Assiut University

Faculty of Science

Department of Zoology

second semester + mid term exam 2020

Introduction to Embryology(Z 418)

Time: 2 hours

First question

Choose the correct answer 15 mark

1- All these structures are derivatives of the mesoderm except
(a) Heart (b) bones (c) thyroid gland (d) dermis

2- Meroblastic cleavage occurs in
(a) mesolecithal egg(b) polylecithal egg(c) centrolecithal egg (d)all answers correct} egg.

3- Pluripotent stem cells can be differentiated into:
(a) ectoderm (b) mesoderm (c) endoderm (d) all answers correct

4- Secondary egg membrane is produced by
(a) follicular cells (b) ovum (c) uterus (d) all answers correct.

5- All these structures are derivatives of epimere except
(a) dermatome (b) sclerotome (c) epidermis (d) myotomes

6- The wall of the chorine is made up of
(a) ectomesoderm (b) mesoendoderm (c) endoderm (d)ectoderm

7- The dorsal roots of the spinal nerves are derivatives of the
(a) fore-brain (b) mid-brain (c) neural crest (d) hind-brain

8- In the gastrula of the amphibia the neural plate found in the
(a) Dorsal side (b) lateral sides (c) ventral side (d) all answers correct

9- The primary oocyte gives rise to ..... mature ova
(a) one (b) two (c) three (d) four

10- The lining of the yolk sac is made up of
(a) ectoderm (b) mesoderm (c) endoderm (d) meso-ectoderm

11- Totiopotent stem cells give rise to
(a) Whole embryo (b) body of the embryo only (c) some tissues of the embryo (d) all answers correct

12- The lining of the mouth is made up of
(a) ectoderm (b) mesoderm (c) endoderm (d) all answers correct

13- The inner most layer of the amnion is made up of
(a) ectoderm (b)mesoderm (c) endoderm (d) all answers correct.

14- Yolk surrounds the nucleus is found in
(a) mesolecithal egg(b) polylecithal egg(c) centrolecithal egg(d)isolecithal eggs

15- Connective tissues originate from
(a) ectoderm (b) mesoderm (c) endoderm (d) all answers correct

Second question:

Put true (T) or false (F) 20 mark

1) In spermiogenesis the round spermatids differentiate into spermatozoa. ( )

2) In oviparous chordates the embryos develop inside the female's body. ( )

3) Somatic cells have the haploid number of chromosomes. ( )

4) The ovum is a highly mobile cell. ( )

5) Zona pellucida found in the ovum of placental mammals. ( )

6) All chordate animals are invertebrates. ( )

7) Mesolecithal eggs are found in Amphibia. ( )

8) External fertilization occurs in terrestrial animals. ( )

9) In oogenesis the first maturation division occurs after fertilization. ( )

10)In parthenogenesis the development of the embryo begins after fertilization. ( )

11) The lining of the respiratory system arises from the endoderm. ( )

12) un equal holoblastic cleavage occurs in isolecithal eggs. ( )

13) The lens of the eye is derived from neural crest. ( )

14) In the blastula of amphioxus, cells are arranged in one layer. ( )

15) Blastomeres contain the diploid number of chromosomes ( )

16) In ovoviviparous animals the developing embryo receives nourishments from the yolk stored in the egg. ( )

17) Alecithal eggs found in human. ( )

18) Secondary spermatocytes formed by meiosis one. ( )

19) The skeletal muscles of the body are derived from the mesoderm. ( )

20) Primary egg membranes are produced by the ovum. ( )

Oral exam: 5 mark

I. **The allantois's wall consisted of**
(a) ectoderm (b) mesoderm (c) endoderm (d) b+c

II. **The larval stage is characteristic of**
(a) reptiles (b) mammals (c) birds (d) amphioxus

III. **Chromatophores of the skin are derived from**
(a) ectoderm (b) mesoderm (c) endoderm (d) neural crest

IV. **Gametogenesis started with**
(a) Maturation (b) Proliferation (c) Growth (d) differentiation

V. **The somatopleure consisted of**
(a) Ectoderm (b) mesoderm (c) ecto-mesoderm (d) endo-mesoderm.

---------- **Best Wishes** ----------

University: Assiut Introduction to embryology&evolution

Faculty: Science Code: 418 Total degree: 70 + 10 Oral

Department: Zoology Final exam. July. 2020Time: 2 hrs

Evolution Part **Note: Questions are in 2 pages**

Answer the following questions:

Q3. Choose the correct answer: (20 marks)

1- (Natural selection-Weight bearing- Mutations-All) is /are physical obstacle/(s) to transition from water to land.

2- Evolutionist claimed that living organisms would emerge from nonliving by (preplanning - spontaneous generation - homology).

3- Antibiotics and insecticides depend upon (immunity- natural selection- evolution).

4- Mutations give rise to (cloning- natural selection- no correct answer).

5- Non-living matter could come together to form living organisms in (spontaneous generation- analogy- preplanning).

6-Evolution considered (liver- spleen- appendix-all) to be vestigial organs.

7- (Metamorphosis – Cloning –Antibiotic mechanism- All) deny evolution concept.

8- Evolution considered (*Archaeopteryx -Coelacanth- Amoeba*) is the interstitial state between birds and reptiles.

9- Mutation is the mechanism of evolution in (New Darwinism - Lamarckism - Darwinism).

10- Mendel's laws (accept – deny -no correct answer) the concept of evolution.

11- If gene flow occurred, the population must be (same- different - both).

12- Darwin and Wallace were based on (cloning technology - mutation - natural selection).

13-"The inheritance of acquired traits" was established by (Darwin - Wallace - Lamarck).

14- Finches of Galapagos are examples of (variation – microevolution-speciation).

15- Evolutionists claimed that wings in (birds- bats- insects- all) are analogous structures.

16- Evolutionists claimed that fore limbs in (human- whale - elephant – all) are homologous structures.

Follow the rest of questions

17- (Analogy- Mutation-Fossil record) causes abnormalities.

18- New Darwinism relies on (cloning - mutation- natural selection).

19- (Macroevolution-Variation- Homology) means different characteristics of a certain type or species within the same gene pool.

20- Progeria Syndrome is an evidence of (evolution – mutation- natural selection).

Q4. PUT (√) OR (X) between brackets: (15 marks)

1- Variation gives rise to new species. ( )

2- Macroevolution is important physical obstacles to transition from water to land. ( )

3- Homology is dealt with structures similar in origin and different in function. ( )

4- Antibiotics accept the evolution concept. ( )

5- Natural selection according to Darwin is the struggle for survival in nature. ( )

6- Non-living matter could form living organisms. ( )

7- Insects came from leftover food. ( )

8- People's death & abnormalities in Hiroshima & Nagasaki is due to metamorphosis. ( )

9- Darwin suggested unlimited changesduring species formation. ( )

10- Natural selection can explain complex organs, such as eyes, ears or wings. ( )

11-Metamorphosis is a complex preplanning process. ( )

12- Mutations give rise to sterility, disforming and maybe death. ( )

13- Weight bearing is important physical obstacles to transition from water to land. ( )

14-Spontaneous generation accepts evolution concept. ( )

15- Darwinism can explain the origin of insects. ( )

The Oral question: Choose the correct answer: (5 marks)

1-Homology depends upon similar (structures – functions – both- no one).

2- (Metabolism-Lamarckism-Darwinism) claimed "The inheritance of acquired traits".

3- Organs similar in function but different in structure are (homologous-analogous-both).

4- (Macroevolution-Microevolution-variation) claimed formation of new species.

5- Traits could be transmitted across (mutations-genes- natural selection).

----------END----------

إنتهت الأسئلة بالتوفيق والسداد د. هناء عاطف

Assiut University Faculty of Science Department of Zoology	Final exam of Experimental Embryology (Z 438) for Zoology students	July, 22nd 2020 Time: 2 hours Total marks: 50

Put your answers in the Answer Table at the last page

Choose the right answer: (one mark each)

1- Regeneration is a process of
a) differentiation b) cleavage c) divisions d) none

2- The excretory product of the tadpole larva is
a) ammonia b) urea c) uric acid d) amino acids

3- The main teratogenic period starts from
a) early stages of development b) late stages of development
c) formation of germ layers d) larval stages

4- According to the preformation theory, successive generations of individual organisms pre-existed one inside the other of
a) mother's ovum b) father's sperm c) both d) none

5- Destructive metabolic phase in regeneration is
a) catabolic b) anabolic c) respiratory d) excretory

6- Metamorphosed frogs excrete nitrogen in the form of
a) ammonia b) urea c) uric acid d) amino acids

7- Cells which undergo abnormal and uncontrolled growth at the cost of remaining cells are called
a) teratoma cells b) cancer cells c) malignant cells d) neoplastic cells

8- Who proposed the recapitulation theory?
a) Muller b) Morgan c) Ernst Haeckel d) Weissman

9- Among legal considerations animals should be correctly
a) fed b) housed c) handled d) all

10- During metamorphosis the visual pigment shifts to the use of
a) porphyropsin b) rhodopsin c) carotene d) none

11- Abnormal and persistent cell divisions that remain localized at the spot origin result in
a) metastatic tumor b) benign tumor c) malignant tumor d) all

12- Spemann transplanted the dorsal lip of the blastopore of one embryo into another where it induced the formation of a second embryo. The dorsal lip acted as an
a) organizer b) exciter c) stimulator d) inhibitor

13- Frog tadpole is
a) secondary larva and direct developer b) secondary larva and indirect developer

c) primary larva and direct developer d) primary larva and indirect developer

14- during tadpole metamorphosis, last one to appear is
a) internal gills b) external gills c) hind limbs d) fore limbs

15- reduction of the gills and tail is affected by
a) necrosis b) degeneration c) autolysis d) histolysis

16- Solid tumors in nerve tissue, breast, skin and brain are examples of
a) sarcoma b) carcinoma c) lymphoma d) leukemia

17- The process by which an embryonic tissue influences other tissues to differentiate is called
a) Induction b) grafting c) activation d) transplantation

18- Some events occur during tadpole metamorphosis including
a) tail resorption b) gill resorption c) intestinal remodeling d) all

19- Integumental changes during tadpole metamorphosis include changing from
a) larval to adult hemoglobin b) herbivorous to carnivorous feeding
c) gill to lung respir d) thin epidermis to stratified squamous epidermis

20- Causes of teratogenesis and may be genetical factors of environmental agents are known as
a) neoplastic b) malignant c) chemical d) teratogens

21- Which thyroid hormone receptor is found in cells before development of thyroid gland
a) TRa b) TRb c) both d) none

22- Larval organs respond to thyroxine through
a) growth and death b) remodeling and respecification c) both d) none

23- All of the following can be considered as stem cells except
a) Bone marrow cells b) Cells of Malpighian layer c) liver cells d) neurons

24- Regeneration occurs in larvae and adults of
a) anurans b) urodeles c) both d) none

25- Removal of thyroid rudiment of frog at the tail bud stage results in
a) giant tadpole b) fails to metamorphose c) monster d) death

26- Tumor virus infection may be
a) productive b) nonproductive c) both d) none

27- During metamorphosis liver creates urea from
a) ammonia b) ammonia and CO_2 c) CO_2 and lipids d) ammonia and lipids

28- Which axis is metamorphosis inhibitor?
a) hypothalamus – pituitary- thyroid b) hypothalamus – pituitary
c) hypothalamus – pituitary – testis d) hypothalamus – thyroid

29- 85% of the cancers are
a) sarcoma b) carcinoma c) lymphoma d) leukemia

30- The hormone involved in the metamorphosis of tadpole is
a) prolactin b) thyroxine c) TSH d) somatotrophin

State true (√) or false (x): (one mark each)

31- Growth inhibiting substance increases the regeneration in hydra.

32- Normal morphogenesis result in the formation of a terata

33- Marcello Malpighi is a co-discoverer of sperm.

34- Epigenesis theory now is 100% wrong.

35- Some kinds of stem cells are haploid cells.

36- Due to X-ray blastemal fails to regenerate.

37- Early stages of development are not much more affected by teratogens

38- The theory of spontaneous generation was introduced by Louise Pasteur

39- Redifferentiation phase is followed by dedifferentiation.

40- Lymphoma is neoplastic growth of leucocytes and are characterized by excessive production of the cells.

41- Posterior end of a cut hydra regenerates foot.

42- De Graaf was one of the most important preformationists.

43- Hair loop is not suitable to handle delicate embryos.

44- All stem cells can substitute any type of adult cells.

45- A wide thermal range incubator is preferred than several narrow range incubators.

46- Tail regeneration in lizard is called epimorphosis.

47- Experimental animals should be used to learn techniques.

48- Ovists are more convenient than spermists.

49- The gene of cancer causing virus responsible for transformation, is called as an oncogene.

50- Red blood cell production is a physiological regeneration.

Oral Sheet: (10 marks)

Choose the right answer:

1- 4% of the cancers are

a) sarcoma b) carcinoma c) lymphoma d) leukemia

2- Which of the following is considered as totipotent stem cells?

a) Cells of inner mass b) Cells of morula c) liver cells d) neurons

State true (√) or false (x):

3- Tail regeneration in lizard is called morphallaxis.

4- Liver cells are stem cells.

5- Experimental animals should not be used to acquire skills.

End of questions .....Best of Luck

Dr. Reda A. Ali
Prof. Experimental Embryology

Answer Table:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Oral Sheet

1	2	3	4	5

Answer the following questions:

I- Choose the correct answer and also write its letter in the answers table below: **(60 marks)**

1- The region of earth, where life exists is known as

A) Atmosphere
B) Biosphere
C) Lithosphere
D) Hydrosphere

2-Ecosystems can be classified to main two major ecosystems; …….. and …….ecosystems.

A) environment / aquatic
B) air / water
C) terrestrial / aquatic
D) all of the above

3- One of the following is not related to the others.

A) stratosphere
B) hydrosphere
C) lithosphere
D) atmosphere

4-In the biosphere energy is received from

A) The interior of the earth
B) The Sun
C) decomposition product
D) None of the above

5- The solid phase of soil has two main constituents namely …… and …… materials.

A) mineral / botanic
B) mineral / organic
C) organism / organic
D) animal / plant

6-In soil profile, …. is called fermentation layer were a partial decomposition occurs.

A) L-layer
B) F-layer
C) H-layer
D) C-layer

7-A horizons of soil profile mainly composed of organic and mineral matter.

A) clay and humus
B) sand, clay and rock
C) organic and mineral matter
D) all of the above

8- …….is a soil horizon mainly composed of organic and mineral matter.

A) A1-layer
B) A2-layer
C) B1-layer
D) B2-layer

9-The extraction and separation of animals from the soil can be by ..... methods.

A) electrical
B) mechanical
C) behavioral
D) mechanical and behavioral

10- One of the following is Not related to the others

A) Baermann funnel
B) Berlese funnel
C) Dry sieving
D) Sand extractor

11- Wet sieving is often more efficient than the dry method, particularly for .....

A) Mites
B) enchytraeids and small molluscs.
C) Microarthropods
D) collembolans

12- One of the following is Not used in Flotation methods.

A) Ladell's can
B) Calcium sulphate
C) Phospho-bronze gauze
D) magnesium sulphate

13- ..... is the best collected methods of enchytraeids and nematodes.

A) Flotation method
B) Sieving method
C) Baermann funnel
D) Berlese funnel

14- It is recommended for most soil arthropods to preserve in stored glass vials preservation in.....

A) 60-70% alcohol and 5% glycerol
B) 70-80% alcohol and 5% glycerol
C) 60-70% alcohol and 10% glycerol
D) 70-80% alcohol and 10% glycerol

15- The mineral soil is separated from the organic matter by making use of the different .....of these two fractions.

A) specific viscosities
B) specific dryness
C) specific gravities
D) None of the above

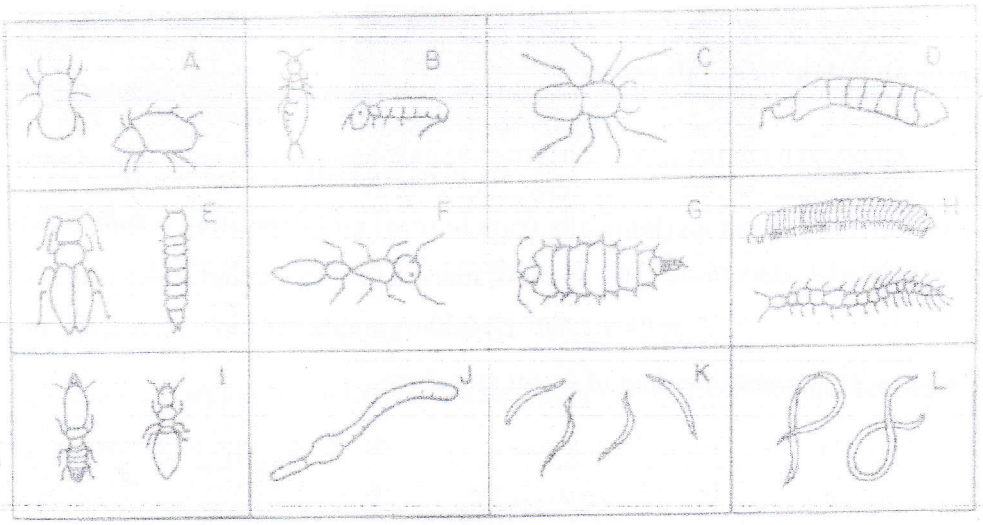
16- One of the following is not related to the others.

A) suction traps
B) pitfall traps
C) lighted traps
D) color traps

17- The most popular kind of dry behavioral extractor is .....

A) Berlese-Tullgren funnel
B) Baermann funnel
C) Flotation method
D) Sieving method

18- In the following plate, Figure (A) refers to .....



A) Mites
B) Springtails
C) Spiders
D) Fly larvae

19- In the previous plate, Figure (C) refers to .....

A) Mites
B) Springtails
C) Spiders
D) Fly larvae

20- In the previous plate, Figure (H) refers to .....

A) Hymenoptera
B) Isopoda
C) Myriapoda
D) Lumbricida

21- Soil active geophiles includes the following insect orders

A) Diptera, Collembola and Lepidoptera
B) Diptera, Coleoptera and Isopoda
C) Diptera, Coleoptera and Hymenoptera
D) Diptera, Coleoptera and Lepidoptera

22- Soil animals inhabit the vegetation layer above the soil surface is called .....

A) heiedaphon
B) epigon
C) euedaphon
D) None of the above

23- One of the following is <u>Not</u> related to the others

A) Manystigmata
B) Cryptostigmata
C) Prostigmata
D) Mesostigmata

24- The opposite collembolan structure refer to it surviving in

A) litter layer
B) deeper layer of soil
C) surface layer of soil
D) humus layer of soil

25- Soil Tardigrades are a group of very small animals, sometimes called

A) Water bears
B) Soil bears
C) Water fox
D) Soil wolf

26- ..... are larvae abundant in arable soils.

A) Tipulids
B) Crane flies
C) Leather-jackets
D) all of the above

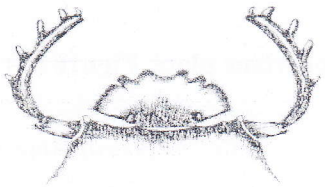
27- ..... are animal moving the soil mechanically from in front and depositing it somewhere else

A) excavators
B) tunnellers
C) burrowers
D) Both A and B

28- The opposite Figure shows modification of insect structure for .....

A) oviposition
B) digging
C) shoveling
D) all of the above

29- The opposite Figure shows



A) Head of dung beetle.
B) Head of dor beetle.
C) Head and forelegs of dung beetle.
D) Head and forelegs of dor beetle.

30- Classification of the soil fauna based on .....

A) body size and presence
B) habitat preference and activity
C) body size and habitat preference
D) all of the above

Answers table

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer															
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer															

II- Put true (√) or false (X) for each of the following statements: (30 marks)

( ) 1- The lithosphere is soils and rocks system within which all life functions.

( ) 2- A full soil profile develops in 20 - 100 thousand years.

( ) 3- The humus layer is composed mainly of organic matter, which has completely lost its original structure.

( ) 4- Mechanical techniques of soil animal extraction can discriminate between animals that are dead at the time of sampling and those that are alive.

( ) 5- Mechanical methods included passive techniques and they utilize the behavioral of the animals.

( ) 6- Mechanical methods for soil fauna extraction included sieving and flotation methods.

( ) 7- In Baermann funnel, heating from down will cause enchytraeids and nematodes to leave the sample.

( ) 8- Potassium permanganate has been used to drive out geophilimorph centipedes from the soil.

( ) 9- The body size of soil microfauna ranged within 20 to 200 μ.

( ) 10- Phytophages soil animal feeding on green plant material above the ground not on root systems.

( ) 11- Soil animals have an equally close association with this environment.

( ) 12- Many dipterous larvae are coprophagous, feeding on decaying wood.

( ) 13- Insect larvae make an important contribution to the soil by their decomposition of organic material in various ways.

( ) 14- Nematodes as bacterial feeders they may well have a direct effect on decomposition.

( ) 15- Head and forelegs of dung beetle are modified for shoveling the soil.

III- Oral exam: Put true (√) or false (X) for each of the following statements: (10 marks)

( ) 1- River is a good example of Terrestrial Biome.

( ) 2- Mineral components of soil undergo decomposition under the action of various agents.

( ) 3- World-wide, agricultural soil is lost at a rate faster than its natural replacement.

( ) 4- B-horizon of soil profile contains clay and humus, which have been leached from A-horizon.

( ) 5- Berlese-Tullgren funnel is the most popular soil fauna wet behavioral extractor method.

( ) 6- Lactic acid is used as a fixative for soil micro arthropods.

( ) 7- The protozoa are one of the most important groups representing the micro-fauna.

( ) 8- Adaptations to Subterranean life to exist in the absence of light and reduced oxygen supply.

( ) 9- Soil temperatures do fluctuate to the same degree as above ground.

( ) 10- The body size of soil macrofauna ranged within 20 to 200 µ.

أنتهت الأسئلة مع خالص التمنيات بالتوفيق،،،،،،،،،،،،

أ.د. خالد فؤاد عبد الوكيل

K. F. Wakeil

Assiut University
Faculty of Science
Zoology Department

Course name: Comparative anatomy of vertebrate
Course code: (432-Z)
Time: two hours

Read the question carefully.

Question 1:

Choose the single response that is the correct answer of the following.

1. **comparative anatomy is**
   a) The study of the structure of vertebrate
   b) The study of similarities , as well as, differences in this structure
   c) The history of the extermination of the unfit and of the invasion of the new territory
   d) All of the above.
2. **Homologous structures are organs**
   a) Do not have the same embryonic origin
   b) Have the same function
   c) Do not have the same evolutionary origin
   d) Have the same embryological and evolutionary origin
3. **Analogous structures**
   a) The wing of bird and the fore limb of a tetrapod
   b) The wing of bird that of insect
   c) Petromyzon teeth and the reptilian scale
   d) Air bladder and the kidney
4. **Integumentary system serves**
   a) Protection from injurious
   b) Execration
   c) Homeostasis
   d) Storage of reserve foods in homoeothermic

e) Nourishment of mammalian young

f) All of the above and more

5. Integumentary system composed of

a) Epidermis and subcutaneous layer

b) Epidermis and ectoderm

c) Dermis and ectoderm

d) Epidermis and dermis

6. Integumentary system includes

a) The skin and the exoskeletal structures

b) The glands and the exoskeletal structures

c) The skin only

d) The skin and all its derivatives

7. Which of the following is a not epidermal derivative?

a) Down feather

b) Claws

c) Hair

d) The bony plates of extinct fish

8. Which of the following is untrue in the integument of lining amphibians?

a) Contains poisonous glands

b) Respiration occurs across it

c) Is moistened by mucous

d) Contains osteoderms

9. Melanocytes arise from

a) Ectoderm

b) endoderm

c) neural crest

d) mesodermal somites

10. **The epidermis has mucous glands in**

a) fish and amphibian

b) birds and mammals

c) reptiles and amphibians

d) all vertebrates

11. **Which of the following integument has Merkel cells?**

a) Amphibians

b) Reptilian

c) Mammalian

d) Fish

12. **an uni-epidermal layer exists in the skin of**

a) Toad

b) Reptile

c) Amphioxus

d) Hagfish

13. **Goblet cells exist in**

a) Protochordate only as that in Amphioxus

b) Protochordate and some bony fish

c) Bony fish and Amphibians

14. **Keratinization is major challenge to face**

a) Humid environment

b) Enemies

c) Terrestrial life

d) Dry habitat

15. **the most conspicuous component of the dermis are**

a) Collagen fibers

b) Elastic fibers

c) Glandular cells

d) Meiotic cells

16. **The dermal bony scales are prominent in**

a) Ostracoderm

b) Fish

c) Reptiles

d) Mammals

17. **Fibers of dermis among the aquatic vertebrates arrange**

a) Parallel

b) Perpendicular

c) At angle to each other

18. **Most living bony fish have**

a) Placoid scales

b) Ganoid scales

c) Cycloid scales

19. **Ganoid scale is characterized by**

a) thick coat of enamel

b) underlies by dentin

c) Lake dermal bone

20. **Luminous organ exist in the skin of**

a) All marine fish

b) Cartilaginous fish

c) Fish live in bottom sea

21. **Wing feather have a primary function in**

a) Insulation

b) Aerodynamic

c) sensation

22. **Bird has feather and skin coated with a toxin**

a) Gallinula chloropus

b) Upupa epops

c) Hooded pitohui

d) Larus argentatus

23. Feather develop from

a) Epidermal- dermal

b) Dermal

c) epidermal

24. An avian exoskeletal structure similar to that found in reptiles

a) Horny scales

b) Ramphocaeca

c) feather

25. Mammalian hair may performs

a) attracting the preys

b) maintenance of body temperature and sensation

c) beauty for the animal

26. Hair develops

a) Epidermal- dermal

b) Dermal

c) epidermal

27. Which of the following have the greatest number of sweat gland

a) Dog and cat

b) Duckbilled and armadillo

c) Chimpanzees and man

d) Horse and cattle

28. Sweat glands are absent in the skin of

a) Dog

b) Cat

c) Elephant

d) Rat

29. The scale instance of the dermal armor in mammalian skin exists in

a) Elephant

b) Armadillo

c) Horse

d) Sheep

30. Sweat glands may perform

a) Attracting members of the same species

b) Attracting members of opposite sex

c) Serving a protection from enemies

d) Act to frighten foes a way

e) All of the above

31. Which of the following is modified hair?

a) Rhinoceros horn

b) Deer horn

c) Giraffe horn

32. Horns and never branched, are never shed

a) Giraffe horn

b) Pronghorn horn

c) Bovine horn

d) Deer horn

33. Nails, characteristic to

a) Reptiles

b) Primates only

c) Birds

34. The hoof is a modified claw of

a) All mammals

b) Mammals walk on the tips of their toes

35. The best example of homology is

a) Air bladder and liver

b) The placoid scale and true teeth

c) Pigeon wing and bat wing

36. Keratinized modified structure

a) Rhinoceros horn

b) Ramphoceaca

c) Baleen

d) All of the above

e) Non of the above

37. Which of the following is not part of the axial skeleton?

a) Hyoid

b) Middle ear ossicles

c) Cranium

d) The pelvis

38. Fate of the hyomandibular is

a) The stapes

b) Quadrate

c) Articular

d) Incus

39. The sphenoid and pterygoid are parts of the

a) Chondrocranium

b) Dermatocranium

c) Splanchocranium

40. Which of the following is a part of the temporal region?

a) Nasal

b) Squamosal

c) Maxillae

d) Fascial

41. Which of the following does not a part of the secondary palate in alligator?

a) Maxilla

b) Palatine

c) Frontal

d) Vomer

42. The sense capsules in the category of

a) Replacement bone

b) Endochondral bone

c) Dermal bone

d) Prochordal

43. The jaw joint present in mammals is

a) Palatine- angular

b) Dentary-squamosal

c) Articular- angular

d) Quadrate- articular

44. The parietal bone is in the category of bone

a) Replacement bone

b) Endochondral bone

c) Dermal bone

d) Prochordal

45. Avian skull is derived from

a) Anapsidian

b) Synapsidian

c) diapsidian

46. a brachial arch contributes to the upper and lower jaws

a) First

b) Second

c) The third

47. Which of the following is not replacing bone?

a) Circumorbital series

b) Occipital condyles

c) Sense capsules

d) Sphenoid

48. Bony skeleton may serve as

a) Body support

b) Lever arm

c) Allowing site attachment for muscles

d) All of the above

e) Non of the above

49. a skeletal structure separates the respiratory passage from the feeding one

a) Upper jaw

b) Maxilla

c) Secondary palate

d) Articular

50. among other things I've learned in vertebrate comparative anatomy is that

a) Comparative anatomy is like Alphabet, no New discoveries will made because past workers have found out all there is to know about anatomy

b) Generally speaking, the number of parts in a vertebrate has increased with evolution.

c) A great among mammalian structures have homologies in fish, such as our kidneys are the same as in fish

d) Obviously, none of the above is really true

Oral question

- Describe the structure of the placoid scales and its developmental stages (notice, with clear drawing).

""""والله ولي التوفيق""""