السؤال الثالث: (10 درجات)

أ- إذا كان ترتيب القواعد النيتروجينية فى جزء من شريط DNA هو

5-ATG CGC GCT AGC TGG TAG AGT GC-3

وضح ما يلى:

1) تتابع الشريط المتكامل معه فى جزئ DNA

2) تتابع القواعد النيتروجينية المنسوخة من الخيط المكمل على mRNA

3) عدد الأحماض الأمينية الناتجة من الترجمة مع تحديد شفرة البدأ و شفرة الايقاف

ب- أذكر المتطلبات اللازمة لعمل PCR ؟

ج- قارن بصورة مبسطة بين كل مما يأتي :

Codon	-	Anticodon
Missense mutation	-	Nonsense mutation

السؤال الرابع:- (15 درجة)

أ- وضح بالرسم كيف أن وجود اللاكتوز في البيئة يؤدى إلى تنظيم ا لـ Lac operon في بكتريا *E. coli*.

ب- اكتب المصطلح العلمى الذى تدل عليه كل عبارة من العبارات الاتية :

1- ( ) تتابع فى mRNA مكمل لتتابع فى rRNA الموجود فى تحت الوحدة الريبوسومية الصغرى small ribosomal subunit.

2- ( ) فى اى جزئ من DNA عند قراءة احد الخيطين من الطرف 5 الى 3 يعطى نفس التتابع عند قراءتة فى الخيط الثانى من الطرف 5 الى 3.

3- ( ) جزيئات صغيرة حلقية من DNA المزدوج توجد فى البكتريا تستخدم على نطاق واسع فى الهندسة الوراثية.

4- ( ) عملية حذف الانترونات وتجميع ولصق الاكسونات فى RNA الخاص بالكائنات الراقية.

5- ( ) المادة الكيميائة او الفيزيائية التى تسبب حدوث الطفرة

ج- عدد فقط الانزيمات المستخدمة فى عملية تضاعف الـ DNA

انتهت الأسئلة

مع خالص تمنياتي بالنجاح والتوفيق

كلية الزراعة – قسم الوراثة

امتحان الفصل الدراسي الاول
مادة اساسيات الوراثة (215 ز)
لطلاب المستوي الثاني كلية العلوم (الساعات المعتمدة)
العام الجامعي 2017 / 2018 م

لجنة الممتحنين: أ.د. عبداللطيف هشام ، د. محمود أبو السعود الراوي الزمـــن: ساعتان

تتكون ورقة الاسئلة من صفحتين صفحة امامية وصفحة خلفية كما يتكون الامتحان من اربعة اسئلة

السؤال الأول: (15 درجة)

أ- أختر الاجابة الصحيحة مما بين الاقواس : - (5 درجات)

1- يتوارث جين الصلع في الإنسان كجين .....(متنحي في الذكور - متنحي في الإناث – متنحي في الاثنين معا).

2- النظام الجيني هو الذي يحدد الجنس في.....(ديدان البونيليا- الطيور – الاسبرجس)

3- تتحور النسبة المندلية في حالة التفوق المتنحي المزدوج إلي.....(9 : 7 – 1:15 – 1:3:12).

4- من الجينات المرتبطة بكروموسوم X في الانسان..... (الشعر الكثيف علي الاذن – عمي الالوان- تعدد الاصابع).

5- في حالة الجينات المميتة المتنحية ذات الاثر المظهري السائد تتحورالنسبة المندلية إلي....(3 : 1 - 3 : أقل من واحد – 1:2).

ب- ما المقصود بكل من: (5 درجات)

السياده – الاليلات المتعدده - الجينات المتأثرة بالجنس – نظرية لايون – المظاهر النسخية

ج- وضح بالرسم منشأ حالة الأنوثة الخصيوية Testicular feminization في الانسان. (5 درجات)

السؤال الثاني: (10 درجة)

أ- عند التلقيح الاختباري لفرد خليط في ثلاث مواقع كان النسل الناتج كما يلي: (6 درجات)

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

a	B	C	325
A	b	c	335
a	b	c	72
A	B	C	78
a	B	c	93
A	b	C	87
a	b	C	7
A	B	c	3
TOTAL			1000

المطلوب :-
1- حساب المسافة بين الجينات الثلاثة

2- ارسم الخريطة الوراثية

3- احسب معامل التوافق

ب- في عشيرة مكونة من 160 فرد كانت اعداد التراكيب الوراثية كالتالي aa(80) Aa(64) AA(16)
احسب: 1- تكرارات التراكيب الوراثية والتكرارات الاليلية. (درجاتان)

2- اختبر اتزان العشيرة بقانون هاردي-واينبرج واذا كانت العشيرة غير متزنة احسب تكرارات التراكيب الوراثية عند الاتزان. (درجاتان)

أنظر خلف الورقة

1I- Write on the following **(20 marks: 4 marks each)**

a- Exposure pathways of toxicants.

b- Biologically active components in the honeybee venom.

c- Components of the wasp venom.

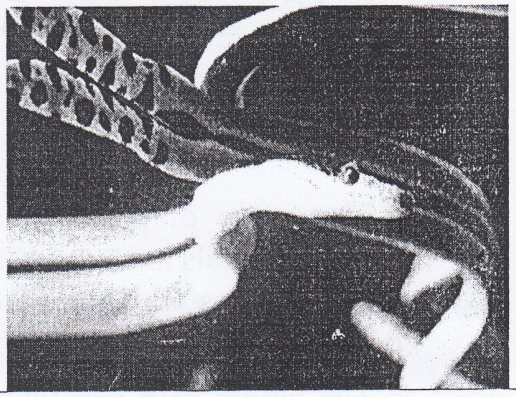
d- Treatment of envenomation by scorpions

e- Symptoms of envenomation by snake venoms.

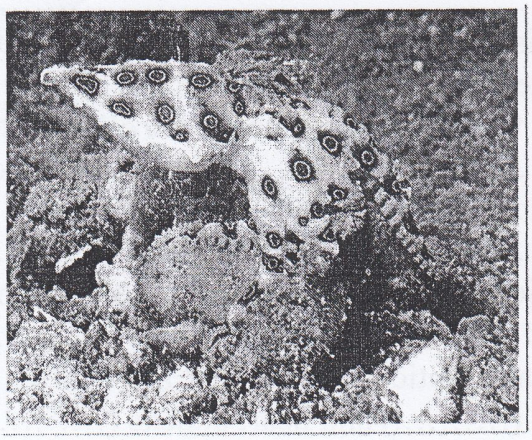
III- Write comments on the following venomous animals (16 marks: 4 marks each)

A

B



C



d-

Good Luck!

Dr. Hossam El-Din M. Omar, Prof. of Animal Physiology

(2) Mention whether of the following statements is true or false and correct the false one: **(14 Marks)**

1- Ribosomes are formed in the nucleoplasm.
2- Nuclear pores are formed by fusion of the inner and outer nuclear membranes.
3- Melanin pigment is present in the cells of hair and skin.
4- The mitotic spindle contains four types of microtubules in anaphase.
5- Chromatin fibers are observed only in the interphase nucleus.
6- Microtubules have a rigid wall composed of 27 protofilaments.
7- Microfilaments play arole in movement of cilia.
8- Strong adhesion between cells needs gap junction.
9- Microvilli consist of neurofilaments.
10-Tight junctions allow cell to cell communication.
11-In lipid bilayer, the phospholipid molecules are arranged in such a fashion that their hydrophobic ends are directed outwards.
12-Lysosomes help in protein synthesis.
13-Kreb's cycle takes place in mitochondrial matrix.
14- Acrosome is formed by Golgi body.

(3) Write on the following: Choose two items. **(10 Marks)**

A- Ultrastructure and function of the nucleolus.
B- Types of intermediate filaments and their location in the cell.
C- The Prophase of mitosis.

(4) Answer Two questions only from the followings: **(10 Marks)**

A- Give an account on the ultrastructure of the Golgi apparatus.
B- What are the functions of smooth endoplasmic reticulum?
C- What are the functions of lysosomes?

Best wishes

Prof Dr. Abdallah B. Mahmoud
Prof Dr. Bothaina M. khidr

Assiut University
Faculty of Science
Zoology Departmnt
Final Exam 2017/1018
Course title: Physiology1 (217Z)

Second Level
First term
Time: two hours

Answer these questions:

Q1- Answer by √ or X for these sentences:- (15 Marks: ¾ mark each)

1-Wax of honey bees is esters of fatty acids with long-chain alcohols (Mercil) combined with Pulmitic acid and this wax is digestible in human and animals. .... ( )

2- Secretin hormone secreted from duodenum , stimulates gastric juice secretion..... .... ( )

3- Free radicals combine with some important molecules in the cells causing destructive effect on the cells. Vitamin C and E act as free radical scavenger. .... ( )

4-Excess intake of vitamin D "calciferol" leads to the deposition of calcium salts in soft tissues such as kidney and ureter..... .....( ).

5-Vitamin K is essential for synthesis and activation of blood clotting factors, and its deficiency leads to Prolonged clotting time. .....( )

6- Vitamin B2 deficiency leads to inflammation of angles of mouth, scaled nose and vascularization of cornea and Photophobia.....( )

7-The difference between secondary and primary active transport is the first used protein channel, but the two types consume energy. ( )

8-In obstructive jaundice, there is increased both unconjugated (indirect) & conjugated (direct) bilirubin in blood, Stool is Pale (low stercobilin), color of urine is yellowish brown. ....( )

9-Vitamin A participates in epithelial glycoprotein synthesis and this maintains the mucosa of urogenital tract, respiratory tract, gastrointestinal tract, the cornea and the skin..... .....( )

10- Ceruloplasmin is metaloprotein found in blood and mediates oxidation of ferrous ions to the ferric state, thereby preventing ferrous ion-dependent formation of hydroxyl radicals ($OH^{\cdot}$) via the Fenton reaction. .... ( )

11-Glucuronic acid found in liver which converts indirect bilirubin to water soluble form. The damage of liver may inhibit this process. ....( )

12- The rate of enzyme reaction is increased with the increase of substrate concentration till a certain point at which any increase in the substrate concentration will cause no further increase in the rate of enzyme reaction. ....( )

13- The basal layer of endometrial is a source of cells for the regeneration of the functional layer. ( )

14- Hypothalmus is the centre of the regulation of the internal organs. ( )

15- The ventral roct consists of nerve fibres carrying information into the spinal cord from the senses ( )

16- Malnourishmen: is a deficiency of one or more of essential nutrients.

( )

II- Write Six Only of the following (18 marks)

1- T ypes and functions of the flora in large intestine.
2- Co mposition of plasma
3- Co mmon causes of anemia
4- Modes of brea:hing
5- Major functions of the kidneys
6- Ph ysiological function of progesterone that is released after ovulation.
7- Dif ferences between endocrine and nervous coordination.

III-Illustrate the following by drawing diagram (16 marks)

a- Body fluid compartments
b- Feedback co ntrol of the thyroid hormones in blood.
c- Hormonal control of the spermatogenesis
d- Reflex arch for pain re ceptors in the skin

Good Luck!

Dr. Hossam El-Din M.Omar, Prof. of Animal Physiology

Faculty of Science		Assiut University

Final Exam in Animal Physiology 1 (217 Z) Time Two Hours

Credit Hour System 2017/2018 First Semester

I- Mark the following sentences as True (√) or False (X) (16 marks)

1-Platelets are cytoplasmic fragments of megakaryocytes. ( )

2-Thrombocytopenia may be due to impaired liver function. ( )

3-The majority of human blood is Rh negative ( )

4-Rapid diffusion of gases through the respiratory membrane is due to the insolubility of oxygen and carbon dioxide. ( )

5-Hemoglobin releases more O_2 when temperature rises. ( )

6-Automatic breathing is influenced by the activity of central and peripheral chemoreceptors that monitor blood PC02, P02 & pH. ( )

7- Strong constriction of the renal arterioles decreases renal blood flow and glomerular filtration. ( )

8- Inhibin hormone is secreted by Leydig cells in the testis. ( )

9- Some diseases may affect urine volume and time. ( )

10- Thyroid hormones are a "double" tyrosine with the incorporation of 3 or 4 iodine atoms. ( )

11- Enzymes which produce steroid hormones from cholesterol are located in rough endoplasmic reticulum. ( )

12- In absence of the growth and thyroid hormones as seen in dwarfism and cretinism, spermatogenesis is severely deficient. ( )

See Next Page

5. **Answer one of the following comparisons? (3 marks)**

D1-In the following table, compare between Crossopterygii and Dipnoi

characters	Crossoperygii	Dipnoi

D2-In the following table, compare between the Pleurotremata and Hypotremata

Characters	Pleurotremata	Hypotermata

6. **Mention different factors influencing mass movements of fishes? (3 marks)**

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
First Semester-2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ---------- ----------.
2. Gonadotropin-releasing hormones are secreted ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. Cypriniformes and Perciformes may grind shells and called ----------.
6. The very important structural innovations in Gnathostomata are ---------- and ----------.
7. Salmonids are ---------- fishes whereas the eel Anguilla anguilla are ---------- fishes.
8. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
9. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
10. Reduction in growth rate is recorded when dissolved oxygen concentrations fell below approximately ---------- at ----------ºC.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. Amazon river fish switch from invertebrates to detritus in the rainy season. (------)
4. Frequency of occurrence method in fish diet studies does not indicate the importance of the various types of food selected. (------)
5. Herbivores are represented by > 5% of all bony fishes and no cartilaginous fishes. (------)
6. Scavengers are represented by 5-10% of all fish species. (------)
7. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
8. The primitive gape and suck feeding mechanism as in *Elops* provide the raw material for the evolution of protrusible jaws. (------)
9. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
10. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)

C- Choice the correct answer of each list in the following (15 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency
b) decreases production of somatomedin

c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- **Wintering migration includes:**
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- **Gametic migration includes:**
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- **Protection mass movements of fishes includes:**
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- **Maturity stage 1 is concerned with**
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- **Maturity stage 3 is concerned with**
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- **The food supply is a determining factor of:**
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- **The length-weight relationship is positive allometric when the allometric coefficient is:**
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- **Europhagous plankton feeders have:**
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- **Maturity stage 4 is concerned with**
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- **Oocyte maturation in fishes includes:**
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- **Advantages of indeterminate growth in fishes includes:**

a) Greater efficiency and more food options
b) Faster swimming and larger gape size
c) Better sensory range

d) All the above

e) Only a&c

15- Maturity stage 2 is concerned with

a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:

a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:

a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:

a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:

a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:

a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are

a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:

a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:

a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:

a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are**:

a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

26- Stressful methods not recommended in collection of fish for diets are:

a) Seine and cast net

b) Rotenone and trawling at depth

c) Electroshocking and overnight gill netting

d) All the above

e) Both of b& c

27- Good methods for fish collection to study diets are:

a) Seine, cast net and trammel netting

b) Electroshocking and overnight gill netting

c) Overnight gill netting

d) All the above

28- As strategy of sampling, amount and type of food should consider:

a) Diel cycle and fish size

b) Seasonal changes and fish territoriality

c) Differential digestion rates

d) All the above

29- Overfished stocks have:

a) Fast growth and good condition

b) Small average size of fish caught

c) Both a&b

d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker

b) Pectoral fins modified as serrate

c) Anal fin as gonopodium

d) Pelvic fins modified as claspers

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Growth	
3. Bioenergetic law	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Gonadosomatic index	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one

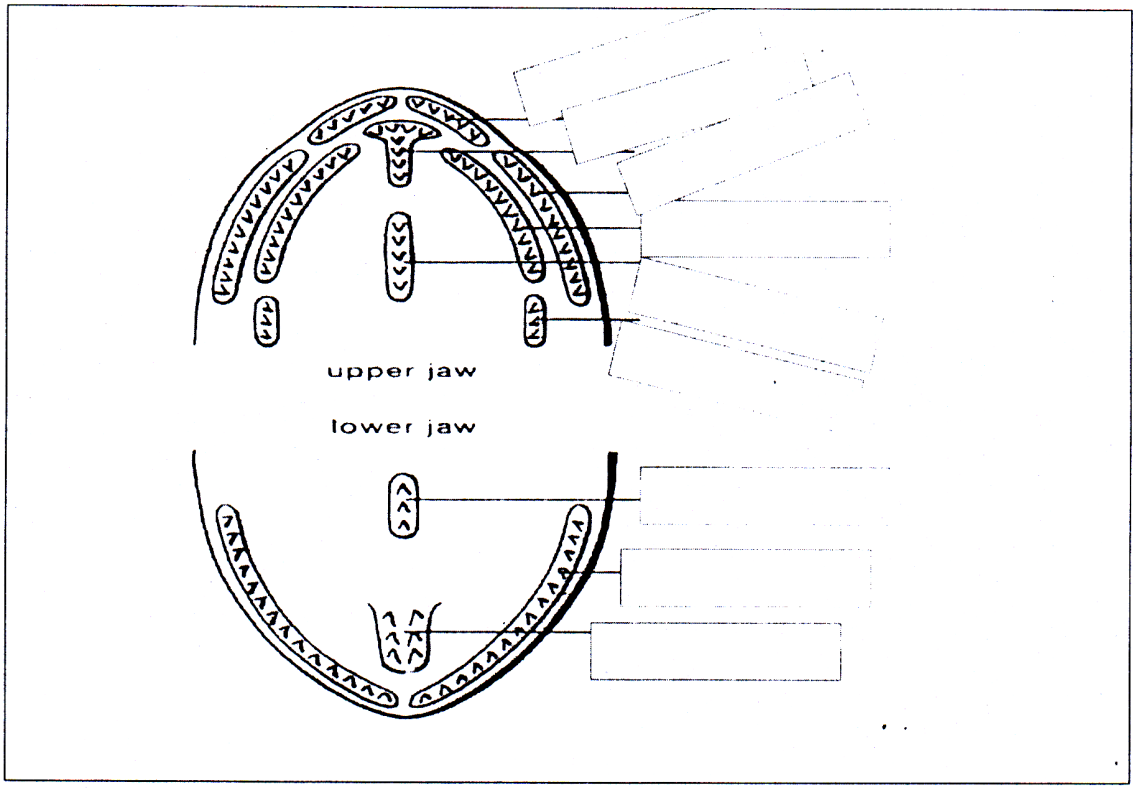
10. Fecundity-size equation	

E- Answer six of the following questions including the first two questions (20 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called herbivores? Mention examples? (4 marks)**

2. **Write short notes on types and causes of fish migrations? (4 marks)**

3. **Write a title to the following figure with labels? (3 marks)**



4. **Enumerate the methods of growth rate measurements? (3 marks)**

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225Z

Credit hour system 2nd level. January 2018

Answer the following questions:

A- Choose the suitable number from Column (A) and write it in the column (B): (10 marks)

A	B	
1-The community	+ Occurs when the position of each individual is independent of the others.	
2- The ecosystem	+ Are those that feed on dead organisms	
3-The biosphere	+ Include all invertebrates	
4-The abiotic factors	+ Depend on internal heat production	
5-Recycling of materials	+ May affect the elements of the ecosystem by eliminating some organisms	
6-The photoperiod	+ Is the ability of the organism to reproduce successfully	
7- Predators	+ Is reproductively isolated from other such group	
8-Scavengers	+ Are those which feed on the remains of animals they did not kill	
9- The population	+ Are those which kill and consume their prey	
10-Fitness	+ Is a factor that affects the biological activities of animals	
11-Reproductive effort	+Is considered one of the positive impacts of man	
12-The canopy	+ Is considered one of the negative impacts of man	
13-Consumers	+ Include all heterotrophic organisms	
14-Exploitation	+Is the primary site of energy fixation	
15- Species preservation	+ Is the energy spent by the organism in reproduction	
16-Thermal pollution	+Is considered one of the requirements of stable ecosystem	
17-Homeotherms	+ Include the physical and chemical ones	
18-Ectothermy	+ Is the portion of the earth in which life exists	
19-Saprophytes	+ Includes all communities plus the physical environment in which they live	
20-Random distribution	+ Includes all organisms in the ecosystem	

B- Write the scientific term of the following: (10 marks)

1-A type of reproduction in which the ova develops without fertilization.
2- The maximum rate at which a population can increase under ideal conditions.
3-The first organism to populate an area.
4-The role played by the organism.

اقلب الصفحة من فضلك

5-A biome characterized by permanently frozen soil.
6-A type of competition in which some individuals claim enough resources while denying others a share.
7- An individual female gains two or more males.
8-The number of births in a given time period.
9-The situation in which an animal defends an exclusive area not shared with rivals.
10-A substance used by plants for synthesis of proteins.

C- Give reasons for the following: (22.5 marks)

1- Some ecosystems can exist in the deep oceans in spite of the absence of sun.
2-About 30% of solar radiation reflects again into sphere.
3-Considering temperature as a factor studied intensively.
4-Death of organisms at High temperature (Give 3 only).
5- Camels can conserve water in their bodies.
6-Considering some animals parasitic while others are mutual.
7-Considering distribution of some animals a Uniform one.
8- Animals cannot increase with their biotic potential.
9- Considering decomposers very important for ecosystem.
10-Considering Egypt in the desert biome.
11- Thermal pollution of some rivers.
12-Considering temperature with a bifold effects on animals.
13- Reproduction of goats in certain time of the year.
14-Considering some places very humid while others are dry.
15- Ability of some soil animals to withstand high temperature.

D- (7.5 marks)

1- Apply your knowledge to analyze some of the abiotic factors which you may find in the River Nile.
2- On the light of your study of ecology: write three recommendations (توصيات) for the government.
3- Apply your knowledge on how animals modify toward moisture.

Good Luck