

12. Which organelles modify, sort and package proteins in the cell?
 a) Mitochondria b) Ribosomes c) Golgi complex d) Lysosomes
13. How many divisions are required to go from a zygote to 64 cell embryo stage?
 a) 2 b) 4 c) 5 d) 6
14. Which of the following organelles has its own DNA?
 a) Centrioles b) Lysosomes c) Mitochondria d) All are false
15. What type of epithelial cells is taller than they are wide?
 a) Squamous b) Columnar c) Stratified d) Cuboidal
16. Which one of the following is highly vascularized?
 a) Cartilage b) Simple epithelium c) Stratified epithelium d) Areolar C.T.
17. Spinal cord originates from
 a) Endoderm b) Mesoderm c) Ectoderm d) Mesoendoderm
18. Which of the following is the correct scientific name for a house cat?
 a) *felis domesticus* b) *Felis Domesticus*
 c) *felis Domesticus* d) *Felis domesticus*
19. The right sequence of animal development is
 a) Fertilization>Gametogenesis>Cleavage>Blastula and gastrula formation
 b) Gametogenesis>Fertilization>Cleavage>Blastula and gastrula formation
 c) Gametogenesis> Cleavage> Fertilization>Blastula and gastrula formation
 d) Fertilization>Cleavage> Blastula and gastrula formation>Gametogenesis
20. Multinucleation is a characteristic of
 a) Apicomplexa b) Porifera c) Ciliophora d) Mastigophora

II: (A) Write the correct word or the scientific expression of the following (5 marks)

1. Excretory cells of Platyhelminthes
 (.....)
2. A process in animal development in which organs are formed from embryonic layers.
 (.....)
3. A kingdom of life in which organisms are unicellular
 (.....)
4. A group of the same kind of tissues that perform a job in the animal's body.
 (.....)

- Subclass: *Theria* is divided into 3 infraclassesand.....
- Class: *Aves* includes 3 superorders.....,and.....
- In *Proboscidea*, the head is large with a long.....
- Phylum *Chordata* includes 3 subphyla....., and
- In *Crocodylian*,..... ribs are present in most vertebrae.
- In *Rhynchocephalia*, the cloacal aperture is..... and there is no
- In *Serpents* the vertebrae have accessory.....
- In *Birds*, sound production is from.....
- In *Carinatae*, the terminal caudal vertebrae are fused to form
- In Mammals, the quadrate and articular bones are transformed into andof ear apparatus.
- In Mammals, neck with..... vertebrae.
- In Mammals, the tympanic bones are fused to form the which is further modified into.....
- In Mammals,..... connecting the two cerebral hemispheres.
- The external ear pinna is present in mammals except in.....and.....
- In *Eutheria*, testes are..... contained in.....
- In *Lagomorpha*, two pairs of present in the upper jaw, but..... are absent.
- In *Cetacea*, hairs are reduced in adults, only few..... on the snout.
- In *Proboscidea*, the incisor teeth of upper jaw are greatly elongated and form.....
- In *Sirenia*, fore limbs are modified into..... for swimming.
- Members of *Chondrostei* havetail.
- Epidermal glands are present keeping the surface moist for..... in *Amphibia*.

2. Compare between the thyroid and parathyroid glands

	The thyroid gland	The parathyroid gland
a) Hormones
b) Function (mention one)

3. Structure and function of the endoplasmic reticulum

.....

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4. List 5 characters of Chordata

.....

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.....

5. Connective tissue fibers

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-In Mammals the opening of trachea into the buccal cavity is guarded by.....

2-Mention the taxonomic characters of 5 only of the following: (20Marks)

a- Lampreys
c-Serpents
e-Ratitae
g-Prototheria

b- Urodela
d- Sauria
f-Metatheria

Good Luck

Prof. Dr. Usama M. Mahmoud

21- Plasmatocyte spreading peptide (PSP) stimulates plasmatocytes toand
.....

22- During encapsulation in Lepidopteran insects the release of plasmatocyte spreading peptide (PSP)
is by

II- Choose the Odd answer of the following: (10 marks)

- 1- *Bombyx mori* proPO activating enzyme (PPAE) is expressed in:
(a) Fat body. (b) Hemocytes. (c) Integument. (d) Salivary glands.
- 2- Naïve *Manduca sexta* larvae express proPO activating proteinases (PAP):
(a) PAP-1. (b) PAP-2. (c) PAP-3.
- 3- In many insect species, one of the most potent stimulator of proPO activation is:
(a) Lipopolysaccharide. (b) Peptidoglycans. (c) β -1,3-glucans.
- 4- Hemolymph protease- 14 (HP14) activates:
(a) proPAP-1. (b) proPAP-2. (c) proPAP-3.
- 5- Serine protease inhibitor (serpin-5) inhibits hemolymph protease (HP):
(a) HP1. (b) HP6. (c) HP21.
- 6- Transmembrane receptor that bind several Gram-positive and Gram-negative bacteria is:
(a) Class C SR. (b) Eater. (c) Membrane bound PGRPs.
- 7- Hemocyte surface receptor that associated in recognition and phagocytosis of apoptotic bodies is:
(a) Croquemort. (b) Transmembrane forms of Dscam. (c) Lipoprotein receptor related protein LRP1.
- 8- In *Lepidoptera* hemocytes that expressing antimicrobial peptides is:
(a) Oenocytoids. (b) Plasmatocytes. (c) Granulocytes.
- 9- Hemocyte types that show PO activity following immune challenge are:
(a) Granulocytes. (b) Oenocytoids. (c) Crystal cells.
- 10- The following hemocyte types are adhesive:
(a) Plasmatocytes. (b) Lamellocytes. (c) Crystal cells. (d) Granulocytes.

III- Correct the underlined sentences of the following (if it needed): (6 marks)

1- Serine proteases that directly activate proPO have been purified only from hemolymph. ()

The correction:

2- Many insect phenoloxidases oxidize diphenols more rapidly than monophenols. ()

The correction:

Use labeled drawings when it is possible to answer all following questions: (10 marks each)

- 1- A- What is the significance of each of the following: - morphogenesis – pattern formation – induction - lampbrush chromosomes? Explain using an example for each. (8 marks)
B- State true or false: (2 marks)
 - i- IP₃ triggers release of Ca⁺⁺ from endoplasmic reticulum during fertilization.
 - ii- Proximal centriole functions for the union of male and female pronuclei.
 - iii- Neural crest cells contribute in the formation of red blood cells.
 - iv- The value of pH is not important factor for the polarity of chick embryo.
- 2- A- Gamete membrane fusion results in some consequences. Summarize in a chart such consequences. (5 marks)
B- Explain the hormonal control of spermatogenesis and mention the functions of two somatic cells contributing to spermatogenesis. (5 marks)
- 3- A- Discuss in details the process of sperm capacitation. (5 marks)
B- What are the results of chromosomal nondisjunction? Discuss the reasons of such abnormalities. (5 marks)
- 4- A- Write notes on only three of the following: Parthenogenesis – cryopreservation – intracytoplasmic sperm injection - oviparous animals. (6 marks)
B- Show with labeled drawings only the development of fore gut derivatives and eye. (4 marks)
- 5- A- Describe the role of only four of the following: hyaluronidase - resact – cyclin – securin-serine protease - glycosaminoglycan. (4 marks)
B - Clarify only three of the following: - cloning – differentiation - Kartagener triad syndrome - vitellogenesis. (6 marks)

End of questions.....Best of Luck

Dr. Reda A. Ali
Prof. Exp. Embryology

3- Pathogen-associated molecular patterns (PAMPs) exist in hemolymph upon microbial challenge. ()

The correction:

4- True clot is composed of hemocyte-derived components. ()

The correction:

5- Nephrocytes are found throughout the hemocele, they are able to kill bacteria. ()

The correction:

6- Toll is a pattern recognition receptor since it binds directly to pathogens to get activated. ()

The correction:

IV- Give a definition for each of the following: (4 marks)

1- Innate immunity:

.....

2- Opsonization:

.....

3- Humoral defenses:

.....

4- Cytokines:

.....

V- Write short notes on 5 points of the following (1 and 2 included): (15 marks)

1- Peptidoglycan recognizing proteins. (2 marks)

2- Humoral lectins. (4 marks)

3- Hemolin. (3 marks)

4- Cecropins. (3 marks)

5- Clotting and hemolymph coagulation in insects. (3 marks)

6- Nodulation, give *Galleria mellonella* as an example for nodule formatin. (3 marks)

With my best wishes

Dr. Ahmed M. Korayem



Assiut University
Faculty of Science
Zoology Department



First Semester General Zoology
Exam /January/2017



Time: 2 hour
Level: First
Course Code: 100Z

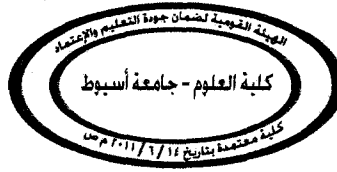
Answer the following questions (50 marks)

I: Choose the best single correct answer (10 marks)

1. A phylum which is characterized by having contractile vacuole.....
a) Annelida b) Porifera c) Ciliophora d) Apicomplexa
2. A solid mass of 16-64 cells formed by cleavage is.....
a) Blastula b) Gastrula c) Morula d) Blastocoel
3.has a bilayer structure and present in the cell.
a) Golgi complex b) Cell membrane
c) Centriole d) None of them
4. Nerves penetrate epithelial tissue.....
a) True b) False
5. The first invertebrates to develop jointed legs are.....
a) Sponges b) Annelids c) Flat worms d) Arthropods
6.is a three layered embryo.
a) Cleavage b) Gastrula c) Blastula d) Morula
7. The coelom is present in
a) Human b) Insects c) *Fasciola* d) Both a and b
8. Which of the following cell organelles is surrounded by two membranes?
a) Mitochondrion b) Cell membrane c) Nucleolus d) All are true
9. binary fission is a type of.....
a) Sexual reproduction in *Amoeba* b) Sexual reproduction in *Trypanosoma*
c) Asexual reproduction in Protozoa d) None of them
10. The Head of a phospholipid molecule is.....
a) Hydrophobic b) Hydrophilic c) Neutrophilic d) Hydrostatic
- 11.....is present only in the animal cell and play a role in cell division.
a) Lysosome b) Ribosome c) Centriole d) Cell membrane



Zoology Department



قسم علم الحيوان

**Final Exam: Insect Physiology II (441E)
Credit Hour System 2015/2016**

Time: Two hour

Answer the following questions:

Question no 1 (10 points): Define the following:

- a- Reproductive diapause
- b- Circadian rhythms
- c- Migration
- d- Hematopoiesis and hematopoietic organs
- e- Hemolymph juvenile hormone binding proteins (hJHBP)

Question no 2 (10 points): Compare between the following:

- a- Class I and class II defensive chemicals.
- b- Apposition eyes and superposition eyes.
- c- Obligatory and facultative diapause.
- d- Univoltine and semivoltine insects.
- e- Polymorphism and polyethism.

Question no 3 (15 points):

- a- How and why do fireflies light up?
- b- Stresses developed due to several reasons affect the survival, growth and development by affecting the insect at physiological level and express through poor survival (Discuss).
- c- Discuss the future application of insect hemocyte science.
- d- What is migration physiology?
- e- Classification of semiochemical based on structure and, how are pheromones detected?

Question no 4 (15 points): Write down on each of the following:

- a- Hormonal control of phase polyphenism in locusts.
- b- Main processes of biosynthetic pathway for JH III and the regulation of JH biosynthesis.
- c- Structure of a single ommatidium, and the processes of photochemistry of insect vision.

Good luck

Amer I. Tawfik

8- In immune response, the Jun N-terminal Kinase (JNK) pathway plays an important role in

9- The main two signaling cascades regulating expression antimicrobial peptide genes are:

(a) The pathway that is activated by and many infections.

This pathway resulted in an activated nuclear transcriptional factor called

(b) The pathway that responds to infections. This pathway resulted in an activated nuclear transcriptional factor called

10- Among cytokines that produced during immune challenge

(a) (b)

11- Insects contain two types of phenoloxidases: the 1st type is the that acts in the cuticle and its function is, the 2nd type is

12- Generally, insect prophenoloxidases are activated by that cleave at a specific site near the terminal of the zymogen.

13- In melanized capsule invading organisms can be killed during melanin synthesis via

14- Melanization due to phenoloxidase activity could be noticed in the following immune responses:

(a) (b)

(c)

15- In insects; secretion of prophenoloxidase is by hemocyte lysis due to

16- In *Manduca sexta* prepupa; after injection of bacteria; PAP-3 expression is upregulated in fat body, and

17- In *Manduca sexta* proPO-activating protease (PAP) is stimulated by binding to a hemolymph protein cofactor called forming a complex binding to a hemolymph lectin (that bind to bacterial lipopolysaccharide) in order to

18- In *M. sexta*; hemolymph protease-14 (HP14) function as, which triggers proPO activation in response to and

19- Insect phenoloxidases different from mammalian tyrosinases in their; but they are similar in their

20- *Drosophila. melanogaster* serpin-27A inhibits, it is an ortholog of *Manduca sexta*

Q4: Fill in the following sentences:

(10 marks)

1. The primary lymphoid organs include..... and
2. The immature neutrophils are known as
3. The blood cells that are important in parasitic infections are.....
4. Leukemia is characterized by an abnormal increase of
5. Rh refers to the presence or absence of the.....on the surface of.....
6. The lymphocytes of adaptive immune system are,and.....

Q5: Write briefly on three only of the following items:

(10 marks)

- A. Disorders and diseases of blood coagulation.
- B. The specific inhibitors of clotting factors.
- C. Roles of platelets in the hemostasis.
- D. Endocrine functions of vessels endothelial cells during hemostasis.

Q6: Write in details about the types of organ transplantation and the associated complications.

(10 marks)

انتهت الأسئلة

Best wishes

Dr. Gamal Badr

Professor of Immunology
Zoology Department

Website: http://www.aun.edu.eg/membercv.php?M_ID=393

e-mail: gamal.badr@aun.edu.eg



Answer the following questions:

- 1- Answer 3 only: (30 marks)
- Describe and draw the internal structure of human testis showing the stages of spermatogenesis in seminiferous tubules.
 - Draw the principal parts of the sperm and explain why it is necessary to ejaculate a huge number of sperms although one sperm is needed to fertilize the ovum.
 - What is semen (seminal fluid) and what is its function?
 - Describe the physiological effect of testosterone .
- 2- Answer 3 only: (30 marks)
- Draw a labeled diagram of the ovarian cycle in woman and mention the main hormones present in this cycle.
 - What is the function of the uterine tube. Define an ectopic pregnancy?
 - Draw a labeled diagram of the principal parts of the uterus (three layers of tissues and blood supply).
 - Describe the structure of mammary gland and write about hormones related to milk production.
- 3- Put (\checkmark) or (\times):- (20 marks)
- Corpus luteum secretes testosterone. ()
 - A zygote with 46 xx chromosomes is a female. ()
 - Failure of the testis to descent in the scrotum is called cryptorchidism. ()
 - Lutinizing hormone (LH) in male is responsible for secretion of testosterone. ()
 - During pregnancy the large amount of estrogen secreted by the placenta increase the formation of prolactin. ()
- 4- Write on the following: (20 marks)
- Function of the Corpus luteum during menstrual cycle and during pregnancy.
 - Functions of the placenta and umbilical cord.
 - Functions of the epididymis and prostate gland.
 - Oestrous cycle and its differences from menstrual cycle.

Good Luck



Answer the following questions:-

1- Complete the following:- (30Marks)

- The upper jaw of *Bradyodonti* is fused to braincase and the is not involved in jaw suspension.
- In *Hagfishes* the gill pouches open to the exterior either or
- The gill slits are ventrally placed in
- In the gills are covered by flap of skin.
- The pelvic fins are modified to form claspers in.....
- The paired fins have a fleshy lobe at their base in.....
- In..... there are two separate dorsal fins.
- In *Halecomorphi*..... is present together with numerous.....
- The frontal and parietal bones are is the skull of *Anura*.
- Limbs and girdles are..... and the body is worm-like in.....
- The skull has..... in *Chelonia*.
- The quadrate bone is..... in *Crocodilian* skull.
- Testes are.....in *Chiroptera*.
-have long limbs,each bearing 5-digits protected by nails.
- Some of *Artiodactyla* haveon their head.
- Except in *Monotremes* and most of the *Marsupials* is present which supplies nourishment to the embryo.
- Mammary glands without..... in *Prototheria*.
- Well developedis present in females of *Metatheria*.
- Class: *Chondrichthyes* is divided into subclasses..... and
- Class: *Osteichthyes* subdivided into subclasses.....,and.....

Question 2: Answer the following:

(10 marks)

- A) How do Bt and EPF work?
- B) The predators use four steps to find and utilize the prey; explain prey acceptance and mention only the name of the other three steps.
- C) Explain refuge area strategy.

Question 3: Answer the following

(5 marks)

A) Define Five only the following terms:

Microbial control, Classical biological control, Biopesticides, Virulence, SemNPV and Biological control.

B) The following are different pests; please find the more suitable biological control agent for each pest.

Weeds, two spotted spider mites, root weevils, mole cricket, and eriophid mites.

Question 4: Compare between each pair of the following: (7 marks)

- A) Monophagous and oligophagous predators
- B) Innundative and Inoculative biocontrol release
- C) Ambushing and trapping strategies.

Question 5: Answer the following:

(8 marks)

- A) Explain the advantages of biological control.
- B) What are the targets of biological control?
- C) What are the types of biological control agents?
- D) Explain why bt is highly effective against beet armyworm and ineffective against white flies and aphids? And explain how the EPF act in both pests?

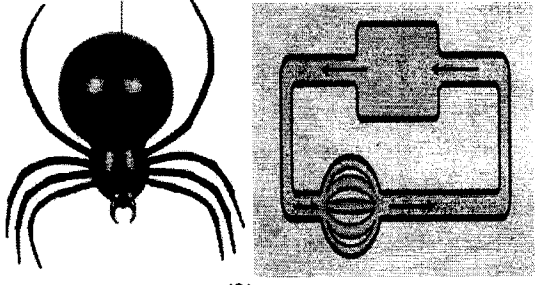
Note: The parasitoids were excluded and were presented in a separate exam

With My best wishes

By Dr. Ali Mohamed Ali

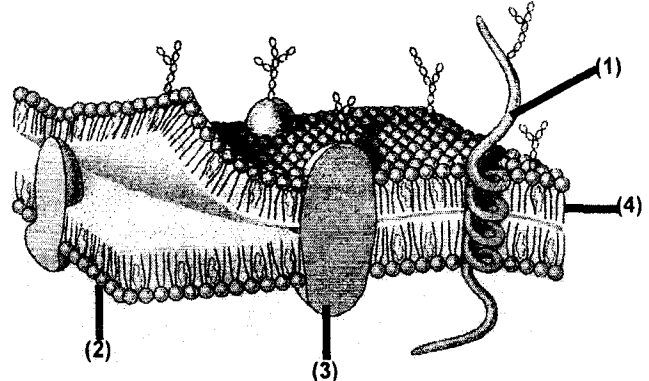
V: Answer the following

(12 marks)

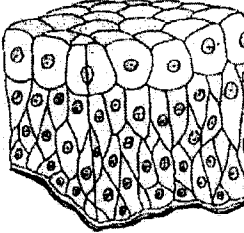


(1) (2)

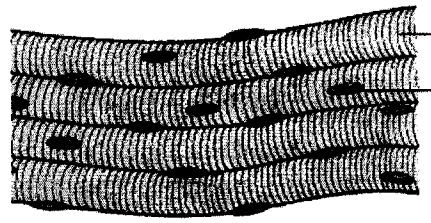
(A)
 (1) Type of symmetry:.....
 Identify sample Phylum:.....
 (2) Type of circulatory system.....
 This type of circulatory system is present in
 Phylum.....



(B)
 Label 1.....
 Label 2.....
 Label 3.....
 Label 4.....



(C)
 (1) Identify the C.T.....
 Description.....
 Location.....



(D) Identify the muscular tissue
 List 3 characteristics
 a-.....
 b-.....
 c-.....

(E) Draw a labeled diagram of a bipolar neuron

(F) Draw a labeled diagram of a mitochondrion



Answer only 5 questions of the following:

Q1: Choose the correct answer (one answer only): (10 marks)

1. **Vegetables are considered as an important part of the :**
a)- protective foods
b)- body building foods
c)- energy giving foods
d)- all of them
2. **Monomers can be converted to dimers by:**
a)- dehydration
b)- hydration
c)- hydrolysis
d)- both b and c
3. **Two grams of fats provide:**
a)- 9 calories
b)- 18 calories
c)- 27 calories
d)- 72 calories
4. **Ribose is a:**
a)- triose monosaccharide
b)- hexose monosaccharide
c)- pentose monosaccharide
d)- disaccharide
5. **Glycogen is a type of :**
a)- structural polysaccharide
b)- storage disaccharide
c)- storage polysaccharide
d)- storage lipo-polysaccharide
6. **Unsaturated fats can be converted to saturated fats by:**
a)- hydration
b)- halogenation
c)- hydrochlorination
d)- hydrogenation
7. **If the serum albumin concentration becomes less than 2.5 g/dl this represents:**
a)- good nutritional status
b)- severe malnutrition
c)- mild malnutrition
d)- obesity
8. **Malnutrition is a term referring to:**
a)- decreased consumption of nutrients
b)- increased consumption of nutrients
c)- inadequate nutrition
d)- all of the above
9. **Amino acids are joined together by:**
a)- ester binds
b)- carbon atoms
c)- peptide bonds
d)- side chain
10. **The dietary sources of essential fatty acids are :**
a)- Sunflower oil
b)- Sesame oil
c)- Coconut oil
d)- all of the above

Q2: Write in details about nutrition and obesity. (10 marks)

Q3: Write briefly about the importance of fat-soluble vitamins and describe in a table the sources, functions in the body, signs of toxicity and signs of deficiency of these vitamins. (10 marks)

انظر باقي الأسئلة خلف الصفحة

5. A type of connective tissue where fat cells form most of the tissue
(.....)
6. A type of neurons that transmits the nerve impulse from the brain to muscles or glands.
(.....)
7. A process of keeping balanced internal body processes in a changing habitat.
(.....)
8. The movement of molecules or ions from low to high concentration across the cell membrane.
(.....)
9. Junctions between neurons where nerve impulses are transmitted
(.....)
10. Defense cells in Cnidaria
(.....)

II: (B) Complete the following sentences (5 marks)

1. Homeostasis is controlled by.....and.....
2. Epithelial tissues receive nutrients by.....and it is characterized by its ability to replace damaged tissue through.....
3. Alveoli of lungs are lined by.....epithelial cells.
4. The deficiency of insulin in blood causes a disease known as.....while T4 deficiency causes.....
5. A ligament connects.....while a tendon connects.....

III: Answer the following (12 marks)

1. write notes on massive transport

.....

.....

.....

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.....

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.....

.....

Assiut University
Faculty of Science
Zoology Department

Final Exam of Developmental
Biology (Z437) For 4th levels
Zoology Students

Jan 2017
Time: Two hours
Total marks: 50

Use labeled drawings when it is possible to answer all following questions: (10 marks each)

- 1- A- What is the significance of each of the following: - morphogenesis – pattern formation – induction - lampbrush chromosomes? Explain using an example for each. (8 marks)
B- State true or false: (2 marks)
i- IP₃ triggers release of Ca⁺⁺ from endoplasmic reticulum during fertilization.
ii- Proximal centriole functions for the union of male and female pronuclei.
iii- Neural crest cells contribute in the formation of red blood cells.
iv- The value of pH is not important factor for the polarity of chick embryo.
- 2- A- Gamete membrane fusion results in some consequences. Summarize in a chart such consequences. (5 marks)
B- Explain the hormonal control of spermatogenesis and mention the functions of two somatic cells contributing to spermatogenesis. (5 marks)
- 3- A- Discuss in details the process of sperm capacitation. (5 marks)
B- What are the results of chromosomal nondisjunction? Discuss the reasons of such abnormalities. (5 marks)
- 4- A- Write notes on only three of the following: Parthenogenesis – cryopreservation – intracytoplasmic sperm injection - oviparous animals. (6 marks)
B- Show with labeled drawings only the development of fore gut derivatives and eye. (4 marks)
- 5- A- Describe the role of only four of the following: hyaluronidase - resact – cyclin – securin-serine protease - glycosaminoglycan. (4 marks)
B - Clarify only three of the following: - cloning – differentiation - Kartagener triad syndrome - vitellogenesis. (6 marks)

End of questions.....Best of Luck

Dr. Reda A. Ali
Prof. Exp. Embryology

IV: Answer the following (6 marks)

1. Complete the missing parts in following table

Cytoskeleton	1.....	2.....
Thicknes
Function
Type of protein

2. Complete the following table

	Platyhelminthes	Nematoda
Digestive system
Body cavity
Body shape
Excretory system

3. Complete the following table about hormones

Hormones	Function of the hormone	The secreting gland
Melatonin
Adrenaline
Glucagon
TSH

ZOOLOGY DEPARTMENT
FACULTY OF SCIENCE
ASSIUT UNIVERSITY
Insect Immunity (Z 447)



قسم علم الحيوان
كلية العلوم - جامعة أسيوط
Semester exam
27th Dec. 2016
Time Allowed: 2 hours

Answer the Following Questions (50 Marks)

الإجابة في نفس ورقة الأسئلة عدا السؤال الأخير يجاب عنه في كراسة الإجابة المُعطاة لك.

I- Complete the following sentences: (15 Marks)

- 1- The following are the most characterized pattern recognition proteins in insects:
(a) (b)
(c) (d) (e)
- 2- In insects, antimicrobial peptides are synthesized mainly in the, and in less extent in the, and
- 3- In *Manduca sexta*, the role of integrins in immune response is
- 4- In some lepidopteran and dipteran insects melanization, has a central role in defense against a wide range of pathogens and participates in, and
- 5- In some insects, passive phase of encapsulation include, and
- 6- The extent of nodule and cellular capsule formation depending on and
- 7- Encapsulation as a defensive response processed in several steps which are in sequence:
(a)
(b)
(c)
(d)
(e)
(f)
(g)



Answer only 5 questions of the following:

Q1: Choose the correct answer (one answer only): (10 marks)

1. Immature erythrocytes are known as :
a)- RBCs
b)- reticulocytes
c)- DC cells
d)- APC cells
2. Polycythemic hyperviscosity occurs due to:
a)- increased numbers of mature RBCs
b)- decreased numbers of mature RBCs
c)- increased numbers of immature RBCs
d)- decreased numbers of immature RBCs
3. Leukopenia is defined as:
a)- increased destruction of WBCs
b)- decreased production of WBCs
c)- increased numbers of WBCs
d)- decreased number of WBCs
4. Lymphocytosis is an increase in the number of :
a)- lymph nodes
b)- lymphocytes
c)- lymphoblasts
d)- lymphomas
5. Hodgkin's disease is a malignancy of :
a)- RBCs
b)- NK cells
c)- DC cells
d)- B lymphocytes
6. Multiple myeloma is a cancer of:
a)- myeloid DC cells
b)- plasma cells
c)- antibody-producing cells
d)- both b and c
7. Clumping of RBCs following blood transfusion is called:
a)- hemolysis
b)- agglutination
c)- aggregation
d)- hemostasis
8. A person with type A blood group has A antigens on RBCs and.....
a)- anti-A Abs in the plasma
b)- no Abs in the plasma
c)- anti-B Abs in the plasma
d)- both types of Abs in the plasma
9. All the blood coagulation factors are produced by the liver except :
a)- factors VIII and II
b)- factors VI and XIII
c)- factors XI and IX
d)- factors III and IV
10. Blood platelets originate from :
a)- myeloid lineage
b)- lymphoid lineage
c)- megakaryocytes
d)- PMN cells

Q2: Write in details about the organs of hematologic system, erythropoiesis and its control, and the factors affecting RBCs production. (10 marks)

Q3: Describe the three types of anemia according to the MCV values and write in details about the hemolytic anemia. (10 marks)