Assiut University Faculty of Science Botany & Microbiology Dept		جامعة أسيوط كلية العلوم قسم النبات والميكروبيولوجى
Molecular Biology (212B)	Final exam (June 2019)	Time: 2 hours
Microbiology & Botany students		2nd level

Answer the following questions (50 Marks)

I. Write on 5 only of the following: (10 Marks)

1. Standard PCR
2. Plasmid DNA vector
3. Abortive transcription
4. Screening of right clone
5. Sequential steps of replication initiation
6. Steps of mRNA degradation by siRNA
7. Transformation of recombinant DNA into bacterial host

II. Give one difference between 10 only of the following: (10 Marks)

1. Translocation of ribosome in Prokaryotes and Eukaryotes
2. Southern blot and Northern blot
3. RT-PCR & qPCR
4. Plasmid and bacteriophage as DNA vectors
5. Chemical and enzymatic methods for DNA sequencing
6. Gene structure in Eukaryotes and Prokaryotes
7. DNA polymerase III and RNA polymerase II
8. A- & B- models of DNA
9. Monocistronic and multicistronic genes organization
10. Leading strand & lagging strand
11. Primary and secondary structure of DNA

III. Define 10 only of the following scientific terms: (10 Marks)

1. Denaturation 2. Gene cloning 3. Hairpin loop 4. primer
5. Trans-splicing 6. hybridization 7. Ligase 8. Telomere
9. Antisense 10 Proofreading. 11. DNA vector

IV. Write the complete name for 10 only of the following abbreviations (10 marks)

1- *Taq* P 2- m^7G 3- dNTPs 4- Tm 5- cDNA 6 - siRNA

7- G≡C 8- PCR 9- 3'UTR 10- RFLP 11 - rRNA

V. Choose the correct answer for 10 only of the following: (10 Marks)

1. What is AGGGTT
   a. The initiation code of translation b. The origin of transcription
   c. The hexameric sequence of telomere

2. Which of the following nucleic acids does contain a genetic message
   a. tRNA b. mRNA c. rRNA d. all of the above

3. The following are features of DNA replication EXCEPT
   a. Semi-conservative b. Semi-discontinuous
   c. Unidirectional d. Chain growth in the 5' to 3' direction

4. If the percentage of G in a DNA sample is 30%, what is the percentage of U in the same sample:
   a. 20% b. 0% c. 30% d. 10%

5. Which of the following is the noncoding sequence in the gene
   a. Enhancer b. Intron c. Promoter d. All of the above

6. Which of the following sentences is true for RNA polymerase
   a. synthesizes RNA primer to initiate replication
   b. makes proofreading during elongation
   c. replicates the single stranded RNA
   d. transcript mRNA from DNA

7. If the transcribed mRNA sequence is AAGUUCGAC, what is the sequence of the coding strand?
   a. TTCAAGCTG b. AAGUUCGAC c. UUCAACGUG d. AAGTTCGAC

8. In PCR, selection of the target is achieved through the use of primers.
   a. True b. false

9. It is more convenient to work with the coding sequence in the cDNA than mRNA because .....
   a. the quaternary structure of mRNA. b. cDNA resembles natural gene.
   c. RNA is very easily degraded by RNases.

10. ..... is a special mechanism employed to package the long DNA molecule inside the cell.
    a. Supercolining b. hybridization c. Melting

11. The Sanger dideoxy method depends on plancing dideoxy analog for .....
    a. all four dNTPs in one single tube. b. DNA polymerase
    c. each one of the four dNTPs in one tube for each.

Best wishes

Dr. Nemmat A. Hussein *Dr. Naeima M. H.Yousef*

	امتحـــان الفصل الدراســـي الثاني لطلاب كلية العلوم للعـــام الجامعـــي 2018-2019	

القسم الذي يقدم المقرر: الوراثة — الفرقة: المستوى الثاني (ساعات معتمدة)
اسم المادة: (215 ز) أساسيات الوراثة — الزمن: ساعتان
لجنة الممتحنين: د/ بهاء الدين السيد عبد الفتاح، د/ محمود أبو السعود الراوي

تعليمات الامتحان
1- يتكون الامتحان من أربعة أسئلة
2- يتكون الامتحان من صفحتين
3- فكر جيدا قبل ان تجيب عن الاسئلة، ولا تجعل قلمك يسبق فكرك
4- الدرجة الكلية للامتحان (50 درجة)

أجب عن جميع الأسئلة الآتية

السؤال الاول:- :- (15 درجة)

(أ) - في التلقيح الإختباري التالي لإناث حشرة الدروسوفيلا الخليطة في ثلاث مواقع كان النسل الناتج كالتالي (7.5 درجة)

$$\frac{A\ B\ C}{a\ b\ c} \times \frac{a\ b\ c}{a\ b\ c}$$

A	B	C	360
a	b	c	340
A	b	c	100
a	B	C	130
A	B	c	33
a	b	C	28
A	b	C	6
a	B	c	3
TOTAL			1000

المطلوب :-
1- حساب المسافة بين الجينات الثلاثة.
2- ارسم الخريطة الوراثية.
3- احسب معامل التوافق.

(ب)- وضح بالرسم مع كتابة البيانات فقط ما يلي (7.5 درجة)
1. تجربة تثبت أن الـ RNA هو المادة الوراثية لبعض الفيروسات
2. ظاهرة الـ Testicular Feminization

السؤال الثاني: في جدول انقل فقط رقم العبارة من العمود (أ) والحرف للعبارة المناسبة من العمود (ب) ؟ (10 درجات)

1	النسبة 2:1 تمثل حالة	A	الجينات متماثلة التأثير
2	النسبة 15 : 1 تمثل حالة	B	نوع الجنس في الدروسوفيلا (بين جنسي)
3	نسبة X/A= 1/3	C	نظام بيني
4	النسبة 9:3:4 تمثل حالة	D	التفوق المتنحي
5	نظام تحديد الجنس في دودة البونيليا	E	جينات مميتة متنحية ذات أثر مظهري سائد
6	الوراثة الهولاندرية	F	يعتبر مثال للصفات المتأثرة بالجنس
7	جين الصلع في الانسان	G	يعتبر مثال للصفات المحددة بالجنس
8	جين انتاج اللبن في الماشية	H	تنتقل جيناتها في خط متصل من الذكور فقط إلى أبنائهم الذكور فقط
9	نظام تحديد الجنس في نبات الاسبرجس	I	نوع الجنس في الدروسوفيلا (ذكور فائقة)
10	نسبة X/A= 2/3	J	نظام جيني
		K	نظام كروموسومي
		L	جينات مكملة

انظر خلفه

السؤال الثالث: (10 درجات)

في كراسة الإجابة قم بعمل جدول مماثل ثم قم بنقل المصطلحات من العمود (أ) ثم ضع امامها رقم العبارة التي تناسبها من العمود (ب):

(أ)	(ب)
1- β- DNA polymerase	1- معقد من البروتينات الهستونية والـ DNA
2- SSB proteins	2- يعمل على فك سلاسل الـ DNA عن بعضها في الخيط المزدوج
3- β - galactosidase	3- إنزيم التضاعف الرئيسي في بكتريا الـ E. coli
4- Gyrase	4- يزيل الحلزنة الفائقة الموجبة
5- Helicase	5- تعمل على تثبيت سلاسل الـ DNA المفردة أثناء التضاعف
6- DNA polymerase I	6- يحلل سكر اللاكتوز إلي جلوكوز وجلاكتوز
7- Telomerase	7- يقوم بإضافة ذيل عديد الادنين الي الطرف 3 في الـ mRNA
8- Nucleosome	8- إصلاح الأخطاء التي تحدث أثناء التضاعف في حقيقية النواة
9- Poly A polymerase	9- يقوم بتخليق خيط من الـ DNA مستخدما قالب من الـ RNA
10- Reverse transcriptase	10- يزيل بادئات الـ RNA ويملأ الفراغات
	11- يقوم بعملية تضاعف اطراف الكروموسومات
	12- يخلق بادئات RNA قصيرة

السؤال الرابع: (15 درجة)

أ- وضح بالرسم فقط. (9 درجات)

1- تركيب المرقي Promoter في الكائنات غير حقيقية النواة والكائنات حقيقية النواة.

2- تركيب اوبرون اللاكتوز (Lac operon).

3- عملية القص المتنوع (RNA Alternative Splicing) لجزيئ mRNA.

ب- أذكر طرز إنزيمات نسخ الـ RNA في الكائنات حقيقية النواة مع ذكر وظيفة كل منها. (3 درجات)

ج- اذكر في نقاط محددة متطلبات عملية الترجمة (Translation) . (3 درجات)

إنتهت الأسئلة مع أطيب التمنيات بالتوفيق،،

لجنة الممتحنين:- د/ بهاء الدين السيد عبد الفتاح

د/ محمود أبو السعود الراوي

	Final- Term Examination 2019	
Botany & Microbiology Department	**Growth hormones (252B)** **Second Level (Credit hours)**	**Time: 1:30**

Q1:Choose the correct answer: ***(15 marks)***

1- Auxin promotes growth in plants by

a) increasing the plasticity of plant cell walls.
b) stimulating the uptake of water by seeds.
c) causing elongation of stems
d) increasing the rate of photosynthesis.

2- A possible auxin-binding receptor protein (ABP1) in plants has been identified which appears to be a,

a) Single polypeptide of 22 kD
b) Dimer of two polypeptides each of about 22 kD
c) Tetramer of four polypeptides each of about 22 kD
d) None of the above

3- This hormone promotes lateral bud dormancy

a) Auxin b) cytokinin c) ethylene d) abscisic acid e) gibberellins

4-Genetic dwarfness can be overcome by treatment with

a) auxins b) gibberllins c) auxins and cytokinins d) ABA

5- Which of the following is <u>not</u> a specific physiological effect of gibberellins?

a) Elongation of internodes
b) *de novo* synthesis of α- amylase
c) bolting and flowering
d) none of the above

6- A well known absorbant of ethylene is,

a) Potassium permanganate
b) Potassium hydroxide
c) Formalin
d) Potassium

7- Conversion of etioplasts into chloroplasts on exposure to sunlight is greatly enhanced by prior treatment with,

a) Cytokinins
b) auxin
c) ethylene
d) ABA

8- Gibberellins are derivatives of,

a) Monoterpenes b) sesquiterpenes c) diterpenes d) triterpenes

9- "Foolish seedling" disease in rice is caused by

a) Ethylene
b) Indoleacetic acid
c) Gibberellins
d) Abscisic acid

10- _____ stimulates the production of hydrolytic enzymes.

a) Ethylene
b) Auxin
c) Gibberellins
d) Cytokinin
e) Indoleacetic acid

11- Which of the following physiological effects is not specific to kinetin?

a) Counteraction of apical dominance
b) Delay of senescence
c) Breaking dormancy of seeds
d) None of the above

12- Fruit ripening hormone is,

a) Ethylene b) auxin c) kinetin d) all of the above

13- Concentration of which of the following hormones increases in senescence of plants?

a) ABA and ethylene c) cytokinins
b) Auxin and gibberellins d) None of the above

14- Which of the following has not been isolated from plants?

a) Cytokinin b) auxin c) kinetin d) gibberellin

15-In their bound form, the cytokinins are biologically inactive and occur as,

a) Ribosides b) glucosides c) both (a) and (b) d) none of these

16-Which of the following is cytokinin receptor in plants ?

a) CRE1 b) AHK2 c) AHK3 d) All of these

Q2: Write on <u>five</u> of the following: ***(10 marks)***

1- The multiple pathways exist for the biosynthesis of IAA.
2- Role of gibberellins in bolting and flowering.
3- Delay leaf senescence : the Richmond-Lang effect.
4- Role of ethylene in leaf epinasty.
5- Effect of auxin in apical dominance.
6- Mechanism of cytokinin action.

Good luck **Dr. Abeer Radi**

Assiut University - Faculty of Science - Botany Department

Final Examination (2018 – 2019) 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 : ..... (10 Degrees, one degree each).**

1. The sepals are modified into different forms, of which: ....., ... , ... and ..... .
2. Types of ovules are ....., ..., ... and .....
3. In diplostemony flowers stamens are ....., but in obdipolostemony they are .....
4. Insect pollinated flowers develop certain adaptation to attract insect such as .....
5. Apocarpy is more ..... than ....., while Hypogyny is ..... than perigyny and epigyny is .....
6. Dioecious plants are more ..... than monoecious.
7. Aggregate fruits develop from ....., the fruitlets may be ....., ..., ... or .....
8. The petaloid tepals are found in family ..... , while the sepaloid tepals are found in family .....
9. The monadelphous Androecium exists in family ..... , but the sengenesious Androecium exists in family .....
10. Flowers of the family Brassicaceae are usually in ....., rarely in ....., while in the family Apiaceae they are arranged in .....
11. The shape of corolla in the family Lamiaceae is ..... , flowers are usually in ..... and the style is .....
12. Exine is characterized by ....., ..., ... and .....
13. Types of Aestivation are ..... , ..., ... , ... and .....

Second question: **Give the scientific name of two economic plants belonging to the following families ..... (6 Degrees).**

Poaceae, Brassicaceae and Apiaceae

بقيـــة الأسئلـــة علـــى الصفحـــة التاليـــة «««««««««««

<u>Third question</u>: **Write short notes on <u>4 ONLY</u> of the following ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, (16 Degrees, 4 degrees each)**

1. **Family Asteraceae.**
2. **,The mechanism of double fertilization and triple fusion.**
3. **Racemose or indeterminate inflorescences.**
4. **Systems of classification.**
5. **Types of simple dry dehiscent fruits.**
6. **Androecium and its development.**

<u>Fourth question</u>: **Compare between <u>4 ONLY</u> of the following ,,,.............................. (18 Degrees, 4.5 Degrees each).**

1. **Leaves, corolla and Androecium of the <u>three</u> families of Fabales.**
2. **Perianth, Androecium and Gynoecium of Brassicaceae, Nyctaginaceae and Liliaceae.**
3. **Stamens, Gynoecium and fruits of the subfamilies: Rosoideae, Prunoideae and Pyroideae.**
4. **Stem, leaves and fruits of Lamiaceae, Cyperaceae and Poaceae.**
5. **Inflorescence, corolla and Gynoecium of Apocynaceae, Convolvulaceae and Solanaceae.**
6. **Androecium, Gynoecium and fruits of Caryophyllaceae, Malvaceae and Geraniaceae.**

Good Luck

Prof. Dr. Zeinab A. R. El Karemy

Assiut University	Final Exam for Fourth year Science Students (Botany and Microbiology Department) Elective Course 216 ص عقاقير نباتية Botanical Pharmacognosy Time allowed: 2 h Total marks: 50 M Date: 2June 2019	Faculty of Pharmacy

Part 1 (25 M)

1- Give the scientific term that can describe each of the following definition. In each case give an example (6 M):

	Definitions	Scientific term (0.5 × 6= 3 M.)	Example (only one) (0.5 × 6 = 3 M.)
1	Constitutes the most important odorous principles found in nature.		
2	Water-soluble polyphenolic compounds from plant origin with molecular weight ranging from 500 to 3000 that have the property of combing with protein to form an insoluble complex		
3	Triglyceride esters of long chain fatty acids		
4	It is a plant carbohydrate resistant to digestion and absorption in the human small intestine, with complete or partial fermentation in the large intestine.		
5	They are heterogeneous compounds having characteristic bitter taste. They belong to different groups and containing C, H, O and free from nitrogen.They belong neither to alkaloids nor to glycosides.		
6	The resinous pleasantly scented plant products containing large proportions of benzoic and/or cinnamic acids and their esters		

2- **B- Choose the correct answer: (5 marks)**

1- Drying oil is characterized by:
   a- Absence of double bonds (completely saturated)
   b- Low no of double bonds (highly saturated)
   c- Moderate no of double bond (moderately unsaturated)
   d- High no of double bonds (highly unsaturated)

2- Extra-virgin Olive oil is characterized by:
   a- Produced naturally without chemical treatment
   b- it contains no more than 0.8% free acidity
   c- highest quality and most expensive olive oil
   d- All of the above

3- The most important product of Psyllium seed is
   a- Psyllium endosperm
   b- Psyllium embryo
   c- Psyllium husk
   d- Psyllium leaves

4- Chemically, *Ammi visnaga* fruits can be tested by:
   a- Give yellow color with KOH
   b- Give red color with KOH
   c- Give green color with FeCl3
   d- Give Blackish blue color with $FeCl_3$

5- Biologically tannins can be identified by:
   a- Gold-beather's test
   b- $FeCl_3$ Test
   c- Ruthenium Red
   d- All of the above

6- The combination of two isoprene units together is termed
   a- Sesquiterpene
   b- Diterpene
   c- Monoterpene
   d- Polyterpene

7- Linseed oil is a source of
   a- Omega-3-fatty acids
   b- Unsaturatued fatty acid
   c- Drying oil
   d- All of the above

8- Volatile oil can be extraction from plants by using
   a- Steam distillation unit
   b- Clavenger's apparatus
   c- Rotary evaporator
   d- Soxhlet'sapparatuus

9- The exposure of volatile oil to light, heat and moisture results in the change in its character in a process called:

a- Rancidity
b- Hydolysis
c- Resinification
d- Either a or c

10- Pyrogallol tannins are characterized by

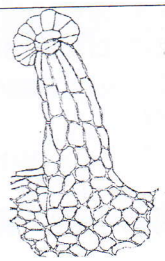
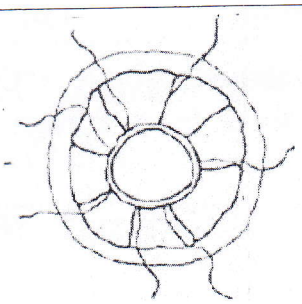
a- Resulted from condensation of two or more molecules of catechin
b- On hydrolysis they give sugar part and gallic acids
c- Give precipitate with Br_2 water
d- Give red color with $FeCl_3$ solution

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

3- C- Propose a medicinal plant that can be used in the following cases. In each case mention the active constituent(s) responsible for the desired effect(0.5 × 20 =10 M)

	Biological effect	Plant name (0.5 M.)	Active constituents (0.5 M.)
1	Toothache		
2	Cough		
3	Renal colic		
4	Ink manufacture		
5	Obesity (weight control)		
6	Chronic constipation		
7	Diarrhea		
8	Hoarseness of voice		
9	Leukoderma		
10	Prevention and treatment of rickets		

4- **For Each of the presented botanical structures mention: the name, the plant containing it and its function in the plant (4 M)**

Botanical Structure	Element name (0.5 M)	Plant containing it (0.5 M)	Function (1M)
			
			

Part II

A- Put (t) for the true statements and (f) for the false ones, then correct the false statements: (0.5 X 9 = 4.5 marks)

1- Crude drug is the harvested and usually dried plant or animal sources of pharmaceutically or medicinally active drugs.
.....( )

2- Volatile oils are considered by products of the metabolic activities which occur in plant, while amino acids are considered as food storage products.
.....( )

3- Thioglycosides yield HCN upon hydrolysis.
.....( )

4- Protoalkaloids have nitrogen in heterocyclic ring; however they don't have pharmacological activity.
.....( )

5- Lobeline is an example of tropane alkaloids which exist in *Lobelia inflate*.
.....( )

6- Shinoda's test is one of the most useful qualitative tests in the study of flavonoid compounds.
.....( )

7- Strophanthin-K is an example of cardenolides.
.....( )

8- Although digoxin is one of the most important steroidal glycosides; it has narrow therapeutic index.
.....( )

9- Fats are high molecular weight compounds that have ability to hide animal skins
.....( )

B- Choose the correct answer and write your answer down in the table below: (0.5 X 8 = 4 marks)

1- All these reagents can be used for microscopical test of protein except:

a- Iodine b- NaOH c- Picric acid d- Millon's reagent

2- Hydrolysable and condensed tannins can be differentiated by:

a- HCl b- $FeCl_3$ c- Iodine d- Sudan III

3- ..... glycosides have hemolytic properties.

a- Cyanogetic b- Saponin c- Anthraquinone d- All of them

4- Borntrager's test is specific for .....

a- Flavonoids b- Saponins c- Iridoids d- None of them

5- ..... is used to relieve cramps associated with the stomach and intestines.

a- Hyoscine b- Capsicine c- Gentiopicrin d- Harpagide

6- The main active constituents of Rhubarb are ..... .

a- Flavonoids b- Anthraquinones c- Iridoids d- Saponins

7- ..... should be used for the hydrolysis of c-glycosides.

a- HCl b- NaOH c- $FeCl_3$ d- Methanol

8- ..... is considered as anticancer drug.

a- Datura b- Vinca c- Passion flower d- None of them

1	2	3	4	5	6	7	8

A- Regarding the drugs you have studied, mention the best herbal drugs that can be used to treat the following disorders and enumerate their active constituents (you may use combinations):

(1.5 X 5 = 7.5 marks)

1- A patient suffers from nausea, vomiting from motion sickness.

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2- A patient suffers from pain, joint inflammation, and osteoarthritis.

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3- A patient suffers from restlessness, anxiety and insomnia.

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4- A patient suffers from breast cancer that will need chemotherapy treatment.

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5- A patient suffers from capillary fragility.

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B- Write down your comments on the following: (1.5 X 6 = 9 marks)

1- Lobelia can be used to stop smoking.

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2- Structural activity relationship of anthraquinones.

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3- A patient suffers from restlessness, anxiety and insomnia.

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4- A patient suffers from breast cancer that will need chemotherapy treatment.

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3- Time of the day could affect the medicinal activity of digitalis leaves.

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4- Atropine is given to patients who are going to undergo surgery.

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5- Glycosidases should be inactivated after the plant collection. Mention the methods that can be used for glycosidases inactivation.

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6- Use of cardiac glycosides in treatment of heart failure is more preferred than other cardiac stimulants.

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Best Wishes ,,,,,,,,

Department of Botany and Microbiology
Faculty of Science
Assiut University

Final Exam. For the 2nd level students (Honor Microbiology and Chem.&Micro.), June 2019
Subject: Systematic Mycology 1 (261 B) Maximum Allowed Time: 135 Min.

Answer The Following Questions:- **(Note: 6 pages should be considered**

Q.1- Give Only One Difference between Five only of the following:- **(10 Marks)**

1	Memnospores	Xenospores
2	*Zygorhynchus*	*Phycomyces*
3	Entomophthorales	Mucorales
4	Gonapodiaceae	Monoblepharidaceae
5	Primary plasmodium	Secondary plasmodium
6	Aplerotic resting spores	Plerotic resting spores

Q.2- Give the scientific term or the organism name which is related to NINE ONLY of the following (Put your answers in the next table):- **(9 Marks)**

a- An obligate parasite fungus which is being investigated for use in biological control of houseflies.

b- The narrow ostiolate flask-shaped structure which contains the endogenous sexual spores.

c-The repeated and successive emergence of the secondary or principal zoospore

d- Fusion between motile male gamete and immotile female one.

e- The chytrid thallus in which the zoospores are released through a lid remaining attached to one edge of the papilla.

f- The aggregation of unicellular, uninucleate naked amoeboid cells which represents the vegetative structure of some slime moulds.

g- A fungal species which could be used as bioagent for nematode control.

h- The obligate parasite fungus inhabiting the body cavity of *Mosquito* larvae

i- The fungal species which produce two forms of zoospores in their life cycle.

j- The order in which the hyphae are constricted at regular intervals and one of the related genus is known as the sewage fungus.

(Give your answers in the following table):-

No	Answer	No	Answer
a		b	
c		d	
e		f	
g		h	
i		j	

Q.3: Circle the correct answer of FIVE only and write the correct answer if it is missing:- **(5 Marks)**

A- The fungal species which is characterized by sexual spores suspensors with circinate filaments

a- *Phycomyces* b- *Rhizopus* c- *Zygorhynchus* d- None of all (.....)

B- Fungi which are characterized by multiflagelated zoospores

a- *Olpidium* b- *Synchytrium* c- Myxomycota d- Oomycota e- None of all (.....)

C- The fungal reproductive units which are produced by transformation of pre-existing cells of the thallus is referred as

a-Zoospores b- Conidia c- Sporangia d- Arthrospores e- Thallospores f-None of all (.....)

D- Non-collumellated sporangium is the main characteristic feature for....

a- *Circinella* b- *Rhizopus* c- *Zygorhynchus* d- None of all (.....)

E- When antheridium encircles and completely surrounds the oogonial stalk, a condition brought on by the growth of the oogonial initial through the antheridial initial.
a- Paragynous b- Diclinous c- Exigynous d- Monoclinous e- None of all (.....)

F- The antheridial branch lacking, but with the antheridial cell abstracted as a part of the oogonial stalk immediately below the oogonium.
a- Exigynous b- Diclinous c- Hypogynous d- Monoclinous e- None of all (.....)

Q.4-Define Briefly each of the Following and give the name of an organism or fungal group which is related to each whenever possible:- (10 Marks)

a- Merosprangia:

b- Pseudoconidia or Chlamydospores (Define only one)

d-Erotactin hormones:

e- Polycentric fungal thallus:

f- Paragynous antheridia:

Q.5- Using a labeled Diagram and Brief Comment, show each of the following:- **(6 Marks)**

a- Differentiation between the two causal agents of Grape (Vitis) and Onions downy mildews

b- Zoospores liberation of Chytridiales:-

c- Differentiation between: *Cunninghamella,* and *Syncephalastrum,*

Q.6- Compare between each of the following (Answer TWO points only):- (4 Marks)

a- Peronosporaceae and Albuginaceae:-

b- *Euallomyces* and *Brachyallomyces*:-

C- Sirenin, Ooganiol, and antheridiol (Refer to their functions):

Q.7- Discuss Briefly Three Only of the following:- (6 Marks)

A- The main characters that set the Oomycota apart from true fungi and is included in Stramenopila kingdom.

B- The diffusible substances playing a specific role in the sexual reproduction of the fungus that produce it.

C- Inclusion of Plasmodiophoromycetes in Mastigomycotina by some authors.

D- Types and evolution of sporangia in Mucorales.

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e Best Wishes

Prof. Abdel-Raouf Khallil