen and its systematic position of the following: (5 Marks)
   - White blister of crucifers
   - Late blight of potato
   - Damping-off of seedling
   - Downy mildews of grape and onion.
   - Why downy mildew disease is more serious in wet conditions.

   B- Give an account with drawing of vegetative reproduction in filamentous fungi. (2 Marks)

"Good Luck" *Prof. M. A. Elnagdy*

Faculty of Science Botany and Microbiology Department		كلية العلوم قسم النبات والميكروبيولوجى
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Section B (25 Marks)

ANSWER THE FOLLOWING QUESTIONS:-

QUESTION ONE: **9 MARKS**

CHOOSE THE CORRECT ANSWER AND WRITE IT IN YOUR NOTEBOOK: 1.5 MARK EACH

1-The sporangium in *Mortierella* is.....

a-Columellate and cuticularized b-Acolumelllate and with delicate wall

c-Acolumellate and cuticularized d-Columellate and with delicate wall

2-Resting spore is not a product of sexual reproduction in the chytrid.....

a-*Olpidium brassicae* b-*Polyphagus euglenae*

c-*Synchytrium endobioticum* d-*Physoderma maydis*

3-The morphology of male gametangium in *Zygorhynchus* is.....

a-Small and curved b-Big and curved

c-Big and straight d-Small and straight

4-The genera in Class/ Plasmodiophoromycetes are identified primarily based on the morphology of.....

a-Zoospores b-Cystosori c-Plasmodia d-Flagella

5-The spore wall and sporangium wall are still distinguishable in.....

a-Planospore b-Zoospore c-Pseudoconidium d-True conidium

6-Suspersor appendages are dichotomously branched and brownish black in colour in.....

a-*Absidia* b-*Mortierella* c-*Zygorhynchus* d-*Phycomyces*

QUESTION TWO:- **16 MARKS**

ANSWER FOUR ONLY OF THE FOLLOWINGS:- **4 MARKS EACH**

A-Give an account on classification of Class/ Plasmodiophoromycetes. Describe with drawing ONLY the primary phase of cabbage plant infection by *Plasmodiophora brassicae*.

B-Mention with drawing the condition and method of resting spores germination in *Physoderma maydis*. Explain with drawing the endobiotic polycentric phase of the fungal infection in the host plant.

C-Define the meaning of isomorphic alternation of generation in *Allomyces*. Explain with illustration the life cycle for any species of the Subgenus: ***Euallomyces***.

D-Describe with drawing the thallus structure in *Pilobolus*. Explain the method of spores germination and the specific phenomena in the fungal thallus.

E-Explain and compare with drawing the vegetative and reproductive structures of the genera *Thamnidium* and *Mortierella*.

إنتهت الأسئلة

Good Luck - Prof. Dr. Esam Hosney Ali

Botany and Microbiology Department
Faculty of Science, Assiut University

Final Exam. For the 2rd level students ,
(Honor Microbiology and Chem.& Microbiol.)- Group B- June 2017.
Subject: Systematic Mycology 1 (262 B) **Maximum Allowed Time: 135 Min.**

Answer the Following Questions, and Illustrate your Answers Whenever Possible.

Q.1: - Discuss Briefly Three Only of the following:- **(12 marks)**

a- Plasmodiophoromycetes could be regarded as slime molds or true fungi.
b- The taxonomic criteria of Chytridiomyceteous fungi.
c- Types of sporangia in Zygomyceteous fungi referring the evolutionary trend. Support your answer by some examples.
d- -Sex hormones which are produced by some lower fungi.

Q.2: Define Briefly each of the following and Give the name of the organisms or Fungal groups which are related to each:- **(10 Marks)**

Aplerotic oospores- Merosporangia – Diplantism– Polycentric thallus – Rumen fungi –Hyphochytridiomycetes- Monomorphism – Mycorrhizae – Plasmodium- Prosorus.

Q.3: Give only one difference between (Answer Ten Points Only; Design a table for your answers) **(10 Marks)**

a- Blastocladiales and Monoblepharidales. b-Ascogonium and Oogonium.
c- ***Sorosphaera*** *and* ***Plasmodiophora***.. d- ***Pythium*** and ***Phytophthora.***
e- Primary and secondary plasmodium. f- ***Absidia*** *and* ***Phycomyces***.
f- Albuginaceae and Peronosporaceae. g- Mucorales and Entomphthorales.
h- Rhizomycelium and true mycelium. i- Amphigynous and Paragynous antheridia.
j- ***Eu-Allomyces*** and ***Brachy-Allomyces.*** k- ***Thraustotheca*** and ***Brevilgnia***.

Q.4: Using a Labeled Diagram and a Brief Comment, show each of the following:- **(9 Marks)**

a- Differentiation between three genera of Downy mildew fungi.
b- Distinction between ***Pythiopsis***, ***Achlya*** and ***Saprolegnia.***
c- The antheridial branch origin in Saprolegniaceous fungi.

Q.5: Write the scientific term or the name of organisms which are related to Nine Only of the following (Design a table for your answer):- **(9 Marks)**

a- The fungal thallus which differentiated into distinct sterile and fertile portion.
b- The organism which produce sexual spores on unequelly bifurcate hyphae (suspensors), one straight small, but the other curved and thicker.
c- The asexual reproductive units which are produced by transformation of pre-existing thallus cells.
d- The obligate parasite fungus inhabiting the body cavity of *Mosquito* larvae.
e- The aggregation of unicellular, uninucleate naked amoeboid cells which represents the vegetative structure of some slime moulds.
f- The fungal thallus attaching several hosts.
g- The sewage fungus at which the hyphae are constricted at regular intervals.
h- A fungal species which could be used as bioagent for nematode control..
i- The fungal class producing zoospores with single posterior whiplash flagellum.
j- The fungus which produce solitary pseudoconidia (sporangioles).
k- An obligate parasite fungus on houseflies and could be used in biological control of various insect pests.
l- The repeated emergence of the secondary or principal zoospore in some Stramenopiles fungi.

Good Luck ***Prof. Abdel-Raouf M. Khallil***

Assiut University - Faculty of Science - Botany Department

Final Examination (2016 – 2017) Time allowed: 2 hours

Taxonomy of Flowering Plants (SECOND LEVEL) - (232 N)

ANSWER THE FOLLOWING QUESTIONS (50 degrees):

First question: **Complete 10 ONLY of the following: ..... (10Degrees).**

1. In Nyctaginaceae: Stamens are ....., Gynoecium is ....., fruits are .....and Perianth is .....
2. Exine is characterized by ....., ..., ..., ...
3. Sepals are modified into ....., ..., ..., ...
4. Theophrastus classified plants into ....., ..., ..., ...
5. Gynoecium could be classified into ....., ..., ...
6. Stamens of Brassicaceae are ..... and known as .....
7. Flowers in Apiaceae are arranged in ....., Ovary is ....., Fruits are ..... and Stems are .....
8. In Rosoideae, the Ovary is ....., and the Fruits are ....., whereas in Pyroideae, the Ovary is ..... and the Fruits are .....
9. Aggregate fruits develop from .....
10. When stamens are non-functional, they are called .....
11. An advanced flower is characterized by ....., ...

Second question: **Put (√) or (x) of 8 ONLY of the following ..... (8 Degrees).**

1. The mode of growth of cymose is sympodial ..... ( ).
2. Fertilization is defined as the transfer of pollen grains from anther to stigma ..... ( ).
3. False fruits develop from ovary only ..... ( ).
4. Caryopsis develops from monocarpellary and superior ovary ..... ( ).
5. In marginal placentation, the placenta develops on the inner wall of the ovary ..... ( ).
6. Family Fabaceae is characterized by the presence of stipulate and bipinnately compound leaves ..... ( ).
7. Inflorescnce of Asteraceae is capitulum ..... ( ).
8. Perianth of the family Brassicaceae is tetramerous ..... ( ).
9. Carcerulus is a type of Composite fruits ..... ( ).
10. When stamens are united by their anthers only and filaments remaining free, they are known as synandrous ..... ( ).

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Third question: **Compare between <u>4 ONLY</u> of the following pairs and write the scientific names of economic plants of each family ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, (20 Degrees, 5 Degrees each).**

1. **Cyperaceae and Poaceae.**
2. **Two families of Order Fabales.**
3. **Perianth, Androecium, Gynoecium and Fruits of Chenopodiaceae and Asteraceae.**
4. **Inflorescence, Corolla, Gynoecium and Fruits of Apocynaceae and Lamiaceae.**
5. **Corolla, Androecium, Gynoecium and Fruits of Malvaceae and Solanaceae.**

Fourth question: **Write short notes on <u>4 ONLY</u> of the following .... (12 Degrees, 3 Degrees each).**

1. **Types of Aestivation.**
2. **Position of floral organs.**
3. **Types of simple dry fruits.**
4. **Anemophily (wind pollination).**
5. **Racemose inflorescences.**
6. **Development of Androecium and Generation of male spores and gametes.**

Prof. Dr. Zeinab A. R. El Karemy