

الفرقة

2

	امتحان الفصل الدراسي الثاني لطلاب كلية العلوم للعام الجامعي 2022-2023	
القسم الذي يقدم المقرر: الوراثة اسم المادة: (215 ز) أساسيات الوراثة لجنة الممتحنين: د/ بهاء الدين السيد عبد الفتاح الفرقة: المستوى الثاني (ساعات معتمدة) الزمن: ساعتان ا.د/ حمدي محمد العارف		
تعليمات الامتحان 1- يتكون الامتحان من أربعة أسئلة 2- يتكون الامتحان من صفتين 3- فكر جيدا قبل ان تجيب عن الاسئلة، ولا تجعل قلمك يسبق فكرك 4- الدرجة الكلية للامتحان (50 درجة)		

أجب عن جميع الأسئلة الآتية

السؤال الاول:- :- (12.5 درجة)

(أ) - في التلقيح الإختباري التالي لإثبات حشرة الدروسوفيلا الخليطة في ثلاث مواقع كان النسل الناتج كالتالي (8.5 درجة)

		A	B	C			a	b	c
							a	b	c
							a	b	c
A	B	C	350						
a	b	c	310						
A	b	c	130						
a	B	C	110						
A	B	c	50						
a	b	C	35						
A	b	C	10						
a	B	c	5						
المجموع الكلي			1000						

المطلوب :-

1- حساب المسافة بين الجينات.

2- ارسـم الخريطة الوراثة.

3- احسب معامل التوافق ومعامل التعارض

(ب) - إذا كان ترتيب القواعد النيتروجينية في جزء من شريط DNA هو (4 درجات)

5-TTA ACG TAC GGC ACC GGG CGT TTG TAA ATT GCT CG-3

وضح ما يلي:

أ- تتابع القواعد النيتروجينية المنسوخة من هذا الخيط لـ mRNA

ب- عدد الأحماض الأمينية الناتجة من الترجمة مع تحديد شفرة البدء و شفرة الإيقاف

السؤال الثاني: (12.5 درجة)

(أ) - وضح بالرسم مع كتابة البيانات فقط ما يلي (10 درجات)

1. تجربة تثبت أن الـ RNA هو المادة الوراثية لبعض الفيروسات

2. ظاهرة الـ Testicular Feminization

3. مراحل تفاعل البلمرة المتسلسل (PCR) Polymerase chain reaction

4. الـ Treptophan Operon

(ب) - جزي DNA يحتوي على 400.000 مجموعة فوسفات، احسب عدد أزواج القواعد النيتروجينية في هذا الجزي وعدد اللفات وطول هذا الجزي؟ وإذا كانت نسبة $A+T/G+C = 0.4$ في أحد الخيطين فما هي النسبة في الخيط المكمل. (2.5 درجة)

السؤال الثالث: (15 درجة)
ضع علامة (✓) امام العبارة الصحيحة وعلامة (X) امام العبارة الخاطئة (قم بعمل جدول في كراسة الإجابة به رقم الجملة فقط والعلامة المناسبة)

1-	تتحور النسبة المندلية من 9:3:3:1 في حالة التفوق السائد المزدوج إلى النسبة 12:3:1	()
2-	تحتوي منطقة بدء التضاعف في الكائنات الدقيقة على تتابعات غنية بالجوانين والسيتوسين	()
3-	يتحول الـ pre-mRNA إلى mRNA ناضج بعد إزالة مناطق الـ Exon وربط مناطق الـ Entron في الكائنات البدائية	()
4-	نسبة الـ $A+C/T+G$ في خيط الـ DNA المزدوج تساوي الواحد الصحيح	()
5-	النوكليوسيد عبارة عن قاعده نيتروجينية وسكر ومجموعة فوسفور	()
6-	وراثية مجاميع الدم تمثل كل من الحالات الآتية سيادة تامة وسيادة جزئية وجينات مميتة وأليلات متعددة	()
7-	تتم عملية الدنترة للـ DNA المزدوج بواسطة انزيم الـ Helicase في الكائنات الحية وفي جهاز الـ PCR	()
8-	الصفات المحددة بالجنس تعني ظهور هذه الصفات في جنس بدرجة أكبر من الجنس الآخر	()
9-	النسبة 15:1 تمثل الجينات المكملة والتي يلزم لإظهار صفاتها أليل سائد من كل موقع وراثي على الأقل	()
10-	انزيم dam methylase يقوم بالتعرف على تتابع GATA عليه ويربط مجموعة الميثيل بقاعدة الأدينين	()
11-	انزيم Ter-binding protein يرتبط بتتابعات النهاية ويمنع تقدم شوكة التضاعف	()
12-	تحديد الجنس في حشرة الدروسوفيلا يعتمد على النظام الجيني	()
13-	الـ Alternative splicing يعني تكوين نوعين أو أكثر من mRNA من جزي أولي pre-mRNA واحد حيث ينتج من ترجمتهما غالبا بروتين خاص.	()
14-	بداية عملية الترجمة يتم فيها تنشيط الاحماض الامينية وارتباطها بالـ rRNA الذي يحمل الشفرة المضادة	()
15-	تكون نسبة الاتحادات الجينية الجديدة في حالة الارتباط التام هي 50%	()

السؤال الرابع :- اختر الإجابة الصحيحة من بين الإجابات

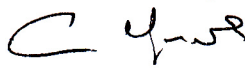
(10 درجات)

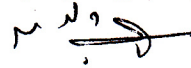
1-	يقوم بتضاعف السلسلة المتأخرة في حقيقيات النواة	(a) DNA Polymerase II	(b) β -DNA Polymerase	(C) δ -DNA Polymerase	(d) α -DNA Polymerase
2-	يتكون من أكتونات (Exons) فقط	(a) Intron	(b) Nucleosome	(C) Operon	(d) cDNA
3-	تتابع خطي من الجينات التي تشترك في نفس العملية البيوكيميائية والتي تنسخ معا في جزء واحد من mRNA	(a) Operon	(b) Nucleosome	(C) Probe	(d) Promoter
4-	يقوم بتخليق خيط الـ DNA مستخدما قالب من RNA	(a) Primase	(b) Reverse Transcriptase	(C) Telomerase	(d) Poly A polymerase
5-	شفرة البدء هي	(a) UAA	(b) UGA	(C) AUG	(d) GUA
6-	يحتوي اوبيرون (Operon) اللاكتوز علي	(a) 6 جينات	(b) 5 جينات	(C) 4 جينات	(d) 3 جينات
7-	يقوم بنسخ الجينات الخاصة بالتشفير لبناء البروتينات في حقيقيات النواة	(a) RNA Polymerase I	(b) RNA Polymerase II	(C) RNA Polymerase III	(d) جميع ما سبق
8-	في حالة الأليلات المتعددة فإن تزاوج أرناب هيمالايا ذاتياً ينتج عنه النسل الآتي	(a) هيمالايا	(b) هيمالايا وشنشلا	(C) هيمالايا و ألبينو	(d) هيمالايا وشنشلا وألبينو
9-	في سلسلة اليلات عدم التوافق الذاتي عند تهجين نبات S_3S_2 مع نبات S_2S_1 فإنها تعطي نسل بنسبة	(a) 100%	(b) 50%	(C) 25%	(d) 0.0%
10-	في حالة شكل العرف في الدجاج التهجين بين أفراد PPRr X PpRr يعطي أفراد ذات أشكال مظهرية	(a) جوزي و باسلاني	(b) جوزي وباسلاني ومفرد	(C) باسلاني و وردي	(d) جميع ما سبق

انتهت الأسئلة مع أطيب التمنيات بالتوفيق،،

لجنة الممتحنين:- د/ بهاء الدين السيد عبد الفتاح

أ.د/ حمدي محمد العارف







Assiut University
Faculty of Science
Zoology Department
Chem. & zoology

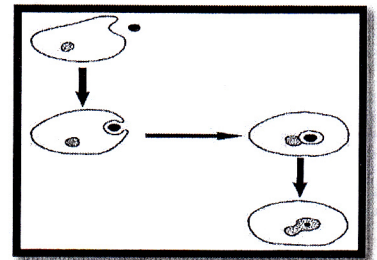
Second Semester Cytology Exam (09/06/ 2023)
Answer the following questions: (50 marks)

Time: 2 hour
Level: two
Course Code: 210Z

الإمتحان في ثلاث صفحات

I: Choose the best single correct answer (30 marks)

- 1- The cytoplasm of a eukaryotic cell is composed of.....
 - a) Only water
 - b) only proteins
 - c) a mixture of water, proteins, and other biomolecules
 - d)) none of the above
- 2-.....Contain no double bonds in the Acyl chain and it have a higher melting temperature
 - a) Unsaturated lipids
 - b) Saturated lipids
 - c) Carbohydrates
 - d) Proteins
- 3-is a spherical vesicle having at least one lipid bilayer.
 - a) Vacuoles
 - b) liposome
 - c) Micelle
 - d) lipids bilayer
- 4- which means of particle transport is shown in Figure?
 - a) Protein pump
 - b) Exocytosis
 - c) Facilitated diffusion
 - d) Endocytosis
- 5- The process of making an mRNA strand from a DNA template is called.....
 - a) Replication
 - b) Translation
 - c) Protein Synthesis
 - d) Transcription
- 6- Translation takes place in the.....
 - a) Ribosome
 - b) chloroplast
 - c) nucleus
 - d) mitochondria
- 7- Membrane..... Allows membranes to fuse and mix molecules, cell signalling and cell division
 - a) pinocytosis,
 - b) phagocytosis
 - c) exocytosis
 - d) fluidity
- 8- Molecules move from high to low concentration via transporter protein and not need energy known as.
 - a) Passive transport
 - b) Facilitated diffusion
 - c) active transport
 - d) Massive transport
- 9- Cell coat is present on the external surface of plasma membrane and composed of
 - a) Glycoproteins,
 - b) oligopolysaccharides
 - c) glycolipids
 - d) all of them
- 10- The lipid molecules move
 - a) Laterally
 - b) axially
 - c) flip-flop
 - d) all of them.
- 11- The phospholipid in the..... plasma membrane are sphingomyelin and phosphatidylcholine.
 - a) Inner leaflet
 - b) outer leaflet
 - c) middle leaflet
 - d) a &b



12- Cadherins , Selectins and Integrins are types ofare used to hold animal cells together.

- a) Proteoglycan b) Cell Adhesion Molecules c) CAMs d) b &c

13- Type of protein known as..... are Ca^{2+} independent CAMs which depend on recognition antibody and antigen.

- a) Cadherins b) Ig-like CAMs c) Selectins d) Integrins

14-allow exchange of chemical/electrical information between cells.

- a) Anchoring junctions b) Communicating junctions c) Occluding junctions d) Tight junction

15 - In mitosis, the chromosomes first become visible ,the nuclear envelope and nucleolus disappear during

- a) Metaphase b) Interphase c) Prophase d) Telophase

16-The stage which serves as a connecting link between meiosis 1 and meiosis 2

- a) Interphase 2 b) Interphase 1 c) Interkineses d) None of the above

17- Duplication of Centrosomes takes place in which of the following phase and checkpoint?

- a) S phase and S checkpoint b) G0 Phase and G0 Checkpoint
c) G1 Phase and G1 checkpoint d) None of the above

18- The glucose molecule is converted to pyruvate in the during the production of energy.

- a) Cytoplasm b) mitochondria c) Golgi d) lysosomes

19-is a short interval in which there is little or no increase in the number of cells present in the population growth cycle.

- a) Exponential phase b) The lag phase of growth c) The stationary phase d) The death or decline phase

20-are those which already entered the digestion events characterized by their large size

- a) Primary lysosomes b) Heterophagy c) Autophagy d) Secondary lysosomes

21- membranous organelle Lacks ribophorin I and II- on Its membrane and responsible for lipid and carbohydrates synthesis is.....

- a) Smooth endoplasmic reticulum b) Rough endoplasmic reticulum c) lysosome d) Golgi

22- can leave the nucleus then goes through the pores of the nucleus with the DNA code

- a) mRNA b) tRNA c) rRNA d) a &b

23- The polypeptide initiated elongation until the..... polyribosomes complex recognize ribophorin I and II

- a) Dynamin-related protein 1 b) SRP c) signal recognition particle d) b &C

24- Which of these organelles are not membrane bound?

- a) Mitochondria b) Endoplasmic reticulum c) Nucleolus d) Lysosome

25- Which is the primary constriction for every visible chromosome?

- a) Centromere b) Ribosomes c) Kinetochore d) Histones

26- Types of Regulatory Molecules, together act as a checkpoint

- a) Kinases b) Cyclins c) Cyclin dependent kinase d) all of them

27- The functional image of two subunit of ribosomes crossthrough nuclear pores to the cell cytoplasm

- a) Individually b) separately c) attached d) a & b

28- Polymerization of tubulin to form microtubules by structure known as

- a) dynamin-related protein b) microtubules organizing centers
c) signal recognition particle d) none of them

29-- increase the efficiency of absorption and the surface area of the cell

- a) Microtubules b) Microfilaments c) Actin d) Intermediate filaments

30--are transitory components of the cytoplasm of varied nature.

- a) lipid droplets b) Pigments c) Cytoplasmic deposits d) all of them

IV-Answer (4) only of the following (20 marks)

- (1) Briefly, explain the difference between Mitosis and meiosis.
- (2) Write difference between types of junction according their function and draw its types.
- (3) Draw the Mitochondria structure as membranous organelles with details and data.
- (4) Draw the different membranes proteins functions with details and data.
- (5) Explain in details about types of ribosomes.

With my best wishes
Prof. Mona M.Atia



Faculty of Science

Assiut University

Dept. of Zoology

Exam of Animal Ecology Code No. 225Z

Credit hour system 2nd level. Year 2023

Time allowed: 2 hours

أجب عن الأسئلة الآتية: (لاحظ أن الأسئلة تقع في صفتين) "درجة لكل نقطة"
س ١: اختر الإجابة الصحيحة من بين الأقواس ثم اطمس الدائرة المقابلة في ورقة الإجابة المعدة لذلك
بالقلم الجاف:

- 1-Saprophytes include: a-(Fungi) b-(Carnivores) c- (Omnivores) d-(all).
- 2-Carnivores include: a-(Fungi) b-(Scavengers) c-(Bacteria) d-(all).
- 3-Light affects a-(the color of animals) b- (Humidity) c- (water currents) d-(all).
- 4-Stenotherms are a-(widely distributed) b-(restricted in their distribution) c- (moderate in distribution) d-(all).
- 5- The temperature affects a-(the physiology of animals) b- (Humidity) c- (pressure) d-(all).
- 6-The maximum rate at which a population can increase under ideal conditions is known as a- (biotic potenial) b- (biotic potential) c- (biotic potentil) d-(boitic potential).
- 7-A small number of young is characteristic of a-(short lived animals) b- (long lived animals) c- (animals that reproduce sexually) d- (all).
- 8- The organisms that break down wastes and dead organisms are known as a-(decomposers) b-(dcomposers) c- (decmposers) d-(decomposrs).
- 9- The a-(carrying capacity) b-(carying capacity) c-(carrying capcity) d-(carryieng capacity) represents the highest population that can be maintained for an indefinite period of time by a particular environment.
- 10- The population includes a-(one species) b- (individuals having the same morphology) c- (individuals that reproduce freely giving fertile offspring) d- (all).
- 11- a-(The predators) b-(omnivores) c- (Bacteria) d- (all) play a good rule in recycling of materials.
- 12- a-(fitness) b-(fitness) c- (fitnes) d-(community) is the ability of an organism to reproduce successfully.
- 13- a-(Hmeostasis) b-(Homostasis) c- (Homeostasis) d-(Homeotasis) is the maintenance of conditions within the range that the organism can tolerate.
- 14- a-(Parthenogenesis) b-(Parthenogenesis) c- (Homeostasis) d-(Parthnogenesis) is a type of reproduction.
- 15- The greatest amount of energy in a community is present in a-(plants) b-(predators) c- (consumers) d-(parasites).
- 16- a-(Monogamy) b-(Polyandry) c-(Polyandy) d-(all) is the formation of a pair bond between one female and more than two males.
- 17- Consumers include a-(all heterotrophs) b- (predators) c-(omnivores) d-(all).
- 18- a-(Biosphre) b- (Boisphere) c-(Biosphere) d-(Secondary consumers) includes water, soil and air.
- 19- a-(Transpiration) b-(Homeotherms) c-(Phytoplankton) d-(zooplankton) feed on 1^{ry} consumers.
- 20- a-(bats) b-(Scorpions) c-(Nocturnal animals) d-(all) become active during night.
- 21- a-(Homotherms) b-(Homeotherms) c-(Hometherms) d-(Homeothers) depend on internal heat production.
- 22- a-(Temperature) b- (pH) c-(light) d-(all) included under abiotic factors. اقلب الصفحة من فضلك

23- a-(Light) b-(Temperature) c-(water) d-(all) is the physical factor which has a bifold effects on the animals.

24- a-(duration of light) b-(Temperature) c-(water) d-(all) is the physical factor which affects the migration of birds.

25- a-(organic pollution) b-(Thermal pollution) c-(inorganic pollution) d- (all) is a kind of pollution arises from building dams and barrages on rivers.

26- a- (the density) b-(natality rate) c-(mortality rate) d-(all) is the number of individuals per unit of time.

27- a-(monogamy) b-(polyandry) c-(polygyny) d-(all) is the formation of a pair bond between one female and one male.

28-The number of births in a given time period is known as a-(natality rate) b-(natlity rate) c-(nataliy rate) d- (all).

29-A relationship in which one organism benefits while the other is not affected is known as a-(cannibalism) b-(parasitism) c-(mutualism) d-(all mentioned before are false).

30-The class of organisms found on the top of food pyramid are known as a-(consumers) b-(herbivorous) c- (producers) d-(all).

س٢: ضع علامة صح أمام العبارة الصحيحة (T=True) وعلامة خطأ (F=False) أمام العبارة الخاطئة ثم اطمس الدائرة المقابلة في ورقة الإجابة المعدة لذلك بالقلم الجاف:

31- The biosphere includes many complex ecosystems ()

32- The limiting factor determines the types of organisms which may not exist in the environment ()

33- Mutualism is the maintenance of conditions within the range that the organism can tolerate ()

34- Thermal pollution may increase diseases, and parasites as well as the decomposition of organic matter in the ecosystem ()

35-Eology is the science dealing with the interactions between organisms and their environment ()

36- The population includes all the species in a given area ()

37- The ecosystem includes all the members of the community plus the chemical environment in which they live in ()

38- Cannibalism is a relationship in which one organism benefits and the other is harmed ()

39- Endothermy refers to animals which control their body temperature by external means ()

40-Hetrothrms refers to species that sometimes regulate their body temperature and sometimes do not ()

41- Interspecific competition occurs among individuals of the same species for environmental resources ()

42- Intraspecific competition occurs among individuals of different species for environmental resources ()

43- The photoperiod is the factor which affects goats reproduction ()

44- Intraspecific competition occurs among two populations for environmental resources ()

45- Parasitism is a relationship in which one organism benefits and the other is not harmed ()

46- Interspecific competition occurs among individuals of two different species for environmental resources ()

47- Clumping is a type of distribution ()

48- Organisms that feed on green plants are considered producers ()

49- Secondary consumers, do not feed on primary consumers ()

50- Territory is a situation in which an animal share an exclusive area with rivals ()

Good Luck



Faculty of Science
Zoology Department

Final Exam of Histology & Histopathology (212z)

4 pages

For Second Year Students (Credit Hour)

A) Choose the most appropriate answer for each of the following statements: (35 marks)

- 1- The study of changes in tissues caused by disease is.....**
a) Etiology b) Histopathology c) Pathogenesis
- 2- In which case the disturbance of cell metabolism is irreversible.....**
a) Necrosis b) Hydrobic degeneration c) Cloudy swelling
- 3- What happened in deficiency of lipotropic factors?**
a) Fatty infiltration b) Cloudy swelling c) Inflammation
- 4- It is the case in which the nucleus gradually dissolves away and disappear.....**
a) Pyknosis b) Karyorrhexis c) Karyolysis
- 5- are basophilic bodies scattered in the cytoplasm of nerve cells.**
a) Nissel b) Node of Ranvier c) Golgi apparatus
- 6- is not present in the adult nerve cells.**
a) Pigments b) Centrosome c) Fibrils
- 7- Which one its basic function is communicates signals to target cells?**
a) Muscle cell b) Neuron c) Both a&b
- 8-is a flask-shape having a single process which divides into a central and peripheral branch.**
a) Bipolar nerve cell b) Multipolar nerve cell c) Pseudo-polar nerve cell
- 9- The cytoplasm of the muscle fibers is called**
a) Axoplasm b) Sarcoplasm c) myelin cytoplasm
- 10- The muscle fibers owe their contractility to the presence of contractile bundle of protein filaments called.....**
a) Myofibrils b) Sarcofibrils c) Axofibriles
- 11- muscle is non-striated and involuntary.**
a) Skeletal b) Cardiac c) Smooth
- 12- The matrix ofis rigid but with some degree of flexibility and nonvascular.**
a) Bone b) Blood c) Cartilage
- 13- Elastic cartilage could be seen in**
a) Intervertebral discs b) knee joint c) Ear pinna

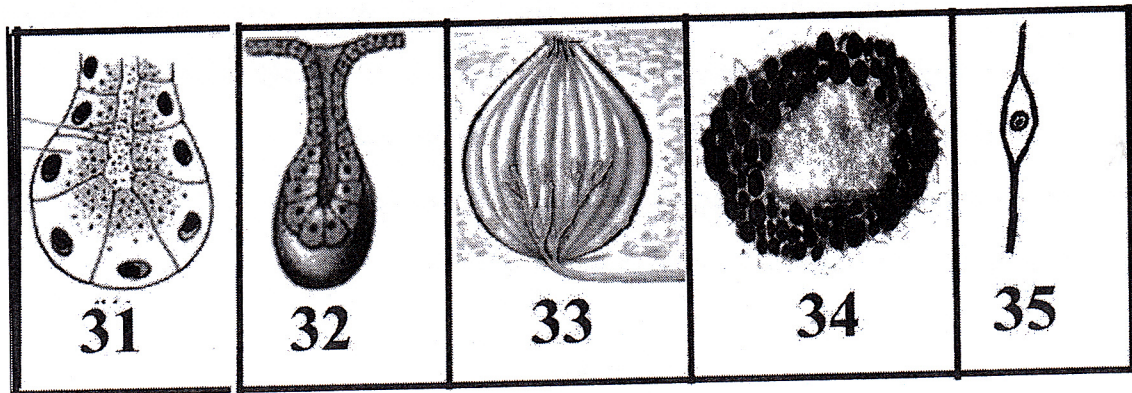
- 14- is strongest cartilage in our bodies.
 a) Hyaline cartilage b) Elastic cartilage c) Fibrocartilage
- 15-is specialized hard connective tissue by a mineralization of extracellular matrix.
 a) Cartilage b) Bone c) Both a&b
- 16- is a type of bone cell that breaks down bone tissue.
 a) Osteoclast b) Osteocyte c) Osteoblast
- 17- Reticular connective tissue can be found in
 a) Spleen b) kidney c) Ear
- 18-tissue is support and connects various tissues and organs.
 a) Epithelial b) Nervous c) Connective
- 19- are tough and resist stretch.
 a) Elastic fibres b) Reticular fibres c) Collagenous fibres
- 20- Tropocollagen is synthesized by the.....
 a) Fibroblastes b) Collagen c) Both a&b
- 21-is caused by an irritant short duration of action.
 a) Acute inflammation b) Chronic inflammation c) Subacute inflammation
- 22- What do you call the simple squamous epithelium that lines the abdominal cavity?
 a) Mesothelium b) Endothelium c) Pseudostratified
- 23- According to the mode of secretion (changes in the secretory cells), glands are classified into:
 a) Exocrine and endocrine b) Unicellular and multicellular c) Merocrine, apocrine and holocrine
- 24- Which cell is a connective tissue fixed macrophage?
 a) Kupffer cells b) Langerhans cells c) Microglia
- 25- Which part of the alimentary canal is lined by stratified squamous epithelium?
 a) Gall bladder b) Stomach c) Oesophagus
- 26- Which of the following organ is mixed gland?
 a) Pancreas b) Thyroid gland c) Pituitary gland
- 27- Gland of special nature is.....
 a) Sebaceous gland b) Lacrimal gland c) Both a& b
- 28- External auditory canal has special nature secretion which is.....
 a) Waxy secretion b) Fatty secretion c) Water secretion
- 29- The myoepithelium cell function is
 a) Secretion b) Contraction c) Sensation

30- The mucoid connective tissue found in:

a) Blood vessels

b) Lymphatics

c) Umbilical cord



31- In Figure (31):is mode of secretion of glandular epithelium

a) Apocrine

b) Merocrine

c) Holocrine

32- According to the shape of secretory part Figure (32) is

a) Simple tubulo- Alveolar

b) Simple Alveolar

c) Simple tubular

33- Figure (33) is

a) Myoepithelium

b) Taste bud

c) Mucous gland

34- Figure (34) is

a) Mast cell

b) Plasma cell

c) Macrophage

35- Figure (35) is type of neurons which classified according to the number of their call processes called

a) Unipolar

b) Bipolar

c) Polygonal

B) Mention whether each of the following statements is true (T) or False (F): (15 marks)

36- Reticular fibres formed from collagen.

37- Exocrine secretion goes into blood stream.

38- Undifferentiated mesenchymal cells divide and differentiate into any other kind of connective tissue cells.

39- Multilocular adipose tissue composed of small fat cells which are filled with many droplets of fat.

40- Neuroepithelium is found in taste buds in the tongue.

41- Degenerations develop to the same extent in all types of tissues.

42- Macrophages cells are derived from blood monocytes.

43- Fibroblast is resting cell while fibrocyte is active cell.

- 44- Most of plasma cells die after four to five days and few survive to become memory cells.
- 45- Yellow elastic connective tissue found in arteries.
- 46- Germinal epithelial one type of epithelium cells is modification, and its function is division.
- 47- Cartilage is a model for the formation of bone and present in freely mobile joint.
- 48- Connective tissue all their cells rest on basement membrane.
- 49- Cartilage and bone are considering vascular connective tissue.
- 50- Pigment cells their cytoplasm is full of melanin granules.

انتهت الأسئلة

مع تمنياتي لكم بالتوفيق: د/ شيماء محمود صالح



Answer the following questions:-

Q1-Choose True or False:

(33Marks)

1-In industrially advanced countries, aquaculture is carried out by private sector. (True-False)

2- Aquaculture is estimated to contribute 12.21 million tons in fish production in 1983. (True-False)

3- In pond culture, the farm is essentially located on a tidal creek. (True-False)

4- Mariculture is aquaculture in the saltwater of the sea. (True-False)

5-Culture in rice fields had declined in recent years because of use of fish-toxic pesticides. (True-False)

6- In cage culture, no question of seepage and evaporation losses. (True-False)

7- In pond culture, no problem of pond excavation and dependence on soil characteristics. (True-False)

8- Cage culture is difficult to apply when water is rough. (True-False)

9-The water supply may be from a stream or canal or from underground source or rainfall in brackish water ponds. (True-False)

10- Public acceptance is one of the restrains in wastewater fish culture systems. (True-false)

11- Prevent loss of stock due to flooding is one of merits of cage culture. (True-False)

12- Culture of *Clarias gariepinus* and Tilapias in Africa is a bad example for polyculture. (True-False)

- 13- The soil in the area selected for pond culture should be impervious. (True-False)
- 14- The site of fish farm should be in the vicinity of transportation routes. (True-False)
- 15- Skilled operators are not essential for operating major fish farm efficiency. (True-False)
- 16- Slaughterhouse refuse and fishery byproducts are artificial fish feeds of vegetable origin. (True-False)
- 17- Dropsy and septicemia are fish disease caused by worms. (True-False)
- 18- Pox disease and cauliflower are fish diseases caused by bacteria. (True-False)
- 19- Aquaculture is organized production of a crop in the aquatic medium. (True-False)
- 20- One of the objectives of aquaculture is production of bait-fish. (True-False)
- 21- In developing countries, aquaculture is mostly practiced by large-scale. (True-False)
- 22- Pond culture depends on comparative economics of land use. (True-False)
- 23- Tastes and odour in fish is one of restraints in wastewater fish culture systems. (True-False)
- 24- No need for water replacement in cage culture. (True-False)
- 25- Costiaasis and chilodonelliasis are fish diseases caused by protozoans. (True-False)
- 26- Quality and density of plankton are biological properties of water quality. (True-False)
- 27- In the brackish water pond the competition with agriculture is relatively more than static freshwater ponds. (True-False)

28-In running water culture, water is filtered continuously and recirculated. (True-False)

29- Oil cakes and kitchen waste are fish feeds of animal origin. (True-False)

30- Artificial feeding is important in intensive aquaculture. (True-False)

31- Monoculture of milkfish *Chanos chanos* is famous in Japan. (True-False)

32- Risk of theft is one of limitations of cage culture. (True-False)

33- Vulnerability to predation is one of effects of fish diseases. (True-False)

Q2-Choose the correct answer: (17Marks)

34-..... is a common type of finfish which used in aquaculture.

(A. Shrimp – B. Oysters – C. Carp)

35- Aquaculture is estimated to contribute million tons in fish production in 1983.

(A. 12.8 – B. 10.21 – C. 11.21)

36- is a common type of shellfish which used in aquaculture.

(A. Prawns – B. Trout – C. Tilapia)

37- Molluscs is estimated to contribute..... million tons of aquaculture production.

(A. 3.25 – B. 0.12 – C. 2.39)

38- Restrains in wastewater fish culture systems lie in

(A. sterilization – B. sedimentation – C. public acceptance)

39- Monoaquaculture as the name implies in the culture of

(A. a single species – B. two species – C. several species)

40- One of the factors have been unfavorable to the development of aquaculture is.....

(A. aquatic pollution – B. reduction of fish production – C. screening)

41- Adoption of traditional techniques of aquaculture is

(A. extensive – B. intensive – C. semi-intensive)

42- One of the water quality data is

(A. oxygen content – B. foundation of the structure – C. stability of the dikes)

43- One of the chemical properties of water is.....

(A. temperature – B. pH – C. turbidity)

44- One of the biological properties of water quality is

(A. alkalinity – B. salinity – C. quality and density of plankton)

45- One of the vegetable artificial fish feeds is.....

(A. trash fish – B. slaughterhouse refuse – C. cereals)

46- Methods of dry fish feeds are.....

(A. mechanical dispensers – B. feeding enclosures – C. feeding baskets)

47- Gill rot is..... fish disease.

(A. fungal – B. protozoan – C. bacterial)

48- is a common type of plants which used in aquaculture.

(A. Mussels – B. Mullet – C. Red alga)

49is estimated to contribute 4.45 million tons of aquaculture production.

(A. Finfish – B. Crustaceans – C. Sea weeds)

**50- is estimated to contribute 8.41 million tons of
aquaculture production.**

(A. Africa – B. Asia – C. Europe)

Best wishes

Prof. Usama M. Mahmoud



University: Asyut

Invertebrate II

Total degree = 50

Faculty: Science

Code: 222 Z

Final exam.

Department: Zoology

May 2023

Time: 2 hrs.

Answer the following questions: Note: The questions are in 2 pages

Q1. Choose between brackets:

(16 marks)

- 1- (*Pagurus* - *Sepia* & *Eremina* - *Pagurus*) can secrete/s its/their shell.
- 2- *Peripatus* is similar to (*Scolopendra* - *Holothuria* - *Ascaris*).
- 3- (Book lung - Green gland - Kidney) is excretory system in *Penaeus*.
- 4- Spinnerets are found in (*Lambis* - *Lycosa* - *Ophicoma*).
- 5- (*Cypris* - *Chiton* - *Echinometra*) possesses mantle.
- 6- Visceral mass lost its symmetry after (torsion - coiling - both).
- 7- (*Radula* - Endoskeleton - Capitulum) is characteristic for *Argas*.
- 8- Parthenogenesis could be noticed in (*Pagurus* - *Artemia* - no one).
- 9- Glochidium larva is found in (*Ophiocoma* - *Anodonta* - *Sacculina*).
- 10- (*Squilla* - *Holothuria* - *Tripneustes*) moves rapidly.
- 11- In *Cyclops* copula helps in (movement - excretion - respiration).
- 12- (Ticks - Slugs - Pauropods) have 3 branched antennae & 9 pairs of legs.
- 13- *Holothuria* has (exoskeleton - endoskeleton - mantle).
- 14- (Scallops - Clams - Oysters) are Soft Bottom Burrowers.
- 15- *Limulus* belongs to (Chelicerata - Crustacea - Chilopoda).
- 16- (Tagmatization - Molting - Cryobiosis) is fusion of segments into functional regions.

Follow the rest of questions

Q2. Answer six only of the following:

(24 marks)

- 1- Compare only by drawing & labeling the nervous system in both *Anodonta* & *Scolopendra*.
- 2- Demonstrate structure & functions of water vascular system in Echinodermata.
- 3- Differentiate among the habitat of Bivalvia & give an example for each.
- 4- Classify Subphylum Chelicerata giving an example for each.
- 5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia*.
- 6- Distinguish feeding & digestion in both *Astropectin* & *Penaeus*.
- 7- List the main characteristics of Echinodermata.
- 8- Illustrate structure & function of mantle in Mollusca.

Q3: Give the reason (s):

(10 marks)

- 1- Siphuncle is important in *Nautilus*.
- 2- *Conus* is a good hunter.
- 3- Absence of exocuticle from joints.
- 4- Coiling doesn't affect symmetry.
- 5- Horseshoe crabs belong to Chelicerata.
- 6- Some mollusks produce normal pearls.
- 7- All spiders have spinnerets.
- 8- *Iulus* secretes repellent substances.
- 9- *Anodonta* grind its food although absence of radula.
- 10- Tardigrades able to survive under severe conditions.

----- End -----

د. هناء عاطف جودة

بالتوفيق و السداد



Answer the following questions (NOTE: Exam in **THREE** pages)

Q1: Shade the correct answer; A, B, C, or D

(1 Mark each, 20 Degree)

- 1- One of the following is converted into thyroid gland of vertebrates:

A. Endostyle	C. Epipharyngeal groove
B. Pharyngeal gill slits	D. Peripharyngeal bands
- 2- The thermoreceptor in branchiostoma is:

A. Eye spots	B. Infundibular organ
E. Cephalic pigments	C. Kollickers pit
- 3- Excretion in vertebrates takes place by:

A. Unpaired kidney	B. Unpaired pronephron
C. Paired mesonephric kidneys	D. Paired mesonephric and metanephric kidneys
- 4- The pineal organ in lampreys is:

A. Present immediately behind the nostril	E. Present immediately behind the eye
B. Present between the eye and the nostril	C. Absent
- 5- Each gill pouch in petromyzon communicates with the respiratory pharynx by:

A. Gill lamella	C. External gill slits
B. Gill arches	D. Internal gill slits
- 6- In petromyzon optic lobes are present in:

A. Forebrain	C. Hindbrain
B. Midbrain	D. Medulla oblongata
- 7- Intermediates between cephalochordates and vertebrates:

A. Ostracoderms	B. Placoderms	C. Branchiostoma	D. Ammocoete larva
-----------------	---------------	------------------	--------------------
- 8- In deuterostomes, blastopore forms:

A. The mouth	C. Brain
B. The anus	D. Kidney
- 9- The teeth in fish are meant for:

A. Tasting	B. cutting	C. reproduction	D. all
------------	------------	-----------------	--------
- 10- The petromyzon larva is called:

A. Tornaria	C. Crinoid
B. Ammocoete	D. Nauplius
- 11- Exoskeleton in lampreys is:

A. Bony	C. Scaly
B. Cartilagenous	D. Absent
- 12- In lampreys paired appendages are:

A. 2 pairs	C. Absent
B. 3 pairs	D. 3 pairs
- 13- In petromyzon water of pharynx is prevented from entering the buccal cavity by:

A. Velum	C. Typhlosole
B. Endostyle	D. Spiral valve
- 14- Which of this is not a chordate character?

A. A dorsal or hollow tubular nerve cord.	D. Diploblastic.
B. A longitudinal supporting rod-like notochord.	
C. Pharyngeal gill slits.	

- 15- Which of the following animals is not a vertebrate?
 A. Fish
 B. Frog
 C. Sea horse
 D. Sea squirt
- 16- Which of the following is an amniote animal?
 A. Fish
 B. Reptilian
 C. Aves
 D. Mamalian
- 17- Coelom in Amphioxus is:
 A. Enterocoelic in origin
 B. Schizocoelic in origin.
 C. Pseudocoelom
 D. Absent altogether.
- 18- Wheel organ is a part of:
 A. Mouth
 B. Oral hood
 C. Velum
 D. Pharynx
- 19- The intestine of Amphioxus is divided into:
 A. Midgut, lateral ciliary tract and diverticulum.
 B. Lateral ciliary tract, diverticulum and rectum.
 C. Midgut, ilio-colic rind and hindgut.
 D. Midgut, hindgut and rectum.
- 20- In Branchiostoma gonads are arranged metamerically one pair in each segment from:
 A. 25 to 51
 B. 29 to 51
 C. 25 to 58
 D. 29 to 58

Q2: Shade (T) for True statements or (F) for false statements (1 Mark each, 10 Degree)

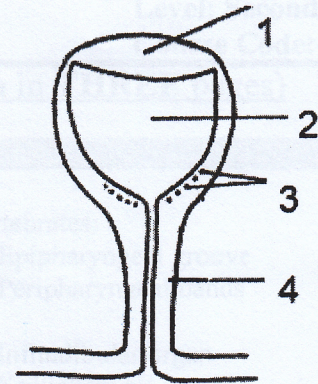
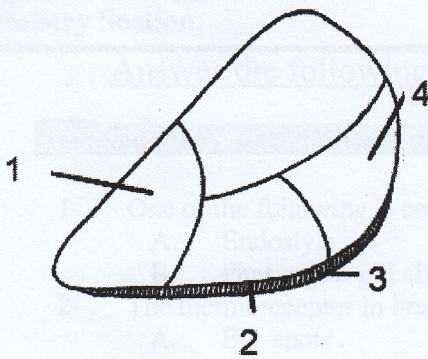
- 21- Oral fimbriae or papillae is used for fish attachment
- 22- Spiral valve or typhlosome in dogfish is used for absorption
- 23- Hindbrain in bony fish controls swimming movements
- 24- Membranous labyrinth in dogfish has static and acoustic function
- 25- Air bladder is used for hydrostatics, respiration, and sound production in fish
- 26- In petromyzon optic lobes are present in medulla oblongata
- 27- Intermediates between cephalochordates and vertebrates Ammocoete larva
- 28- The circuli of the cycloid scales are used to determine the sex of fish
- 29- The third eyelid in frog is called nictitating membrane
- 30- Salivary glands in frog are absent

Q3: Answer FOUR the following questions (10 degree)

1. Explain the structure of placoid scale by drawings?
2. Types of tails in fish?
3. Arterial system in bony fish?
4. Pentadactyle limb in vertebrates?
5. Compare between pisces (fish) and tetrapod?

Q4: Define the structure and label each item for the following questions

(10 degree)



A-

B-

Best wishes.....,

1. The pharyngeal organ in lampreys is:
 - A. Present immediately behind the nostril
 - B. Present immediately behind the eye
 - C. Present between the eye and the nostril
 - D. Absent
2. Each gill pouch in petromyzon communicates with the respiratory pharynx by:
 - A. Gill lamella
 - B. Gill arches
 - C. External gill slits
 - D. Internal gill slits
3. In petromyzon optic lobes are present in:
 - A. Forebrain
 - B. Midbrain
 - C. Hindbrain
 - D. Medulla oblongata
4. Intermediates between cephalochordates and vertebrates:
 - A. Osteichthyes
 - B. Placodermis
 - C. Branchiostoma
 - D. Agnatha
5. In deuterostomes, Mesoderm forms:
 - A. The mouth
 - B. The anus
 - C. Brain
 - D. Kidney
6. The teeth in fish are meant for:
 - A. Tasting
 - B. cutting
 - C. reproduction
 - D. all
7. The petromyzon larva is called:
 - A. Trocharia
 - B. Ammocoete
 - C. Ctenoid
 - D. Nauplius
8. Exoskeleton in lampreys is:
 - A. Bony
 - B. Cartilaginous
 - C. Scaly
 - D. Absent
9. In lampreys paired appendages are:
 - A. 2 pairs
 - B. 3 pairs
 - C. Absent
 - D. 3 pairs
10. In petromyzon water of pharynx is prevented from entering the buccal cavity by:
 - A. Velum
 - B. Endostyle
 - C. Typhlosole
 - D. Spiral valve
11. Which of this is not a chordate character?
 - A. A dorsal or hollow tubular nerve cord
 - B. A longitudinal supporting rod-like notochord
 - C. Diphyletic
 - D. Diplocaulus



Answer the following questions (50 marks)

(Note: The exam in Eight pages)

First Question: Complete the following sentences: (10 marks: 1 for each)

1- Anatomically, insect head consist of six embryonic segments, the first head segment is called.....that contains a neuromere called.....The second head segment is called.....that contains a neuromere called.....The third head segment is called.....that contains a neuromere called.....

2-The largest insect order is know as.....

3- The exoskeleton is a multilayered structure with three functional regions are.....

4- Three separate cells form each seta, one for hair formation, one for socket formation, and one sensory cell.

5- There are two main functional groups of mouth parts among insects which are

6- Insect cuticle is consists of four layers which are from inside to outside

7- The dorsal blood vessel is divided into an anterior part called.....and a posterior part called

8-is the fifth longitudinal vein, which is divided into

9- All insects have an egg -laying tube or ovipositor which is absent in

10- The structure which is situated at the end of tarsus....., it takes the form of a pair of.....and median lobe called.....

Second Question: Choose the best correct answer (20 marks: 1 for each)

1. During insect respiration, air enters through tracheae by pores called?
a) Tracheoles b) Ostia c) Spiracles d) Gonopore
2. How many pairs of ganglia have fused together to form the insect brain?
a) Two b) Three c) Four d) Six
3. The pleural sclerite is found in.....
a) Thorax b) Abdomen c) Head d) All of them
4. Which structure lies below the frons and above labrum?
a) Furca b) Clypeus c) Gena d) Subgen
5. The halter is a modification of the posterior pair of wings of
a) Hemiptera b) Diptera c) Coleoptera d) Hymenoptera
6. Which of the following is Not a characteristic of silver fish?
a) Order Zygentoma b) Wingless c) Has larval stage d) Long cerci
7. The insect hemolymph transport wastes, nutrients, hormones and oxygen to all insect cells.
a) True b) False
8. The deutocerebrum innervates the.....
a) Antennae b) Compound eyes c) Mouthparts d) Labrum
9. The hemolymph enters to the heart through openings called...
a) Spiracles b) Ostia c) Accessory organs d) Lungs
10. The process of shedding an exoskeleton in order to grow.
a) Camouflage b) Molting c) Chrysalis d) Metamorphosis
11. Bees, wasps and white ants (termites) are belonging to order Hymenoptera.
a) True b) False
12. Which structure would never be found on an insect's prothorax?
a) Leg b) Wing c) Spiracle d) Pronotum
13. The free proximal part of the insect leg is known as.....
a) Coxa b) Trochanter c) Femur d) Tarsus

14. Generally the last abdominal segment bears.....

- a) Two pairs of cerci b) A pair of antenna c) A pair of cerci d) A pair of spiracles

15. Which of the following have mandibles and maxillae that have been modified to sharp stylets?

- a) Locusts b) Butterflies c) Mosquitoes d) Houseflies

16. The insect head is specialized for:

- a) Feeding and sensation b) Locomotion and reproduction
c) Reproduction and digestion d) Digestion and ingestion

17. Which of the following is not correct about beetles?

- a) Order Coleoptera b) The fore wing is elytron and the hind one is scaly
c) Complete metamorphosis d) The most common insect in the world

18. List the stages of the complete metamorphosis life cycle in the correct order?

- a) Egg-pupa-larva-adult b) Egg-larva-pupa-adult
c) Egg-numph-pupa-adult d) Egg-larva-pupa

19. Gizzaed is a part of.....

- a) Foregut b) Midgut c) Hindgut d) Gastric ceaca

20. Which structure would probably Not be present in an insect that feeds exclusively on blood?

- a) Crop b) Proventriculus c) Gastric caecae d) Rectum

Third Question: Answer Five only of the following: (10 marks : 2 for each)

A: Write short notes on interspecific and intraspecific insect communication, mention the difference and types?

.....

.....

.....

.....

.....

.....

B: Types of neurons according to their function?

.....

.....

.....

.....

C: Illuminate the importance of circulatory system.

.....

.....

.....

.....

D: Write short note on the male external genitalia.

.....

.....

.....

.....

E: Explain the insect wing venation.

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.....

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.....

.....

F: Define paedogenesis, exopterygota, metamorphosis hymenopteran waist.

.....

.....
.....
.....
Fourth Question: Answer the following:

(10 marks)

(A) Define Five only of the following terms:

(5 marks)

1. Sclerotization

.....
.....

2. Apodeme

.....
.....

3. Opisthognathous

.....
.....

4. Lacinia

.....
.....

5. Corium

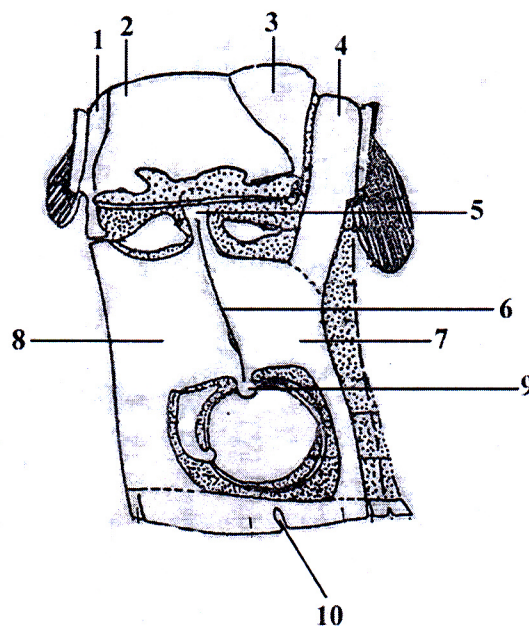
.....
.....

6. The remigium region of wing

.....
.....

(B) Define and Labeling only the following diagram

(2.5marks)



(C) Compare between the following: (2.5 marks)

(A) Paurometabolous	(A) Holometabolous

End of the Questions

Best wishes

By Dr.Daaa Shehata Mohamed

Dr. Ali Mohamed Ali



Answer the following question and record answer in the "Bubble Sheet" given to you (50 scores for 100 points; each point equal 0.5 score).

Choice the correct answer of each list in the following:

- 1- Juvenile migrations are not recorded in
 - a) Clarias sp.
 - b) Tilapia sp.
 - c) Sharks and rays
 - d) All the above
 - e) Nothing of the above
- 2- Carps, trouts and catfishes are examples of migratory fishes of the type
 - a) Potamodromous
 - b) Oceanodromous
 - c) Catadromous
 - d) All the above
 - e) Nothing of the above
- 3- Pituitary growth hormone in fishes leads to:
 - a) increases appetite and increases food conversion efficiency
 - b) increases production of somatomedin
 - c) both of a & b
 - d) none of the above
- 4- In saltwater (SW) conditions, lamprey perform as SW adapted bony fishes by
 - a) High volume of urine flow
 - b) B-type chloride cells
 - c) Drinking, feeding and α -chloride cells
 - d) No urine flow
- 5- Foraging strategy in herbivores is
 - a) Pursuit as in barracuda
 - b) Stalking as in trumpetfish
 - c) Ambush as in lizardfish
 - d) All the above
 - e) None of the above
- 6- The maximum period between ovulation and deterioration of egg quality of common carp and bighead carp is:
 - a) 15-30 minutes
 - b) 30-45 minutes
 - c) 50-80 minutes
 - d) 7 days
 - e) 2 hours
- 7- If one concentrate on the tropical parts of the ocean and particularly on shallow-water inshore areas of the world, the barriers between zoogeographic regions include:
 - a) East Pacific Water Barrier
 - b) New World Land Barrier
 - c) Mid-Atlantic Water Barrier
 - d) Old-World Land Barrier.
 - e) All the above.
- 8- Anabolic steroids that stimulate growth include:
 - a) testosterone and estrogen
 - b) prolactine
 - c) corticosteroids
 - d) all the above
 - e) both a & c



- 9- Lungfish, pike and cyprinids are -----
----- freshwater fishes that are strictly
confined to freshwater with little salt
tolerance:
- Primary.
 - Secondary.
 - Peripheral.
 - All the above.
 - Nothing of the above.
- 10- Female gonadosomatic index of 0.1 to
0.45 did not referred to all except:
- Oocyte development
 - Vitellogenesis
 - Oocyte maturation
 - Spawning
 - None of the above
- 11- Fishes that perform as
osmoconformers instead of
osmoregulator are
- Sharks and tuna
 - Perciformes
 - Cladistia
 - Holocephali
 - Hyperotreti
- 12- As regards biogeography, the Suez
canal connects two areas that are not
separated by a Temperature barrier.
- True
 - False
- 13- ----- biogeography accounts
for the present distributions in terms
of interactions between organisms and
their physical and biotic environments.
- Conservation.
 - Historical .
 - Ecological.
 - All the above.
 - Nothing of the above.
- 14- Fish advantages of being small
include:
- Large generation time
 - Lack of more habitat
 - Availability of few types of food
 - All the above
 - None of the above
- 15- Chloride cell (CC) function in marine
fishes involve
- Active transport and creation of
 Na^+ gradients IN CC
 - High concentration of Cl^- inside the
CC cytoplasm
 - High concentration of Na^+ in the
fluids outside
 - All the above
 - Nothing of the above
- 16- Good collection methods for fish
diet study include:
- Seine and Cast net.
 - Short time gill or trammel netting
 - Trawling at depth.
 - All the above except c.
 - Nothing of the above.
- 17- Cichlid species use ----- with
pumping energy
- Branchial ventilation



- b) Ram ventilation
c) Pulmonary ventilation
d) all the above
e) nothing of the above
- 18- On spawning, the female gonadosomatic index range is:
a) 0.5-0.96
b) 1.0-1.7
c) 0.1-0.45
d) 2.0-2.7
e) 1.8-2.2
- 19- Using the following Bertalanffy growth equation parameters: $L_{\infty} = 747$ mm, $K = 0.12$ and $T_0 = -0.82$, the length of age 4 is:
a) 215 mm
b) 328 mm
c) 450 mm
d) 263 mm
e) None of the above
- 20- The prolactin influences water and ion regulation acting on
a) Gill and kidney
b) Scales and fins
c) Swim bladder
d) All the above
e) Nothing of the above
- 21- Gars and bowfins are holostein fishes belonging to:
a) Teleostei.
b) Neopterygii.
c) Halecostomi.
d) Amiformes.
e) Lepisosteiformes
- 22- The effect of pH on affinity/capacity of Hb for O₂ could be studied in concern with:
a) Bohr effect
b) Root effect
c) Both a&b
d) Nothing of the above
- 23- With no pumping energy, sharks and tuna use
a) Branchial ventilation
b) Ram ventilation
c) Pulmonary ventilation
d) all the above
- 24- Amazon mollies are examples of
a) Ostaryophysi from the Amazon basin
b) Topminnows from the Amazon basin
c) Unisexual species
d) Asexual species
e) Nothing of the above
- 25- One can study migration by
a) Back calculation and captivity
b) Direct observation
c) Tagging and marking
d) Length frequency distribution
e) Both b&c
- 26- Aral sea bream start overwintering migration with condition factor of:
a) 4
b) 3 with high fat content
c) 3 with high fat content and sharp fall in temperature
d) 4 with sharp fall in temperature
e) All the above are correct



27- Before entering Volga during migration, white salmon have fat content of :

- a) 21% and 2% at spawning
- b) 2% and 21% at spawning
- c) 5% and 2% at spawning
- d) None of the above

28- Gill area equal ----- times of fish body surface

- a) 5-10
- b) 10-60
- c) 70-90
- d) All the above
- e) Nothing of the above

29- Lungfish, pike and cyprinids are -----
---- freshwater fishes that are strictly confined to freshwater with little salt tolerance:

- a) Primary.
- b) Secondary.
- c) Peripheral.
- d) All the above.
- e) Nothing of the above.

30- Fishes inflate and deflate their swimbladder at:

- a) The rete mirabile and the oval, respectively
- b) The oval, and the rete mirabile, respectively
- c) The rete mirabile and the countercurrent organ, respectively
- d) The countercurrent organ, and the rete mirabile, respectively

31- Malacopterygii are characterized by:

- a) Maxillary enter gape plus physostomous swimbladder
- b) 17 principle caudal rays with no mesocoracoid
- c) Pelvic fins typically thoracic or jugular
- d) Maxillary excluded from gap with no orbito shenoid
- e) All the above

32- Fish remove more than 90% of O₂ from water due to the following except

- a) Short diffusion distance
- b) Large surface area
- c) Counter-current exchange
- d) Limited water passing over gills
- e) Good vascular supply

33- Maturity stage 4 is concerned with

- a) Oocyte development
- b) Oocyte resorption
- c) Vitellogenesis
- d) Oocyte maturation
- e) Spawning

34- 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



- 35- Ceratodontiformes differ from Lepidosireniformes using the following taxonomic characters :
- a) Body form and paired fin shape.
 - b) Scale size and gass bladder state.
 - c) Larval gill and estivation of adult
 - d) All the above.
 - e) None of the above
- 36- ----- freshwater fishes such as stingrays are freshwater members of the primarily saltwater taxa:
- a) Primary.
 - b) Secondary.
 - c) Peripheral.
 - d) All the above.
 - e) Nothing of the above.
- 37- Teeth in plankton feeder fishes are:
- a) Strong and a cutely pointed.
 - b) Single plate
 - c) Nibbling mouth with incisiform teeth.
 - d) Toothless mouth but with pharyngeal teeth and horny pad.
 - e) None of the above
- 38- 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.
- 39- Historical biogeography includes:
- a) Dispersal biogeography
 - b) Vicariance biogeography
 - c) Panbiogeography
 - d) Both a&b
 - e) Both b&c
- 40- On any drop in temperature, Anchovy start overwintering migration with fat content of :
- a) 14%
 - b) 14-17%
 - c) 22%
 - d) All the above
 - e) None of the above
- 41- Flying fishes have modified fins that help them glide. These are:
- a) Pelvic fins
 - b) Caudal fin
 - c) Pectoral fin
 - d) All of the above
 - e) None of the above
- 42- Schreckstoff is
- a) The fear hormone
 - b) Growth hormone
 - c) Used in sexual selection
 - d) Reproductive hormone
 - e) Used in respiration
- 43- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a
- a) Shark



- b) Freshwater bony fish
c) Marine bony fish
d) Lamprey
e) All the above
- 44- In Elasmobranchii, body fluids are isosmotic with environment due to:
a) Mineral concentration = 500 mOsm/l
b) Urea 440 mOsmol/l
c) Trimethyl Amine Oxide = 70 mOsmol/l
d) All the above
e) None of the above
- 45- Criteria of back calculations in fish growth include:
a) Number of scales is variable throughout life
b) Growth of scale (or hard part) is proportional to growth of fish
c) Annuli formed yearly at different times
d) All the above
e) None of the above
- 46- Using population fecundity as a measure of reproductive potential assumes with other assumptions:
a) Linear fish size- fecundity relationship with on annual variations
b) constant annual sex ratio
c) annual variation in age/size at maturity
- d) all the above except c
e) None of the above
- 47- Differences between determinate and indeterminate fecundities are due to:
a) incomplete spawning
b) atresia (degeneration)
c) resorption of oocytes
d) all the above
e) Nothing of the above
- 48- implications for fecundity estimation in indeterminate spawners are due to:
a) Counts of eggs do not indicate annual fecundity
b) Continuous new batches (size distribution)
c) Protracted season
d) All the above
e) None of the above
- 49- The fish mass movements are influenced by different factors including:
a) Temperature and Photoperiod
b) Salinity and Water current
c) Predators and Hormones
d) All the above
e) Only a and c
- 50- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration



- b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above
e) None of the above
- 51- Freshwater Chondrichthyes perform like freshwater Osteichthyes by
a) Reduction of internal osmotic pressure
b) Decreased urea production
c) Retain higher concentration of Na^+ & Cl^-
d) Both a & b
e) nothing of the above
- 52- 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
- 53- Limit of fish sizes are important because
a) egg production is linearly correlated with female fish size
b) egg production is exponentially correlated with female fish size
c) fish mortality is linearly correlated with fish size
d) fish mortality if exponentially correlated with fish size
- 54- Changes in salmon family during spawning migration include:
a) Enlarge of eyes
b) Coloration alteration
c) Degeneration of alimentary tract
d) Decrease in swim bladder size
e) None of the above
- 55- Formation of false annuli on scales is due to
a) Depression in temperature
b) Pollution and diseases
c) Fish parasites and reproduction
d) All the above
e) Both a & c
- 56- Which is the proper order of the evolution of parental care in fishes:
a) No care; biparental care; male care; female care
b) No care; male care; biparental care; female care
c) No care; female care; biparental care; male care
d) Female care; male care; biparental care; no care
- 57- Biogeography is the study of the distribution of species and ecosystems in geographical space and through geological time.



- a) True
b) False
- 58- Courtship displays, female choice, and aggressive male behaviors are all driven by
a) Sexual selection
b) Asexual selection
c) Natural selection
d) Genetic drift
- 59- All the following anatomical requirements are for herbivores except:
a) Small mouth with nibbling mouth.
b) Gizzard like stomachs.
c) The sharp teeth on multiple bones
d) Highest relative length of gut.
e) Beak-like structure.
- 60- Neoceratodus is a diponian genus having the following characters except:
a) Leaf-shaped paired fins.
b) No aestivation in dry season.
c) Filamentous paired fins.
d) Maxilla and premaxilla absent.
e) No movable joint between skull parts.
- 61- Laterally compressed forms, with pectoral fins high on the body, with pelvic fins immediately below; small mouths, eyes large, snout short are:
a) Eel-like fishes
b) Ambush predator
c) Surface-oriented fishes
d) Deep-bodied fishes
- 62- Hagfishes are separated from Craniata as sister group to vertebrates because they are characterized by the following except:
a) A single semicircular canal
b) Capable of hyperosmoregulation
c) No neuromast cells and no extrinsic eye muscles.
d) Incapable of nervous regulation of the heart.
e) No vertebrae
- 63- Latimeria are Sarcopterygii having:
a) 2 separate dorsal fins.
b) Maxilla absent and premaxilla present.
c) Movable joint between skull parts.
d) All the above.
e) Nothing of the above.
- 64- Neopterygii includes the following taxa:
a) Halecostomi & Ginglymodi.
b) Ginglymodi and Teleostei.
c) Ginglymodi and Halecomorphi.
d) Ginglymodi and Cladistia.
e) Cladistia and Amiformes.
- 65- A clade is defined by
a) by shared characters called apomorphies
b) shared derived characters called synapomorphies
c) shared characters called homoplasies
d) unshared characters called paraphylies.



66- Extinct jawless fishes are called

- a) acanthodians
- b) Placoderms
- c) Ostracoderms
- d) Agnathans
- e) Acanthopterygii

67- Homoplasies are characters that are

- a) shared by ancestry
- b) shared by convergent evolution
- c) unshared
- d) characteristic of a polyphyletic assemblage

68- Sturgeons and paddle fishes are grouped with ----- to form Actinopteri:

- a) Neopterygii.
- b) Actinopterygii.
- c) Amiformes.
- d) Teleostei.
- e) Polypteriformes.

69- Otophysi share the following synapomorphy:

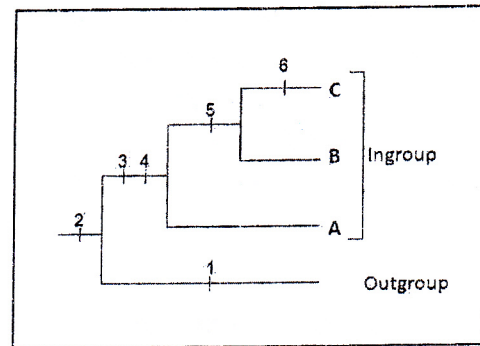
- a) Pterygiophores
- b) Schrekstoff
- c) Weberian apparatus
- d) Retractor dorsalis.
- e) Nothing of the above

70- The biggest problem of using scales in age determination is

- a) Stop annuli formation in old fishes
- b) Stop annuli formation in slow-growing fish
- c) Variability over body

d) Metabolically active

e) Both a&b



71- In the above figure of the clade, character 6 is

- a) Syanapomorphy
- b) Sympleiomorphy
- c) plesiomorphy
- d) Autapomorphy

72- Pelagic eggs are characterized by:

- a) Large size, thicker envelop and large yolk.
- b) Small size, thinner envelop and small yolk.
- c) Low fecundity, parental care, low dispersal and pigmentation.
- d) High fecundity, no parental care, high dispersal and no pigmentation
- e) Both "b"&"d"

73- Biparental and uniparental cares are represented by % respectively

- a) 22& 78
- b) 10& 90
- c) 90& 10
- d) 55& 45
- e) 78& 22



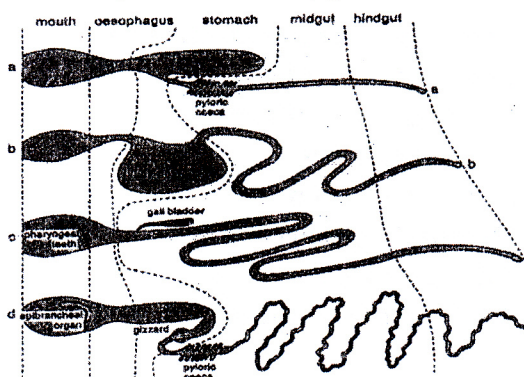
- 74- Lamprey shares *Oreochromis niloticus* with all the following characters except:
- Two or three semicircular canals
 - Vertebrae and true neuromast organs
 - Extrinsic eye muscles and hyperosmoregulation
 - True jaws and scales
- 75- Teleost success was achieved by
- Size and shape variability
 - Maneuverability and protrusible premaxillae
 - Reaction plasticity with evolution of intelligence
 - All the above
 - b and c only
- 76- ----- are extant jawless fishes , scavengers, predators of the deep and lazy osmoregulators
- Lamprey.
 - Conodonts.
 - Hagfishes.
 - Lancelets
 - Placoderms
- 77- Most speciation in African cichlids is the result of the following except:
- Decoupling of jaw bones.
 - Natal homing.
 - Sexual selection.
 - Absence of drift and selection
 - Diversification in food habits
- 78- Chondrichthyes are
- paraphyletic group.
 - Monophyletic group.
 - Polyphyletic group.
 - None of the above
- 79- ----- wrote two important texts on fish classification and fishes of Great Lake regions:
- Carl L. Hubbs(1894-1979).
 - D.S. Jordan(1851-1931).
 - G.S. Myers(1905-1985).
 - Albert Gunther (1830-1914).
 - Georges Cuvier (1769-1832).
- 80- The key traits account for ostracoderm success are
- True jaws and paired fins
 - Bony dermal plates and internal skeleton
 - Use of filter feeding and first use of bone in support
 - All the above
 - Nothing of the above
- 81- Maneuverability was better developed in teleosts than in other fishes because they have:
- No swim bladder
 - Heavy scales
 - Improved position of paired fins
 - All the above
 - Nothing of the above
- 82- Fish hemoglobin loses its bonding capacity with oxygen when



- a) The partial pressure of oxygen in the blood plasma increases
- b) The pH of blood plasma increases
- c) The partial pressure of carbon dioxide in the blood plasma decreases
- d) The pH of blood plasma decreases

83- Mackerels, Tunas, Cod and Herring are migratory fishes of the type

- a) Potamodromous
- b) Oceanodromous
- c) Anadromous
- d) All the above
- e) Nothing of the above



84- In the above figure digestive canal (d) represents a carnivore fish:

- a) True
- b) False

85- In the above figure digestive canal (c) represent:

- a) A herbivore fish
- b) A carnivore fish
- c) An omnivore fish
- d) A planktivore fish

e) Algavore fish

86- In the above figure, digestive canal (b) represents:

- a) A carnivore fish
- b) A planktivore fish
- c) A herbivore fish
- d) All the above
- e) Nothing of the above

87- In Zoogeography, the concept of filters is a way to explain:

- a) The composition of a species assemblage in a given place
- b) How difficult it is for a species to go from one biogeographic province to another
- c) How difficult it is for a species to go from one ecological niche to another
- d) All of the above
- e) none of the above

88- Physoclistous swim bladder are found in

- a) Sunfishes and perch
- b) Cyprinids and eels
- c) Salmonids and cat fishes
- d) Acanthopterygii
- e) Both a&d

89- Functional fecundity differs from true fecundity due to:

- a) Incomplete spawning
- b) Atresia
- c) Absorption of oocytes
- d) All the above
- e) All the above except "c"



- 90- Static reduced density advantages include
- a) Free movement up and down
 - b) Buoyancy doesn't vary with depth
 - c) Restricted swimming ability
 - d) Buoyancy regulation linked to metabolism
 - e) No relation to energy storage
- 91- In British Museum, ----- attempted to describe all fish species in the world.
- a) Carl L. Hubbs(1894-1979).
 - b) D.S. Jordan(1851-1931).
 - c) G.S, Myers(1905-1985).
 - d) Albert Gunther (1830-1914).
 - e) Georges Cuvier (1769-1832).
- 92- In external fertilization, male care is represented by%
- a) 100
 - b) 80
 - c) 76
 - d) 50
 - e) 10
- 93- Key to gas exchange into swim bladder include
- a) Bohr and Root effects
 - b) counter-current exchange
 - c) Salting out
 - d) Rete Mirabile
 - e) All the above
- 94- Dispersal and vicariance are:
- a) Two modes of dispersal of marine organisms
- b) Two equivalent terms that describe the formation of zoogeographic boundaries.
- c) Two opposing terms that describe the formation of zoogeographic boundaries
- d) Two mechanisms that result in the formation of genetically divergent populations
- e) Nothing of the above.
- 95- Disadvantages of generated lift include
- a) Low energy expenditure
 - b) Unrestricted swimming ability
 - c) Buoyancy regulation linked to metabolism
 - d) Both a&b
 - e) Nothing of the above
- 96- Stressful methods in collecting fishes for diet study include:
- a) Trawling in depth and electroshocking.
 - b) Seine and Cast net.
 - c) Overnight gill netting.
 - d) All the above except b.
 - e) Nothing of the above.
- 97- The absence of Hb in some fishes is associated with
- a) High metabolic requirements
 - b) Low environmental O₂
 - c) Special cardiovascular adaptations
 - d) High environmental O₂
 - e) Both c&d
- 98- Hb structure in petromyzontiforms is
- a) Dimeric
 - b) Tetrameric
 - c) Monomeric



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Faculty of Science,
Zoology Dept

- d) All the above except c
- e) Nothing of the above

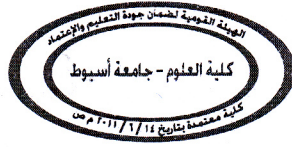
- e) Nothing of the above

- 99- Body fluids of Siluriformes are isosmotic with the environment due to
- a) Mineral concentration of 500 mOsmol/l
 - b) Urea of 440 mOsmol/l
 - c) Trimethylamine Oxide of 70 mOsmol/l
 - d) All the above

- 100- Evolutionary trends in fish morphology include

- a) A shift in position of the paired fins
- b) A decrease in overall spinyness
- c) Changes in body shape
- d) All the above
- e) Only a and c

Best Wishes: IMAM MEKKAWY



قسم علم الحيوان والحشرات

ZOOLOGY AND ENTOMOLOGY
DEPARTMENT

Insect Morphology 242E Exam, 2023

Would you confirm with draw your answer for only ten questions
(5 degrees each)

1-Please, give the terms:

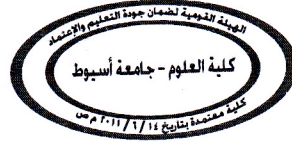
- Mouth parts faced downwards
- Water proofs the exoskeleton
- Organs used for laying eggs
- A line separating sclerotic area of the cuticle
- Mouth parts used to suck up liquid

2- What are the three different names for the outer hard covering of the insect's body, name it's different layers , and mention the function of each one.

3-What are the different parts of maxillae belonging to chewing mouthparts, with their musculatures

4-Do you have a clue about the development of an inset's wing and it's venations, please, explain both

5-How could an insect walk, show the mechanism of walking, and the musculature of a leg



قسم علم الحيوان والحشرات

ZOOLOGY AND ENTOMOLOGY
DEPARTMENT

- 6-What are the function of :
Tentorium, Apodemes, Basement membrane, mandible, Sensory hair
- 7-Mention the thoracic musculature plan of the three parts of the thorax
- 8-Explain the two mechanisms of flying of an insect
- 9-Mention the complete steps of metamorphosis
- 10-What are compound eyes of an insect, draw and explain their function
- 11-Draw the three views (dorsal, ventral and lateral) of an insect's head,
and mention the sutures of each view

Professor Azza Awad wishes a good luck for you