



Q1/ Fill with the suitable answer: (40 marks)

- 1- Phylogeny of axial skeleton depends on -----, -----, & -----
- 2- The transverse process of the thoracic vertebra has an articular facet for ----- of rib.
- 3- Adaptation is a process that increases an organism's chances of ----- and ----- success in a specified environment.
- 4- ----- is a specimen of the original series from which the holotype has been selected
- 5- ----- The species is at imminent risk of extinction in the wild.
- 6- Hemichordates are considered an invertebrate because -----, -----, -----, & -----.
- 7- The transverse process of the sacrum tends to fuse to form the ----- that joins the ----- to the pelvic bones.
- 8- In tetrapods, there are two types of anatomical relationships between centra and neural arches including -----and -----
- 9- The vertebral column in a snake lack a ----- & -----
- 10- In aspidospondyly, all vertebral elements -----, -----, and ----- arch remain separate.
- 11- There are two incorrect ideas for Lamarck including ----- & -----
- 12- Sexual selection occurs when females choose males based upon their ----- or ----- or their ability to ----- other males in contests.
- 13- Xenopus is a valuable tool because they are -----, -----, -----, & -----
- 14- Agnetha includes two classes 1- ----- 2-----
- 15- Crossopterygii have large ----- scales; the tail is ----- with a ----- lobe
- 16- Recent studies of deuterostome molecular phylogeny demonstrated that echinoderms and -----form a clade -----, and those -----, ----- and vertebrates form another clade -----

Q2/ Answer with True or False

(15 marks)

- 1- Microspheres and coacervates are the precursors of cells and have some selectively permeable qualities.
- 2- Atlas vertebra has an odontoid process on the anterior side of its body
- 3- An isotype is a specimen of the original series from which a holotype
- 4- Vulnerable the species is facing an extremely high risk of extinction in the wild.
- 5- The California condor is an endangered species.
- 6- Microevolution, in which organisms change from generation to generation
- 7- Allopatric speciation depended on the geographic barrier
- 8- Parallel evolution describes two related species that have made similar evolutionary changes after they diverged from a common ancestor.
- 9- There is a simian gap in apes between the incisors and canines of the jaw.
- 10- Cynodonts are ancestors of humans
- 11- Sarcopterygii related to amphibians by the presence of vomerine teeth
- 12- In anapsida the skull has one temporal opening behind the eye.
- 13- Protochordate and vertebrates are protostomes and resemble echinoderms and hemichordates.
- 14- Hemichordates are considered an invertebrate because of auricularia larvae similar to tornaria larvae of echinoderms.
- 15- The concentration of sense organs in the head and brain of protochordate

Q3/ Explain the following:

(20 marks)

- a) The transition from water to land involved different modifications ----?
- b) Differences between directional selection and disruptive selection?
- c) Mention the arguments of Darwin's theory for natural selection (10 M)

Q4/ Draw and label

(25 marks)

- 1- Draw and label the caudal vertebra of bony fishes (8M)
- 2- Draw and label Ciona sp. (8M)
- 3- Draw and label the sagittal section through the shark trunk vertebra (9M)

Good luck.....

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Subject: Comparative anatomy
theory

Exam. Duration: 2 hours

Date: --- / 6 / 2022

Final Examination

B

Q1/ Fill with the suitable answer:

(30 marks)

- 1- The ancestral function of the vertebral column is the protection of ----- & dorsal -----.
- 2- Axis vertebra bear ----- process at anterior face for articulation with ----- vertebra
- 3- In tetrapods, there are two types of anatomical relationships between centra and neural arches -----& -----
- 4- Vertebral column in bony fish, resist -----, resist -----, and resist -----
- 5- In pigeons, posterior -----, -----, ----- & the first few ----- vertebrae are fused into a single bony mass called synsacrum.
- 6- The vertebral column in the pigeon consists of = C-----, T-----, L----- S -----, C-----
- 7- ----- is a duplicate of a syntype.
- 8- ----- the species is at imminent risk of extinction in the wild
- 9- ----- in which the blastopore gives rise to the mouth
- 10- Differences between protochordate and vertebrates -----, -----, -----, & -----
- 11- The transverse process of the thoracic v. has -----at their tips and small projections on the sides of the centrum called-----, which serve for the attachment of ribs
- 12- The vast majority of bird species are socially-----, other species have breeding systems that are ----- or, rarely-----.

Q2/ Answer with True or False

(30 marks)

- 1- The vertebral column in a snake lacks a sacrum vertebrate
- 2- The notochord persists in the tail region only during larval stages in Urochordata.
- 3- An allotype is a specimen of the opposite sex used to describe the species for the first time.
- 4- Endangered species is facing a high risk of extinction in the wild.
- 5- Western gorilla is endangered.
- 6- Gene flow describes the introduction or removal of alleles from the population when individuals leave or enter the population.
- 7- The sauropsids would evolve into mammals
- 8- Aglossa frogs have sticky a tongue
- 9- Cephalization in protochordate
- 10- Hemichordates are considered an invertebrate because of the presence of arginine phosphate
- 11- Deuterostomes in which the blastopore gives rise to the anus
- 12- In apes, the posture is semierect and the pelvis is elongated.
- 13- Anapsida skull has one temporal opening behind the eye
- 14- Evolution is a process that increases an organism's chances of survival and reproductive success in a specified environment.
- 15- Species diversity is diversity within a species

Q3/ Explain the following:

(24 marks)

- a) Differences between disruptive selection and stabilizing selection?
- b) Mention the relationship of sarcopterygii with amphibia.
- c) Mention the steps that led to the first primitive cell.
- d) Xenopus is a valuable tool because they are -----

Q4/ Draw and label

(16 marks)

- a) The sacral vertebra in human
- b) typical vertebra in mammals

Good luck.....

Assist. Prof

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