Faculty of Science
Botany Department
El-Mansoura, Egypt

كلية العلوم
قسم النبات
المنصورة - مصر

**Final Examination in Botany**
**First Term: Jan. 2016**

**Educational Year: Second level** | **Program (Branch): Biology Students**
**Code: B 202** | **Courses: Introduction in plant metabolism**
**Time: 2 hrs** | **Date: 27 /12 /2015** | **Full mark: 60**

**Answer the following questions:**

## Section I:Photosynthesis

**Answer the following:**

**A- Can you discuss briefly what exactly happens during the 1st stage of photosynthesis? (3 marks)**

**B- From the 2nd phase of photosynthesis:**

1- Where does it occur? **(0.5 mark)**
2- What is the name of this phase? **(0.5 mark)**
3- What is the $CO_2$ acceptor and what is the responsible enzyme? **(1 mark)**
4- Mention the steps which need $NADPH_2$ and ATP. **(2 marks)**
5- Do you think that RuBP can be regenerated? **(0.5 mark)**
6- Give an equation to summarize this cycle? Comment on this equation. **(2 marks)**
7- What are the different enzymes required until this phase is completed? Mention the function of two enzymes. **(2 marks)**

**C- Show with an equation how can higher plants synthesize source? (1.5 marks)**

## Section II: Respiration

**A- Complete the following sentences: (3 marks; 1 mark each)**

1. In alcoholic fermentation, conversion of pyruvate into ethanol is catalyzed by ..... and ..... respectively.
2. Conversion of 3-phopsphoglycerate into 2-phosphoglycerate is catalyzed by .....
3. For each ATP molecule formed, ..... H+ is transferred from ..... to .....

**B- Answer the following:**

1. Illustrate the different steps of conversion of glucose (6 C) into two 3C molecules. **(4 marks)**
2. Starting with pyruvate, write all the reactions needed to convert it into $CO_2$. **(3 marks)**

**C- Choose the most correct answer. (3 Marks; 1 mark each)**

1. Six electrons from $NADH+H^+$ and four electrons from $FADH_2$ moved through ETC form ..... molecules of ATP.
   a- 3 & 2 b- 6 & 4
   c- 9 &4 d- none of the previous
2. All of these compounds contain iron sulfur (Fe-S) centers except .....
   a- Complex I b- Complex II
   c- Complex III d- Complex IV
3. Cytochrome C is a carrier protein characterized by .....
   a- Hydrophilic b- Peripherally attached
   c- Hydrophobic d- all the previous

## Section III: Carbohydrates & Lipids

**A- Write the right concept for the following sentences: (3.5 marks)**

1. (.....) are small saccharide polymers consisting of three to ten monosaccharide units joined together by glycosidic linkage.

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2. (.....) consists of glucose and galactose units.
3. (.....) is a polymer of repeated glucose units linked together by β-glycosidic linkages.
4. (.....) is the most sugars that transported in phloem.
5. (.....) can be either a source or sink, depending on the plant's stage of development and the season.

**B- Write short notes on: (3.5 marks)**

1. Steps of carbohydrates translocation within the plant.
2. Effect of cytokinins on carbohydrates translocation.
3. Role of companion cells in food translocation.
4. Polysaccharides.
5. Direction of carbohydrates translocation through the plant.

**C- Write short notes on: (6 marks)**

1. Oleosomes.
2. Synthesis of fatty acid (equations only and don't forget the name of enzymes that activate the reactions).

## Section IV: Lipids – Amino acids & Proteins

**A- Discuss each of the following: (11 marks)**

1- Glyoxylate cycle. **(3 marks)**
2- The conversion of 1-Acyl-glycerol-3-phosphate (lysophosphatidic acid) to diacylglycerol. **(2 marks)**
3- Catabolism of an amino acid (alanine) by oxidative deamination method, referring to structural formula. **(2 marks)**
4- Biosynthesis of glutamine from glutamate, referring to structural formula. **(2 marks)**
5- The elongation in the translation step of protein synthesis process **(Draw only). (2 marks)**

**B- Complete the following sentences: (5.5 marks)**

1- ..... & ..... are the major types of lipids.
2- Fructose-1,6-diphosphate is converted to fructose-6-phosphate by enzyme .....,while glucose-6-phosphate is converted to glucose by enzyme .....
3- In cytosol, oxaloacetate is converted to ..... by enzyme .....during the conversion of lipids to sugars in germination.
4- A fatty acid composed of 18 carbon atoms is broken down to ..... molecules of acetyl CoA.
5- .....is the final product of the conversion of lipids to sugars during germination.
6- ..... are used as the starting material for the β-oxidation of fatty acids, while ..... is the initial acceptor for triacylglycerol biosynthesis.
7- ..... &..... are functions of RNA polymerase.
8- The structural formula of the general equation of transamination reaction is.....
9- The structural formula of aspartate-glycine-glycine tripeptide is .....

**C- Compare between the following in a table: (4.5 marks)**

1- Codon and anticodon. **(1.5 mark)**
2- Promoters and termination signals. **(1.5marks)**
3- mRNA and rRNA **(Function only). (1.5 marks)**

**With our best wishes**

Prof. Sami Abo El-Kasem
Dr. Amany M. Kazamel
Dr. Rasha M. Eid Gamel
Dr. Shimaa N. Tourky

**Mansoura University** | **First term Exam, 3/1/2016**

**Faculty of Science** | **2nd level**

**Physics Department** | **Time allowed: 2 hours**

**Full mark: 80 marks**

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**Subject : physics** | **Course : 221ف Physical optics**

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**Answer the following questions:**

1- a) Give the optical arrangement to get Fraunhofer diffraction pattern using a rectangular single slit. Discuss this diffraction pattern. Drive the formula of intensity distribution of the resultant pattern.

(19 marks)

b) A grating with 6000 lines/cm is illuminated with monochromatic light at normal incident, the second order spectral line is observed to be deviated through $30^{\circ}$. Calculate the wavelength of the spectral line.

(8 marks)

2- a) Give a brief account, with an explanatory diagram of the optical arrangement of Fabry-Perot system of multiple- beams interference. Drive an expression for the intensity distribution in transmission for this system when the two coated plate are of same transmission coefficient T and of same reflectivity R. Sketch schematic diagram for the intensity distribution.

(20 marks)

b) Drive Malus law of the intensity of polarized light transmitted through analyzer.

(7marks)

3- a) Demonstrate an explanatory diagram of the optical arrangement of Young's double slits experiment. Drive the necessary formulae for the brightness and darkness conditions.

(10marks)

b) Give an experiment to determine the thickness of a thin sheet of transparent material using Fresnel's biprism. Drive the necessary formula.

(8 marks)

c) A water film ( $\mu = 1.33$ ) in air is 3000 $A^{\circ}$ thick if it is illuminated with white light at normal incidence. What color will appears to be in reflected light?

(8 marks)

Good Luck

Prof. Dr. Taha Sokkar

Mansoura University
Faculty of Science
Chemistry Department
Course: CHEM 235

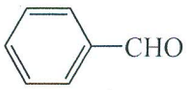
First Term Exam
Level Two: CHEM 235
Time Allowed: 2 Hours
Full Mark: 60 Marks
Date: 10 January, 2016

## Answer the following questions:

**Question (1):** (15 Marks)

**(A) Complete the following reactions by the major product(s):**

(a) $CH_3-\overset{\overset{O}{\|}}{C}-CH_3 + 3\,I_2 \xrightarrow{\text{aq. NaOH}}$ ---------- + ----------

(b) 2  + aq. NaOH ⟶ ---------- + ----------

(c) $CH_3-\overset{\overset{CH_3}{|}}{CH}-CH_2-CH_3 + Cl_2 \xrightarrow{\text{Light}}$ ----------

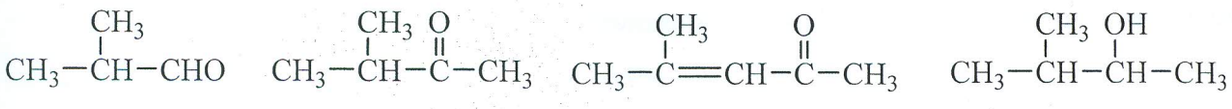
(d) $CH_3-CH_2-CHO + H_2NNH-\overset{\overset{O}{\|}}{C}-NH_2 \longrightarrow$ ----------

(e) $CH_3-\overset{\overset{CH_3}{|}}{C}=CH_2 \xrightarrow{HBr\,/\,H_2O_2}$ ----------

(d) $CH_3-C\equiv CH \xrightarrow{NaNH_2}$ ---------- $\xrightarrow{CH_3CH_2I}$ ----------

**(B)An alkene with the formula $C_8H_{16}$ reacts with ozone ($O_3$/Zn-$H_2O$) to provide acetone and pentanal. What is the structure of this alkene?**

**Question (2):**
**For compounds from (1) to (4), answer the questions (a) to (g): (15 Marks)**



**Compound (1)** **Compound (2)** **Compound (3)** **Compound (4)**

**(a) Give the IUPAC names for compounds (1), (2) and (3)?**
**(b) How can you convert compound (1) into compound (2)?**
**(c) Give the product when compound (1) is oxidized by potassium dichromate ($K_2Cr_2O_7$).**
**(d) Suggest a suitable method to prepare compound (3).**
**(e) How can convert compound (2) into compound (4).**
**(f) Action of phosphorus trichloride ($PCl_3$) on compound (4).**
**(g) Reduction of compound (1) with Zn-Hg in the presence of HCl.**

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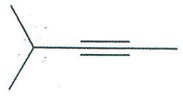
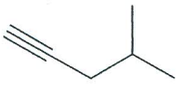
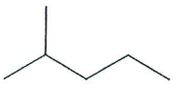
**Question (3):** **(15 Marks)**

**(A) Choose the correct answer:**

(1) Which from the following chemical structures has the IUPAC name: 4-Methyl-2-pentyne

(a)  (b)  (c)  (d) 

(2) The IUPAC name of the alcohol $CH_3CH(CH_3)CH_2CH(OH)CH_2CH_3$ is:

(a) 2-Methyl-4-hexanol (b) 2-Methyl-4-hexanone

(c) 5-Methyl-3-hexanol (d) 5-Methyl-3-hexanone

(3) Hydration of $CH_3$-C≡CH with water and $H_2SO_4/HgSO_4$ produces:

(a) $CH_3CH_2CHO$ (b) $CH_3COCH_3$ (c) $CH_3CH_2CH_3$ (d) $CH_3CH{=}CH_2$

(4) Addition of two moles of HCl to 1-butyne produces?

(a) 1,1-dichlorobutane (b) 1,2-dichlorobutane

(c) 2,2-dichlorobutane (d) 2,3-dichlorobutane

(5) Compounds of the type R-$CH_2$-OH are refereed to as ..... alcohols.

(a) quaternary (b) tertiary (c) secondary (d) primary

(6) The major product that produced from the action of alc. KOH on $CH_3CH(Cl)CH_2CH_3$ is:

(a) $CH_2{=}CHCH_2CH_3$ (b) $CH_3CH{=}CHCH_3$ (c) $CH_3CH(OH)CH_2CH_3$

**(B) Suggest a suitable method to differentiate between 2-butanol and 3-pentanol.**

**Qustion (4):** **By equations only, Expalin the following reactions? (15 Marks)**

**(1) Reaction of benzaldehyde with acetic anhydride in presence of $CH_3COONa$.**
**(2) Conversion of 2-butene into 2-butyne**
**(3) Heating of 2-methyl-2-butene with basic $KMNO_4$ solution.**
**(4) Kolbe electrolysis $KOOCCH_2CH_2COOK$.**
**(5) Reaction of acetaldehyde with two moles of methanol to form Acetal.**

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**GOOD LUCK**

**Prof. Dr. Ahmed Fadda, Prof. Dr. Margret Mansour, Prof. Dr. Ehab Abdel-latif**
**Dr. Manal El-fidawy, Dr. Ghada Emad and Dr. Ibrahim Youssef**

| | | |
|---|---|---|
| Mansoura University<br>Faculty of Science<br>Chemistry Department<br>Course: Represented Elements<br>Code: Chem 221 | | First Semester<br>2nd Level Biochemistry<br>Date: Jan. 2016<br>Time: 2 hours<br>Marks: 80 |

**Answer The Following Questions**

**I) Comment on (7 only) of the following:- (28 marks)**

1) Thallous (I); $Tl^+$ compounds are stable.
2) The 1st Ionization Energy (1st IE) of ($_4$Be, $_7$N and $_{10}$Ne) is high while for ($_8$O) is low.
3) The reaction of elements of Group IA with water is increasing through the group.
4) Berylium metal is amphoteric whereas aqueous solution of Be(II) is acidic.
5) Carbon monoxide is considered as good reducing agent.
6) Magnesium(II) chloride is heavily hydrated more than Barium(II) chloride.
7) Nitrogen ($N_2$)molecule is generally unreactive while Phosphorous molecule (P4) is highly reactive.
8) The solubility of most of the salts of alkali group (IIA) elements is decreasing down the group.
9) The acidity and pka values in the hydrolysis of one molecule and three molecules of boric acid ($H_3BO_3$).
10) Effect of increasing $CO_2$ or $O_2$ concentration on the blood pH.

.....

**II) A- Write shortly on (4 only) of the following:- (20 marks)**

1) Biological importance of carbon dioxide.
2) Separation of pure silicon element (Si) from silica ore ($SiO_2$).
3) Photodissociation of nitrogen dioxide ($NO_2$) and Ozone ($O_3$) levels in sunny days.
4) Isolation of pure aluminium (Al) from bauxite ore {AlO(OH)}.
5) Production of nitric acid ($HNO_3$) by Ostwald process.
6) Bond strength of the pairs of (C-C & Si-Si) and (C-O & Si-O) bonds

.....

**II) B-Complete (4 only) of the following chemical equations:- (8 marks)**

1) $Ba + O_2$ (at 500 °C) $\rightarrow$
2) $H_2BO_3 + H_2O \rightarrow$
3) $Be_2C + H_2O \rightarrow$
4) $^{14}_{7}N + ^{1}_{0}n \rightarrow$
5) $Li_3N + D_2O \rightarrow$
6) $B_2O_3 + NH_4BF_4 \rightarrow$

.....

**IIIA)**

**1-Discuss the structure and nature of bonding for**

**a) Diborane ($B_2H_6$) b) Trimethylamine {$N(CH_3)_3$} (7 marks)**

**2-An insulator like Silicon (Si) can be converted to semiconductors (n-type & p-type) (5 marks)**

.....

**IIIB) Choose the most correct answer for 8 only:- (12 marks)**

1) $Li + O_2 \rightarrow$ ....., while $Rb + O_2 \rightarrow$ .....
a) Li & RbO b) $LiO_2$ & $RbO_2$ c) $Li_2O$ & $RbO_2$ d) LiOH & $RbO_2$

2) $CaC_2 + N_2 \rightarrow$ .....
a) $Ca_3N_2$ b) $CaCN_2$ + C c) $CaCN_2$ d) C

3) The structure of $N(SiH_3)_3$ has .....
a) triagonal b) triagonal pyramidal c) due to $sp^2$ d) a & c are correct

4)Diamond is ..... than graphite due to .....
a) harder, saturation b) $sp^2$ c) weaker, $sp^3$ d) harder, $sp^2$

5)$Pb^{2+}$ is stable than $Pb^{4+}$ due to
a) metallic character b) inert pair effect c) reactivity of $6s^2$ electrons d) b & c

6) Baking powder ( ..... ) is responsible for evolution of $CO_2$ during baking
a) $NaHCO_3$ b) $Na_2CO_3$ c) $Ca(H_2PO_4)_2$ d) $CaHPO_4$

7) $H_2SO_4 + SO_3 \rightarrow$ .....
a) fuming sulphuric acid b) $H_2S_2O_7$ c) $H_2SO_3$ d) a & b
e) b & c

8) Oxidation state of Cl in $HClO_4$ is
a) +1 b) +7 c) +5 d) +4

9) $^{7}_{3}Li$ isotop is used in treatment of cancer *via*.....
a) neutron capture therapy b) physiotherapy c) chemotherapy d) electron capture therapy

10) Chlorophyll is ..... porphyrin complex, catalyse the ..... process
a) $Ca^{2+}$, gypsum b) Mg, photosynthesis c) $Fe^{2+}$, $O_2$ storage d) $Mg^{2+}$, photosynthesis

11).....is used as anti-acid for ulcer patients
a) $CaSO_4$ b) $MgCO_3$ c) $BaSO_4$ d) $NaHCO_3$

*Best wishes*

*Prof. Tawfik Rakha*

*Prof. Sahar Mostafa*

*Dr. Rania Ramadan*

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

جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

**Final Examination in Botany**
**Second Term: Jan. 2016**

**Educational Year: Second Level** **Program (Branch): Biology**
**Subject: Bot (201)** **Course(s): Introduction to Plant Ecology & Taxonomy**
**Time: 2 hrs** **Date: 17 / 1 /2016** **Full mark: 60** **Question mark: 20**

**Answer the Following Questions:**

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**Q.1:** **[A] Mark the following sentences by true (√) or false (x) (10 marks)**

1) Drought escaping plants are short lived plants called ephemerals.
2) Xerophytes adapted to the drought by developing the root system.
3) A vertical section of soil through all horizon termed as soil profile.
4) The leaves of some xerophytes rolled to cope with the dry habitat.
5) Prismatic soil structure is commonly found in soil of arid and semiarid region.
6) Hydrophytes adapted to habitat by formation of thick cuticle.
7) Mangrove belongs to xerophytic vegetation.
8) Physical drought means that, the water is present in excess amount but it is not available to plants.
9) Hydrophytes contained well developed conducting tissue.
10) Amphibious hydrophyes, these plants are adapted to both aquatic and terrestrial mode of life.

**[B] Complete the following sentences** **(10 marks)**

1. Xeric habitats may be physically or ..... dry.
2. The three basic processes in soil development are ..... , ..... and ..... .
3. Halophytes are adapted to the environment through ..... , ..... and ..... .
4. Soil components are ..... , ..... , ..... and ..... .
5. Floating hydrophytes may be ..... and ..... .
6. The soil structure may be ..... or ..... .
7. Xerophytes are adapted to the environment through ..... , ..... and ..... .
8. The soil textural classes are ..... , ..... and ..... .
9. Colluvial soil parent materials are transported by ....., while alluvial parent materials are transported by ..... .
10. The soil parents materials may be ..... or ..... .

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**Q.2:** **[A] Write on each of the following:**

1- Evolution of vegetation. **(5 marks)**
2- Xerosere succession. (please draw) **(5 marks)**

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تابع باقي الأسئلة في خلف الورقة

**[B] Complete the following sentences** **(10 marks)**

1- In wind-pollination, polien grains are characterized by ..... , ..... and ..... .

2- ..... and ..... constitute the essential leaves of the flower.

3- Theophrastus classified the plants according to their forms into ..... , ..... , ..... and ..... .

4- Pistil is composed of ..... , ..... and ..... .

5- Imbricate aestivation may be ..... or ..... .

6- When the stamens are united with their filament only, they may be ..... or ..... or ..... .

7- In parietal placentation the number of carples are ..... while the number of lobules are ..... .

8- Collectively the stamens are termed ..... .

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**Q.3:** **[A] Describe and draw each of the following:**

1- Simple dry dehiscent fruits. **(3 marks)**

2- Racemose inflorescences with sessile flowers. **(3 marks)**

3- Floral diagram of *Phoenix* flowers. **(4 marks)**

**[B] Mark the following sentences by √ or X (with correction)** **(10 marks)**

1- Androcium in family: **Compositae** are diadelphous.

2- Stamens with united filaments in family: **Cruciferae**.

3- The anthers are united with free filaments in **Geraninaceae**.

4- **Sympetalae** are characterized by free petals.

5- **Malvaceae** have hypogenous flowers.

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**With Best Wishes & Good Luck**

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**Examiners:**

**Prof. Dr. Ibrahim A. Mashaly** **Prof. Dr. Mohamed E. Abu-Ziada**

| | | |
|---|---|---|
| Mansoura University<br>Faculty of Science<br>Physics Departement<br>Subject: Introduction to Biophysics<br>Course code: biophys221 | | First Term, Final Exam<br>2nd Students<br>Time Allowed :2 h .<br>Date :20/1/2016<br>Full Mark :80 Mark |

# *Answer all the following questions*

## I-Write short notes about each of the followings:

a) Cobalt 60 and linear accelerator

c) Classification of light atom interaction

b) Ion distribution in cell membrane

e) Acoustic impedance

f) Transducer

g) Equivalent Circuit Model for the Plasma Membrane

h) Treatment planning software

d) Compton Effect

## II-Choose the correct answer from the followings:

1) The process in which α and β rays pass close to atoms and knocks the electrons out is called:

a ) Ionization

b) Ionisation

b) Decay

d) None of above

2)The sound that emanates from a piezoelectric transducer originates:

a) From a point on the active surface

b) From most of the active surface

c) From a small area in the center of the active surface

d) From the edges of the active surface

3) Period is determined by:

a) Sound source

b) Medium

c) Both

4) The time it takes a wave to vibrate a single cycle, or time from the start of a cycle to the start of the next cycle :

a) Period

b) Frequency

c) Wavelength

d) Speed

e) Power

5) Which of the following ions are involved in neuronal action potentials؟

a) $Na^+$

b) $K^+$

c ) $Cl^-$

d) A and B only

e) A, B, and C

6) At what membrane voltage do neuronal voltage-gated $Na^+$ channels become activated`

a) −70 mV

b) −55 mV

c) 0 mV

d) +55 mV

7) At what membrane voltage do neuronal voltage-gated K+ channels become activated?

a) −70 mV

b) −55 mV

c) 0 mV

d) −90 mV

8) The hyperpolarization phase of the action potential:

a) Is due to the opening of voltage-gated Cl− channels

b) Is due to the prolonged opening of voltage-gated K+ channels

c) Is due to the closure of resting Na+ channels

d) None of the above

9) What is a major health concern wth MRI?

a) Reaction to applied drug

b) extrerme cold؟

c) Radiation dose

d) localized burns due to metallic implants?

10) Uses high doses of radiation to kill cancer cells and shrink tumors, delivered precisely to avoid damaging healthy brain tissue.

a) Radiation therapy

b) Ionizing radiation

c) X-ray

d) Radiosurgery

11) Which of the following is NOT true about the neuronal action potential؟

a) Action potentials are all-or-nothing .

b) Action potentials travel along axons in a non-decremental fashion .

c) Repolarization and hyperpolarization are due to the activity of K+ channels .

d) All of the above are true about action potentials.

12) Which of the following is NOT a source of background radiation?

a) Radiation from Naturally occurring unstable isotopes.

b) Radiation from a Source being measured.

c) Radiation from Space.

d) Radiation from Human Activity.

13) Which of the following types of radiation can enter living cells and cause ionization, thus damaging or destroying the cell?

a) Gamma. b) Alpha and Beta.

c) Beta and Gamma. d) Alpha, Beta and Gamma.

14) Where does radiation come from?

a) An electron b) An atom.

c) A stable nucleus d) An unstable nucleus which decays.

15) Which type of radiation would be stopped by a few millimetres of aluminium, but not by paper?

a) Gamma. b) Infra-red.

c) Alpha d) Beta.

## III-Write the scientific expression:

a) The component of the ultrasound imaging equipment that is placed in direct contact with the patient's body( ).

b) Conversion of electrical energy to mechanical energy and vice versa ( ).

c) Nerves that communicate messages between the central nervous system and the rest of the body nerves that communicate messages between the central nervous system and the rest of the body( ).

d) Places radioactive material into tumor or surrounding tissue( ).

e) The action potential goes past -70 mV because the potassium channels stay open a bit too long( ).

f) A pair of reflecting surface of which one is a perfect reflector and the other is a partial reflector( ).

مع تمنياتي بالتوفيق

د/أمل الشهاوي

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**Mansoura University**
**Faculty of Science**
**Zoology Department**

**Academic year: 2nd Year**
**Program: All Programs**
**Code: 204 Z**
**Course: Chordates and Vertebrates**

**Marks: 60**
**Date: SUN, 24/1/2015**
**Time: 2 Hours**
**Number of papers: 2**

## Answer ALL the following questions:

### Question One: [30 Marks]

**[A]- Choose correct Answer (ONLY one answer is correct)** **[10 Marks]**

**1)** – In which of the following animals the heart does not have the left and right auricles?

(*a*) Lizards and snakes (*b*) Frogs and toads (*c*) Cartilaginous and bony fishes (*d*) Crocodiles and alligators

**2)** – Which of the following structures is present in all chordates?

(*a*) Cranium (*b*) Notochord (*c*) Spinal cord (*d*) Vertebral column

**3)** – Egg-laying mammals are of the subclass-------.

(*a*) Marsupials (*b*) Placental (*c*) Eutheria (*d*) Monotremes

**4)** – All of the following involved in swimming of Osteichthyes except -------.

(*a*) Homocercal caudal fin (*b*) Squelence (*c*) Bilaterally body compression (*d*) Swimming bladder

**5)** – The infundibular region of *Amphioxus lanceolatus* has ------- pit, which is responsible for olfaction and chemoreception.

(*a*) Optic (*b*) Lorenzini (*c*) Auditory (*d*) Kolliker's

**[B]- Complete the following sentences.** **[10 Marks]**

**6)** – The first 1st visceral arch of splanchnocranium of *Scyliorhinus canicula* is called ------ and it is mainly composed of ------- and -----.

**7)** – The pigments which are present in the skin of toad are ------, ------ and ------.

**8)** – The sensory organs of *Petromyzon fluviatilis* are ------, ------ and ------.

**9)** – The exoskeleton of Chondrichthyes is represented by ------- which is composed of -----, -----, ----- and -----.

**10)** – The skin of birds is dry, cornified and devoid of glands except -------gland.

**[C]- State if the sentence is true (T) or false (F), and postulate a correction if possible.** **[10 Marks]**

**11)** – Tunicates have a notochord at some point in their life cycle.

**12)** – Skull of reptiles are dicondylic.

**13)** – Amphibians have 4-chambered hearts.

**14)** – Fertilization in *Branchiostoma lanceolatus* is external and gives rise to Ammocoet larva.

**15)** – Salamander and Newt are typical examples of Anura.

**The rest of questions in the next page ↓**

**Question Two:** **Write a brief notes on the following items:** **[15 Marks]**

1) – State (6) main general characters of class Mammalia. [4 Marks]

2) – Male ♂ urinogenital system of ***Scyliorhinus canicula.*** (Draw) [4 Marks]

3) – Digestive system of ***Petromyzon fluviatilis.*** (Draw) [4 Marks]

4) – Air sacs of birds. [3 Marks]

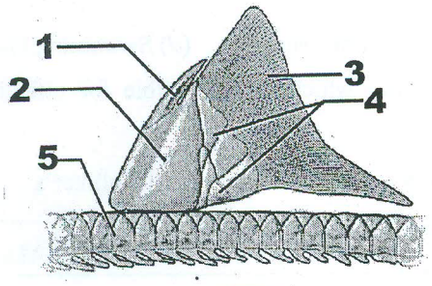
**Question Three:** **Answer the following items:** **[15 Marks]**

1) – State (5) features of flight adaptations of various body organs of birds. [4 Marks]

2) – write short notes about the swimming bladder structure and its function of boney fishes. (Draw) [3 Marks]

3) – Compare between Lacertilia and Ophidia. [4 Marks]

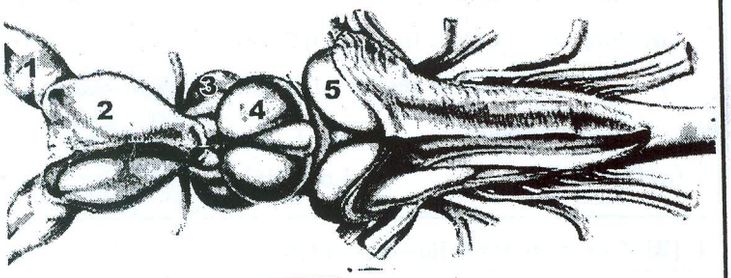
4) – Answer the questions concerning the following two diagrams [A] and [B]: [4 Marks]




A

*i)*- **Diagram [A] represents ------.**

*ii)*- **Define the structures from (1) to (5).**




B

*i)*- **Diagram [B] represents ------.**

*ii)*- **Define the structures from (1) to (5)**

*Good Luck*

**Examiner:**
*Dr.* Ahmed Elmansi

| Mansoura University<br>Faculty of Science<br>Zoology Department | |
|---|---|

**First term, Final exam, January, 2016**

**Education Year: Second Level**
**Date: 27\ 1\ 2016**
**Time: 2 hours**
**Cod: Z201**

**Program: All programs of biology**
**Subject: Zoology**
**Courses: Introduction to Embryology**
**Full Mark: 60**

## Answer all the following question:

**Q1- A) Rewrite 14 sentences only in your answer sheet after correction: (14) marks**

1- The female puberty-hood starts under the hormonal control of .....
a- Hypothalamus b- Pituitary gland c- both of them respectively

2- The ..... man who has sperm dead sperms in the ejaculate.
a-necrospermia b- oligospermia c- aspermia

3- Sperm capacitation is associated with ..... adherent seminal plasma protein.
a- adding to b- removal of c- union with

4- LH stimulate the production of ..... by the follicular cells.
a- acrosin b- progesteron c- estrogen

5- The bulbourethral secretion gives the semen.....
a- milky appearance b- acidity c- alkalinity

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

7- The egg of frog is classified as ..... according to the amount of yolk.
a- alecithal b- mesolecithal c- heavy telolecithal

8- During spermeiogenesis, Spermatids will transform to spermatozoa ..... division.
a- with mitotic b- with meiotic c- without

9- The activation of SRY gene on ..... differentiates the indifferent embryonic gonads into male gonads. a- XY chromosome b- Y chromosome c- XX chromosome

10- Sperm secretes Hyaluronidase that helps to penetrate the .....
a- corona radiata b- zona pellucida c- plasma membrane

11- Secretion of prostate gland contains fibrinolysin enzyme that..... the semen.
a- liquefies b- solidifies c- neutralizes

12- The empty Graffian follicle becomes ..... after ovulation.
a- primary oocyte b- corpus luteum c- corpus albicans

13- PGCs migrate by amoeboid movement from the .....
a- yolk sac toward germinal disc b- yolk sac toward mature gonad
c- germinal ridge toward yolk sac

14- During spermeiogenesis, shedding of most of the cytoplasm occurs during .....
a- cap-phase b- acrosomal-phase c- maturation-phase

15 - The amount of yolk influence the .....
a- egg size b- pattern of cleavage c- both of them

**Q1-B) Discuss the important of the following phenomenon: (6) marks**

1- Egg activation and the cortical reaction of fertilization.
2- Post-fertilization events.

**Q2-A) Compare between TWO pairs only of the following: (10) marks**

1- Spermatogenesis and oogennesis process.
2- Somatic cells and sex cells.
3- Proliferative and secretory phase of the uterine cycle.

**Q2-B) Compare between** the steps of gastrulation in both amphioxus and toad, adding labeled diagrams. **(10) marks**

**Q3-A) Write short note on each of the following referring to its function: (6) marks**

1- Allantois 2- Yolk sac 3- Cleavage

**Q3-B) Write briefly on the following:**

a- Types of monozygotic twins. (4) marks
b- Steps of implantation of human embryo, adding labeled diagram. (10) marks

.....

***With our best wishes .....Dr. Manal Ramadan, Dr. Heba EL-Ghaweet***