

PUNJAB PUBLIC SERVICE COMMISSION
COMBINED COMPETITIVE EXAMINATION FOR
RECRUITMENT TO THE POSTS OF
PROVINCIAL MANAGEMENT SERVICE -2019

SUBJECT: ZOOLOGY (PAPER-I)

TIME ALLOWED: THREE HOURS

MAXIMUM MARKS: 100

NOTE: **Attempt FIVE Questions at least TWO Questions from each Section.**
Attempt in Urdu or English.

SECTION-I

- Q. No. 1:** a) Discuss diverse types of parasite of economic importance in protozoans.
b) Elaborate types of canal system in porifers with example of each.
(10+10=20 Marks)
- Q. No. 2:** a) Explain the reasons for the success of arthropods.
b) Discuss diversity in gastropods along with torsion and foot modifications.
(10+10=20 Marks)
- Q. No. 3:** a) Describe the life cycle Liver Fluke (*Fasciola hepatica*)
b) Write a note on the larval forms and evolutionary significance of echinoderms
(10+10=20 Marks)
- Q. No. 4:** **Write short note on any Four of the following:** **(4x5=20 Marks)**
a. Spicules b. Ascaris-life cycle c. Pseudo-coelomate body plan
d. Metamerism e. Annelid-phylogenetic relationship

SECTION-II

- Q. No. 5:** a) Define amplexus. Discuss reproduction in Frog.
b) Explain Anatomical modifications in birds.
(10+10=20 Marks)
- Q. No. 6:** a) Discuss poisonous apparatus and biting mechanism in poisonous snake.
b) Write a note regarding different modifications in mammals to live in different environments.
(10 + 10=20 Marks)
- Q. No. 7:** a) Explain the thermoregulatory adaptations and strategies of mammals.
b) Give a comparative account of the evolution of heart in vertebrates.
(10 + 10=20 Marks)
- Q. No. 8:** **Write short note on any Four of the following:** **(4x5=20 Marks)**
a. Dentition b. Stomach in vertebrates c. Migratory birds
d. Swim bladder e. Dinosaurs-causes of evolution and extinction

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SUBJECT: ZOOLOGY (PAPER-II)

TIME ALLOWED: THREE HOURS

MAXIMUM MARKS: 100

NOTE: Attempt FIVE Questions in All. Selecting ONE from each Section. Attempt in Urdu or English.

SECTION-A

- Q. No. 1:** a) Differentiate between transcription and translation. Also write down the mechanism of protein synthesis.
b) Differentiate between prokaryotic and eukaryotic cells describing their structures. **(10+10=20 Marks)**
- Q. No. 2:** a) Describe various models of plasma membrane. Explain which model is dynamic and why?
b) Describe the role of cytoskeleton during mitosis emphasizing on role of mitotic spindles. **(10+10=20 Marks)**

SECTION-B

- Q. No. 3:** a) Define osmoregulation? Discuss role of nephron in osmoregulation?
b) Differentiate between skeletal, cardiac and smooth muscles and their mechanism of contraction and relaxation. **(10+10=20 Marks)**
- Q. No. 4:** a) Briefly define various pulmonary volumes and capacities and also draw a diagram showing these capacities and volumes.
b) Describe precisely the mechanism of self-excitation and rhythmicity in mammalian Heart. **(10+10=20 Marks)**

SECTION-C

- Q. No. 5:** a) What do you mean by chromosomal aberrations? Briefly describe write down numerical disorders.
b) Write a detailed note on 'DNA as genetic material'. **(10+10=20 Marks)**
- Q. No. 6:** a) What is tetrad analysis? Why Neurospora found suitable for the study of crossing over and recombination? How you can show that crossing over takes place at four strands stage using Neurospora?
b) Discuss the significance and role of polyploidy in evolution. Whether autopolyploidy or allopolyploidy is more important in speciation and why? **(10 + 10=20 Marks)**

SECTION-D

- Q. No. 7:** a) Differentiate between the following:
i. Mutation pressure and selection pressure
ii. Adaptive radiation and natural selection
b) Define speciation and describe various types of speciation. **(10 + 10=20 Marks)**

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- Q. No. 8:** a) What is genetic load? Discuss it in relation to evolution.
b) What is organic evolution? Discuss the indirect evidence of organic evolution. **(10 + 10=20 Marks)**

SECTION-E

- Q. No. 9:** a) What do you mean by energy cycle? Write a detailed note on nitrogen cycle.
b) Differentiate between biome and ecotone. Write various adaptations in animals for aquatic mode of life. **(10 + 10=20 Marks)**

- Q. No. 10:** a) What is global warming? What is the implication of this phenomenon?
b) Discuss the importance of recycling of nutrients in an ecosystem. **(10 + 10=20 Marks)**