المستوى الثاني - مجموعة البيولوجيين مدخل إلى علم الأجنة ع ١٠١

Mansoura University
Faculty of Science
Zoology Department

Final Exam, Jan. 2014

Education year: Second level | **Program: Biology**
Time: 2 hours | **Subject: Zoology**
Date: 21/1/ 2014 | **Course: Introduction to Embryology**
Code: Z 201 | **Full Mark: 60**

Answer all the following questions:

Q1) A- *Rewrite* the sentences in your answer sheet after correction: (10) Marks

1- In the uterine tube the ovum passes along by ……..
a-activity of the tubal cilia b- tubal muscular contraction c- both

2- LH stimulates the production of …… by the follicular cells.

a- estrogen b- progesteron c- acrosin

3-The necrospermia man who has ……. sperms in ejaculate.
b- No b- low count c- dead

4- The bulbourethral secretion gives the semen ……
a- milky appearance b- acidity c- alkalinity

5- Acrosomal reaction occurs by ……. Glycoprotein overlies the sperm.
a- removing b- adding c- union

6- At the puberty, the PGCs differentiate into …….. which are spermatogenic linage.
b- Spermatogonia b- Sertoli cells c- spermatids

7- Animtal pole is the pole of the egg where yolk is ……. concentrated.

b- least b- most c- not A or B

8- LH secreted from the anterior pituitary stimulates ……. process.

a- ovulation b- capacitation c- fertilization

9- The secretion of prostate gland contains fibrinolysin enzyme that …..the semen.
a- liquefies b- solidifies c- neutralizes

10- During spermiogenesis, differentiation of the acrosomic vesicle is formed during …
b- cap phase b- golgi phase c- maturation phase

Q1) B - Compare between both of the following: (5) marks

a- Morphological and Numerical sperm abnormalities.

b- Proliferative and secretory phase of the uterine cycle.

6- Rectal gland in dog fish removes excess .....

A) Undigested food B) Salts C) Water

7- All the following Items are involved in parasitism except .....

A) Buccal funnel with horny teeth B) Pineal eye C) Rasping Tongue

8- Single fins only found in .....

A) Amphioxus only B) Amphioxus & Petromyzon C) Petromyzon & dog fish

9- Nocturnal animals are those .....

A) Active by day B) Active by night C) All the above

10- Reptilian skin is covered with keratin for .....

A) Protection B) Prevent water loss C) All the above

11- The number of cerebral nerves in amniotes are .....

A) Two pairs B) Ten pairs C) Twelve pairs

12- Light sense in Amphioxus occurs by .....

A) Lateral eyes B) Eye spot and ocelli C) Pineal eye

13- Avian air sacs acts for .....

A) Gas exchange B) Getting more oxygen C) All the above

14- Metanephric kidney is the main excretory organ in .....

A) An amniotes B) Warm blooded animals only C) all Amniotes

15- The only hermaphrodite animals in Chordates belong to .....

A) Cephalochordates B) Urochordates C) Cyclostomes

Question No. 3: With Drawings ONLY Clarify the Following: (15 Marks)

1- Internal Structure of Ascidia (5 Marks)

2- Alimentary Canal of Petromyzon (5 Marks)

3- Digestive system of Amphioxus (5 Marks)

4- Fore and Hind limbs of Tetrapods (2.5 Marks)

With My Best Wishes

Dr. Fawkeia El- Sayad

المستوى الثاني - مجموعة الفيزياء الحيوية فرع ١١

Mansoura University
Faculty of Science
Physics Department
Course code: Bio-Phys 211
Course title: General biophysics

First term 2013-2014
Date: 14-1-2013

2nd Level students
Biophysics-Physics-Microbiology-Chemistry-Biochemistry-Chemistry Botany - Chemistry Zoology and Environmental Science
Full Mark: 80
Allowed time: 2 hours

Answer all the following questions:

1-	**A-**	**Write true (√) or False (χ)** **[each item = 1.5 Mark]**
		i. A graded potential is a minor perturbations in membrane potential due to spontaneous ion leakage through cell membrane.
		ii. Any change in membrane potential from -70 mV to -80 mV is called hyperpolarization.
		iii. The dose equivalent measured in Sv and equals the absorbed dose in rad multiplied by quality factor.
		iv. Glaucoma disease is characterized by a clouding of eye's natural lens.
		v. The graded potentials last from 5 msec to several minutes.
		vi. The electrical signals of the brain can be measured using electroencephalogram EEG.
		vii. Hypermetropia caused by irregularity shaped cornea results in light focusing behind of retina
		viii. X-rays can be deflected by electric field or magnetic field.
		ix. The cornea of the eye contains the photoreceptors which are rods and cones.
		x. The ear canal behaves like pipe that are open from both ends.
	B-	Potential biological effects depend on how much and how fast a radiation dose is received. Differentiate between the acute and chronic radiation doses, explain your answer by different syndromes. **[10 Marks]**
	C-	Calculate the velocity of blood through the capillaries inside the lung if you know the radius of aorta is 8 mm, the velocity of blood in aorta is 33 cm/sec and the total cross sectional area of capillaries is 2800 cm^2.**(Comment on your answer)** **[5 Marks]**
2-	**A-**	**Complete the following sentences:** **[each item = 2 Marks]**
		• The heart can be described as an ......(1)......dipole whose magnitude and direction varies in a ......(2)...... manner, repeating for each heart cycle.

Please follow the rest of questions on the other side of this paper

		• The beta waves of EEG have frequency range .....(3)..... Hz in .....(4).....state.
		• X-rays are produced when rapidly moving .....(5)..... that have been accelerated through a potential difference of order 1 kV to 1 MV strikes a .....(6)..... .
	B-	Magnetic resonance imaging (MRI) is an imaging technique used primarily in medical settings to produce a high quality images of the inside of the human body. Discuss the physical principle of the magnetic resonance imaging (MRI) technique. **[10 Marks]**
	C-	Find an expression given for minimum wavelength and maximum frequency for X-ray tube operates at an accelerating voltage V. **[8 Marks]**
3-	A-	**Choose the correct answer :** **[each item = 1 Mark]**
		i. (Absorbed dose- Dose equivalent- Quality factor- Radiation flux) is a measure of energy deposition in any medium by any type of ionizing radiation.
		ii. The human eye is organ design to receive visible light having wavelengths between [(360 and 760 nm) – (380 and 670 nm) –(380 and 760 nm) –(390 and 660 nm)].
		iii. The X-rays emitted from the target is usually consisting of continuous radiation up on which (parallel-superimposed-straight-under) a line spectrum containing a relatively few lines.
		iv. About (64% -54%-44%-34%) of cone cells are red sensitive.
		v. The unit of the absorbed dose is called the (Gray-Sv-Rem-joule)
		vi. (Hypermetropia-Myopia-Astigmatism-Presbyopia) caused by irregularity shaped cornea results in light focusing in front of retina.
		vii. Myopia is corrected by (converging-diverging lens-cylindrical-flat) lens.
		viii. (Absorbed dose- Dose equivalent- Quality factor- Radiation flux) is number of particles or photons crossing an area of 1 square meter in one second.
	B-	Calculate the resistance per unit length of the fluids inside an axon of unmyleinated nerve and the resistance per unit area of the membrane, if the resistivity of the fluids inside the axon is 0.5 ohm-m, resistivity of membrane is 1.6×10^7 ohm-m , the axon radius is 5μm and the axon thickness is 6 nm. **[6 Marks]**
	C-	Each of three people talking, when speaking individually produce an unknown sound level L_1, but when they talk together, the sound level is 70 dB. Calculate the sound level L_1. **[6 Marks]**

Best wishes:

Dr Hany Kamal

المستوى الثانى - مقدمة فى الفيزياء الحيوية فرع ١١

Mansoura University
Faculty of Science
Physics Department
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Course title: General biophysics

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Dr Hany Kamal

المستوى الثانى - مجموعة البيولوجى
كيمياء العناصر المكتلة لطلاب + الجيولوجيا -

Mansoura University Faculty of Science Chemistry Department Subject: Chemistry Course(s): Inorganic 221	كلية العلوم جامعة المنصورة	First Term Microbiology, Environmental, Geology, Botany, zoology. Chem. Students Date : Jan, 2014 Time Allowed: 2 hours Full Mark: 80 Marks

Answer The Following Questions

1. Comment on (10 only) of the following **[Each one 3 Marks = 30)**

1. Oxy-hydrogen torch is used in cutting and welding metals.
2. Lithium is similar to magnesium.
3. BF_3 is Lewis acid.
4. White phosphorous should never be allowed to come in contact with the skin
5. Calcium dihydrogen phosphate is used in food industry.
6. Na^+ is smaller than Na but Cl^- is bigger than Cl.
7. Malathion has a great effect on insects than man.
8. Aqueous solutions of Be(II) salts are acidic
9. Graphite conducts electricity.
10. Both sodium peroxide and potassium superoxide are used in self-contained breathing apparatus.
11. The high values of ionization energies for Be and Mg.
12. Hardness of diamond.

2. Compiete the following Equation (10 only) **[Each one 3 Marks = 30)**

1. $CH_4 + H_2O \xrightarrow[1000°C]{Ni}$
2. $B_2O_3 + Co\ O \xrightarrow{heat}$
3. $Ca\ CN_2 + 5H_2O \rightarrow$
4. $2NaHB_4 + H_2SO_4 \rightarrow$
5. $NH_{3(aq)} + ClO^-_{(aq)} \rightarrow$
6. $2\ Ca_3(PO_4)_2 + 6\ SiO_2 + 10C \xrightarrow[1000°C]{over}$
7. $AgCl \underset{dark}{\overset{sunlight}{\rightleftharpoons}}$
8. $SiO_2 + C \xrightarrow{2000°C}$
9. $SiCl_{4(g)} + 2Mg(s) \rightarrow$
10. $4NH_{3(g)} + 50_{2(g)} \rightarrow$
11. $SiO_2 + 6HF \rightarrow$
12. $2NaCl \xrightarrow[Electrolysis]{CaCl_2(l)/600°C}$

3. Try on (4 only) of the following : [Each one 5 Marks = 20)

1. Plant fertilizers.
2. Contact process for production of sulfuric acid
3. Structure of B_2H_6
4. Ortho and para hydrogen.
5. Solvay process for production of sodium carbonate .

المستوى الثالث - مجموعة البيولوجي - كيميا، العناصر الممثلة ك٢٢١
الجيولوجيا

Mansoura University Faculty of Science Chemistry Department Subject: Chemistry Course(s): Inorganic 221	كلية العلوم جامعة المنصورة	First Term Microbiology, Environmental, Geology, Botany, zoology. Chem. Students Date : Jan, 2014 Time Allowed: 2 hours Full Mark: 80 Marks

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

جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Final Examination in Botany
First Term: Dec. 2013

Educational Year: Second Level **Program (Branch): Biology**
Subject: Bot (201) **Course(s): Introduction to Plant Ecology & Taxonomy**
Time: 2 hrs **Date: 31 /12/2013** **Full mark:** 60 **Question mark: 20**

Answer the following three questions:

Q1:

[A] **Mark the following sentences by true (√) or false (×)** **(10 marks)**

1) Halophytes are plants growing in saline habitats, while hydrophytes growing in aquatic habitats.
2) Hydrophytes adapted to habitat by formation of thick cuticle.
3) Obligatory halophytes requiring salinity throughout their life.
4) Mangrove belongs to xerophytic vegetation.
5) A vertical section of soil through all its horizon termed as soil profile.
6) Soil triangle classified soil into three textural classes.
7) Autecology is the science study the relations between individual plant and its habitat
8) Capillary water is the water combined with chemicals in soil.
9) Drought escaping plants are short lived plants called ephemerals.
10) In the evolution of vegetation the aggregation of plants led to competition.

[B] Give an account on:

1) Hydrosere succession (With help of diagram). **(6 marks)**
2) Transported soil parent materials. **(4 marks)**

Q2:

[A] Complete the following sentences **(10 marks - ½ marks each)**

1. The evolution of vegetation started by stage called…….
2. Salt marshes may be inland or …….
3. Three basic processes are concerned in soil development which are ……. , …….and…….
4. Xeric habitats may be physically or ……dry
5. The crustose lichen stage followed by……stage in xerosere succession
6. The main causes of plant succession are ……,…….and…….

[B]

1. Give one important difference between the following pairs: **(6 marks)**
   - Gramineae and Cyperaceae
   - Caryopsis and Cypsela
   - Syconus and Sorosis
2. With the help of flora diagram and floral formula discus the floral characters of Musacea **(4 marks)**

Please turn the page

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

جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Final Examination in Botany
First Term: Dec. 2013

Q3:

[A] **Fill the space with the correct word:** **(10 marks)**

1) The inflorescence with sessile flowers are ....., ..., ...and.....
2) .....and.....constitute the essential leaves of the flower.
3) .....is the axis of the flower while ..... is the axis of the inflorescence.
4) Englar divided plants into ....., ..., ...and.....
5) Taxonomy is the science that treats....., ...and.....of the plants.
6) Catkin inflorescence characterized by ....., ...and.....
7) In..... flower the floral parts situated around the ovary.
8) In.....the placentae develop on the wall of a compound ovary.

[B] **Compare (answer <u>five</u> only): (5 marks)**

1) Type of fruit in Crucifrae and Leguminosae.
2) Ovary position of Malvaceae and Umbelliferae.
3) Type of stamens in Cruciferae and Geraniaceae.
4) Type of fruit in Labiatae and Compositae.
5) Presence of perianth in Salicaceae and Chenopodiaceae .
6) The main difference between Choripetalae and Sympetalae.
7) The number of stamens in Mimosoideae and Papilionoideae.

[C] Mention the families which have the following characters: (answer <u>three</u> only) (5 marks)

1) Ginobasic style
2) Epicalyx
3) Fleshy oblque placenta
4) United anthers

Examiners:

Prof. Ibrahim Mashaly

Dr. Ehsan El-Habashy

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

جامعة المنصورة
كلية العلوم
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جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Final Examination in Botany
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Examiners:

Prof. Mohamed Abu Ziada

Dr. Yasser El-Amier

Mansoura University Faculty of Science Physics Department		**First Term Exam, 2014** **Second level** Date:**28-12- 2013** Time allowed : **2 hours** Full Mark: **80 Mark**
Subject: **Physics**		Course: **Physical Optics 221 ف**

Answer the Following Questions

[1] a -Demonstrate an explanatory diagram of the optical arrangement of Newton's rings. Discuss the forming of dark spot in the center of these rings. Derive the necessary formula of these ringes. **[15 Marks]**

b - The disturbances produced at a given point by two coherent sources separately are given by;

$y_1 = a \sin \omega t$

and $y_2 = b \sin (\omega t - \delta)$.

Deduce an expression for the intensity at a given point when both the sources act simultaneously.

Show a plot of this intensity as a function of δ for the case where (a=b).

[12 Marks]

[2] a- Using Fresnel's biprism give an experiment to determine the refractive index of the thin sheet of a transparent material having thickness t. Derive the necessary formula. Explain why a white light is used in this experiment. **[15 Marks]**

b- A grating with 6000 ruling /cm is illuminated with white light at normal incidence. Describe the diffraction pattern for zero and first order assuming that the wavelength of light extends from (4000 A°) to(7000 A°).

[12 Marks]

[3] a- Discuss Fraunhofer diffraction pattern when using a rectangular slit. Derive an expression for the intensity distribution of the observed diffraction pattern . Show a plot of this intensity. **[18 Marks]**

b- Drive the Malus law of the intensity of polarized light transmitted through the analyzer. **[8 Marks]**

Good Luck

Examiners: Prof. Dr. Taha Sakkar & Prof. Dr. Karemal El -Farhaty

Prof. Dr. Eman Seisa & Prof. Dr. Mohamed Kabeel

المستوى الثانى - كيمياء وفيزياء ف 221 ضوء فيزيائى

Mansoura University Faculty of Science Physics Department		**First Term Exam, 2014** **Second level** Date:**28-12- 2013** Time allowed : **2 hours** Full Mark: **80 Mark**
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Prof. Dr. Eman Seisa & Prof. Dr. Mohamed Kabeel

Mansoura University
Faculty of Science
Zoology Department

Academic year: 1st semester, 2013/2014
Program: Biology Students (2nd Level All Programs)
Course: Chordata and Vertebrata Code: (Z 204)

Date: 23/12/2013
Time: 2hrs
Marks: 60

==========

Answer All the Following Questions

Question No. 1: Complete the Following Sentences: 30 Marks, each with 1 marks

1- Most species of Lamprey are anadromous, this means that they .....
2- Internal fertilization in cartilaginous fish occurred because .....
3- The claws formed as skeletal derivative in Classes ....., ..., and .....
4- Class Amphibia includes three Orders: ....., ..., and .....
5- In Mammals, the thoracic and abdominal cavities are separated by .....
6- The alimentary canal of Birds is specialized by the presence of crop for ....., ... for ..... and ..... for .....
7- The reptilian heart has ..... chambers, they show the habits of hibernation and .....
8- In colonial forms of Urochordates self fertilization never happened because .....
9- Fishes have ..... ear only, Amphibians have ..... and ..... ears but amniotes have ....., ... and .....
10- Mammals can breath while eating due to presence of .....
11- In Amphioxus waste products are collected by ..... and out with water through .....
12- Amniotes have four extr-embryonic membranes, they are ....., ..., ... & .....

Question No. 2: Choose the Correct Answer from the following: (15 Marks, each with 1 marks)

1- Pulmonary and systemic circulations are characteristic features of .....
A) All Tetrapods B) Amniotes Only C) Warm blooded animals only
2- Swimming bladder is found in .....
A) Osteichthyes B) Chondrichthyes C) All of them
3- Neoteny means:
A) Larva more advanced than the adult B) Larval maturation C) All the Above
4- The spiral valve is found in the intestine of .....
A) Osteichthyes Only B) Chondrichthyes Only C) Chondrichthyes & Cyclostomes
5- Retrogressive metamorphosis is a phenomenon in .....
A) Larvacea B) Thaliacea C) Ascidiacea

Q2) A- Discuss TWO only of the following: **(15) marks**

1- Steps of fertilization.

2-The ovarian cycle.

3- The changes during spermiogenesis.

Q3)Choose the correct answer: **(10) marks**

1- During implantation ..... cells hang the blastocyst into the uterine wall.

a- hypoblast b- trophoblast c-epiblast

2- The cleavage does not pass through ..... stages.

a- G_1 and G_2 b- S c- M

3- In human development. blastocyst differentiate into inner cell mass and.....

a- epiblast b- trophoblast c- hypoblast

4-The following implantation sites represent ectopic pregnancy except .....

a- uterin b- ovarian c-tubal

5- In human development amnion is derived from .....

a- ectoderm b- mesoderm c- endoderm

6- Hatching of human blastocyst occurs as a result zona pellucida digestion by.....

a- E-cadherin b- hyaluronidase c- protease

7- In human. fetal movements occur in the ..... trimester

a- first b- second c- third

8-The chick`s egg is classified as .....

a-telolecithal b- alecithal c- mesolecithal

9- During chick development. the three germ layers are formed from .....

a- epiblast b- hypoblast c- trophoblast

10- During chick development. the area pellucid is separated from yolk by .....

a- blastoceol b- subgerminal cavity c- marginal zone

Q4) Compare between each of the following, adding labeled diagram: (20) marks

1- Gastrula of Amphioxus and Toad.

2- Monozygotic and dizygotic twins (definition and fetal membranes).

3- Origin and function of Amnion and Allantois.

4- Cleavage of Amphioxus and Toad.

With our best wishes ..... Dr. Manal Ramadan. Dr. Heba EL-Ghawet. Dr. Eman Bakr

المستوى الثانى - مجموعة البيولوجى - مدخل إلى علم الأجنة ج ١

Mansoura University
Faculty of Science
Zoology Department

Final Exam, Jan. 2014

Education year: Second level | **Program: Biology**
Time: 2 hours | **Subject: Zoology**
Date: 21/1/ 2014 | **Course: Introduction to Embryology**
Code: Z 201 | **Full Mark: 60**

Answer all the following questions:

Q1) A- *Rewrite* the sentences in your answer sheet after correction: (10) Marks

1- In the uterine tube the ovum passes along by ……..
a-activity of the tubal cilia b- tubal muscular contraction c- both

2- LH stimulates the production of …… by the follicular cells.

a- estrogen b- progesteron c- acrosin

3-The necrospermia man who has ……. sperms in ejaculate.
b- No b- low count c- dead

4- The bulbourethral secretion gives the semen ……
a- milky appearance b- acidity c- alkalinity

5- Acrosomal reaction occurs by ……. Glycoprotein overlies the sperm.
a- removing b- adding c- union

6- At the puberty, the PGC's differentiate into …….. which are spermatogenic linage.
b- Spermatogonia b- Sertoli cells c- spermatids

7- Animtal pole is the pole of the egg where yolk is ……. concentrated.

b- least b- most c- not A or B

8- LH secreted from the anterior pituitary stimulates …….. process.

a- ovulation b- capacitation c- fertilization

9- The secretion of prostate gland contains fibrinolysin enzyme that …..the semen.
a- liquefies b- solidifies c- neutralizes

10- During spermiogenesis, differentiation of the acrosomic vesicle is formed during …
b- cap phase b- golgi phase c- maturation phase

Q1) B - Compare between both of the following: (5) marks

a- Morphological and Numerical sperm abnormalities.

b- Proliferative and secretory phase of the uterine cycle.

Q2) A- Discuss TWO only of the following: (15) marks

1- Steps of fertilization.

2-The ovarian cycle.

3- The changes during spermiogenesis.

Q3)Choose the correct answer: (10) marks

1- During implantation ..... cells hang the blastocyst into the uterine wall.

a- hypoblast b- trophoblast c-epiblast

2- The cleavage does not pass through ..... stages.

a- G_1 and G_2 b- S c- M

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Q4) Compare between each of the following, adding labeled diagram: (20) marks

1- Gastrula of Amphioxus and Toad.

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With our best wishes ..... Dr. Manal Ramadan, Dr. Heba EL-Ghawet, Dr. Eman Bakr

Mansoura University
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جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Final Examination in Botany
First Term: Jun. 2014

Educational Year: Second level

Program (Branch): Chemistry-Botany / Microbiology/ Chemistry – Zoology / Environmental Sciences

Code: B 202

Courses: Introduction in plant metabolism

Time: 2 hrs **Date: 18 /1 /2014** **Full mark: 60**

Answer the following questions:

Section I
Photosynthesis & Carbohydrates

I **1- Illustrate with a diagram the significance of the Z-scheme in green tissues. (4 Marks)**

2- Mention the different steps which need ATP and ($NADPH_2$ and ATP) during CO_2-fixation. (3 Marks)

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3- **Write an equation to summarize the Calvin cycle. (3 Marks)**

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4- **Write the reactions which are activated by: Aldolase, Transketolase and Transaldolase during the Calvin cycle. (3 Marks)**

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II **"Though the great importance of carbohydrates for any developing plant cell, not all the cells have the ability to synthesize such essential macromolecules."**

(a) Mention only four roles of carbohydrates in plant development and growth. (2 Marks)

1- .....

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2- .....

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3- .....

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4- .....

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b) Sketch a longitudinal section in the tissue that is considered the pathway of carbohydrates translocation within the plant. (3 Marks)

(c) Briefly refer to only two experiments which prove that the sketched tissue is the pathway of carbohydrates translocation within the plant.

(3 marks)

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Section II

Respiration

A Complete the following sentences: (4 marks)

a	b	c	d
1-	3-	5-	6-
2-	4-		7-
			8-

a- …(1)… and …(2)… are stages of aerobic respiration occur in mitochondrion.

b- …(3)… net ATP are formed during aerobic respiration while ...(4)… net ATP are formed during anaerobic respiration.

c- The electron carriers in complex I include a tightly bound cofactor called ...(5)...

d- Pyruvate dehydrogenase enzyme exist as a large complex that catalyze a reaction in a three step process: ...(6)..., ...(7)... and ...(8)..

B Illustrate the different steps of glucose conversion into ethanol during anaerobic respiration. (5 Marks)

C **Circle the correct answer or answers. (4 Marks)**

1	a	b	c	d
2	a	b	c	d
3	a	b	c	d
4	a	b	c	d

1 -Which of the following is peripherally associated with the inner mitochondrial membrane

a- Complex III
b- Complex I
c- QH_2
d- CytC

2- Select all the components of the electron transport chain that contain a heme group

a- complex IV
b- Complex I
c- Cyt C
d- Complex III

3- Which of the following reactions do not contribute to the formation of a proton gradient across the inner mitochondrial membrane?

a- $NADH + H^+ + Q \longrightarrow NAD + QH_2$

b- $Succinate + Q \longrightarrow Fumarate + QH_2$

c- $Cytochrome\ C1 + QH_2 \longrightarrow cytochrome\ C1 + Q + 2\ H^+$

d- $Cytochrome\ a + 1/2\ O_2 + 2\ H^+ \longrightarrow H_2O + cytochrome\ a$

4- All these enzymes are present in mitochondrial matrix except

a- Aconitase
b- Succinyl –CoA synthetase
c- Succinate dehydrogenase
d- Malate dehydrogenase

Section III
Amino acids & Proteins

Answer the following questions: (8 Marks; each of 2 Marks)

1- Synthesis of aspartate by reductive amination method, referring to the structural formula.

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2- Conversion of an amino acid glutamate to an amide glutamine, referring to the structural formula.

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3- Elongation step in translation of protein synthesis. (drawing only)

a	b

c	d

4- Compare between transfer RNA and ribosomal RNA.

	t- RNA	r-RNA
Description	.....	.....
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	.....	.....
Function	.....	.....
	.....	.....
	.....	.....
	.....	.....
	.....	.....

B- Complete the following sentences: (5 Marks)

1.	**a-**	
	b-	
2.	**c-**	
	d-	
3.	**e-**	
4.	**f-**	**g-**
5.	**h-**	

1- RNA polymerase enzyme has two functions in transcription step, which are ...(a)… and …(b)….

2- Codon may be defined as …(c)…, while anticodon is defined as …(d)…

3- The general equation of transamination reaction using structural formula is ...(e)…

4- Regions on DNA that show where RNA polymerase must bind to begin the transcription are called …(f)…, while …(g)… are specific base sequences act as signals to stop transcription.

5- Structural formula of alanine-glycine-alanine tripeptide is …(h)…

Section IV
Lipids

1- Answer the following: **(5 Marks)**

Question	Answer
? enzyme 1-18:0-ACP----------→ 18:1- ACP	18:0-ACP----------→ 18:1- ACP
Name the following fatty acids 2- 16:3	
3- 20:0	
4- Structural formula of glycerol	
5- Precursor for fatty acid biosynthesis	
6- Examples of nonpolar solvents	
7- Prokaryotic pathway occure in	
8- Kennedy pathway are located on	
9- Fatty acid synthesis in animal cell occur in	
10- Fatty acid **(14C)** broken down to **(a number of)** acetyl-CoA molecules	

2- Write the reaction of the glyoxylate cycle. Illustrate your answer the site of each step. (4 Marks)

3- Describe the different steps that will accomplish fatty acid biosynthesis. (4 Marks)

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With our best wishes

Prof. Sami Abo El-Kasem — Prof. Waffa M. Shoukry
Dr. Rasha M. Eid Gamel — Dr. Amany M. Kazamel
Dr. Bardes M. Miky