



PUNJAB PUBLIC SERVICE COMMISSION

**COMBINED COMPETITIVE EXAMINATION
FOR RECRUITMENT TO THE POSTS OF
PROVINCIAL MANAGEMENT SERVICE -2020**

SUBJECT: ZOOLOGY (PAPER-I)

TIME ALLOWED: THREE HOURS

MAXIMUM MARKS: 100

NOTE:

- i. All the parts (if any) of each Question must be attempted at one place instead of at different places.
- ii. Write Q. No. in the Answer Book in accordance with Q. No. in the Q. Paper.
- iii. No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
- iv. Extra attempt of any question or any part of the question will not be considered.

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

SECTION-I

- Q. No. 1** a) Discuss various types of reproduction in protozoans.
b) Describe sponge morphology and functions of its various cell types.
(10+10=20 Marks)
- Q. No. 2** a) Write a note on feeding appendages in arthropods.
b) Give an account on parasitic nematodes of man.
(10+10=20 Marks)
- Q. No. 3** a) What is metamerism? Discuss its advantages in annelids.
b) Explain reproduction and larval development in echinoderms.
(10+10=20 Marks)
- Q. No. 4** **Write short note on any FOUR of the following: (4×5=20 Marks)**
- a. Torsion in gastropods
 - b. Social insects
 - c. Differentiate between a polyp and medusa
 - d. Pseudocoelomate body plan
 - e. Parasitic adaptations in Liver Fluke (*Fasciola hepatica*)

SECTION-II

- Q. No. 5** a) Explain diagnostic characters of chordates.
b) Describe excretion and osmoregulation in fishes.
(10+10=20 Marks)
- Q. No. 6** a) Discuss features of reptiles that distinguish them from amphibians.
b) Give a detailed account on feathers in birds.
(10+10=20 Marks)
- Q. No. 7** a) Describe reproduction and development in mammals.
b) Explain early evolution of amphibians as the first land vertebrates.
(10+10=20 Marks)
- Q. No. 8** **Write short note on any FOUR of the following: (4×5=20 Marks)**
- a. Swim bladder
 - b. Aerial adaptations in birds
 - c. Diversity among mammals
 - d. Evolution of vertebrate heart
 - e. Reproduction and development in amphibians



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TIME ALLOWED: THREE HOURS

MAXIMUM MARKS: 100

NOTE:

- i. All the parts (if any) of each Question must be attempted at one place instead of at different places.
- ii. Write Q. No. in the Answer Book in accordance with Q. No. in the Q. Paper.
- iii. No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
- iv. Extra attempt of any question or any part of the question will not be considered.

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

SECTION-A

- Q. No. 1** a) What are lysosomes? Discuss various types of lysosomes. Give detail account of functions of lysosomes.
- b) Differentiate between the following
- i. Transcription in Prokaryotes and transcription in Eukaryotes.
 - ii. RNA and DNA. **(10+10=20 Marks)**
- Q. No.2** a) What are the steps involved in the process of Glycolysis?
- b) How many net ATPs are formed after complete oxidation of one glucose molecule? Show in tabular form.
- c) Cell membrane is the outer covering of the cell and is selectively permeable. Describe the different ways through which molecules pass through the membrane. **(5+5+10=20 Marks)**

SECTION-B

- Q. No. 3** a) What are the adaptations for osmoregulation that are found in organisms living in fresh water and marine water?
- b) Differentiate between following
- i. Sensory nerves and Motor nerves
 - ii. Nerves and Tracts
 - iii. Nuclei and Ganglions
 - iv. CNS and PNS
 - v. Cranial and Spinal nerves **(10+10=20 Marks)**
- Q. No.4** a) Name the hormones secreted by the adenohypophysis, their target cells and principal actions.
- b) Write detail note on the generation of Nerve impulse and its transmission between cells. Discuss the role of Sodium Potassium Pump in maintaining the resting membrane potential. **(10+10=20 Marks)**

SECTION-C

- Q. No. 5** a) Write notes on the following
- | | |
|-----------------------|------------------|
| I. Polygenes | II. Test cross |
| III. Multiple alleles | IV. Condominance |
| V. Bar bodies | |
- b) What are transgenic animals? How can they be used to produce drugs?

(10+10=20 Marks)

- Q. No. 6** a) What is gene insertion? How is gene insertion being used in treatment of SCID patients?
- b) Differentiate between sex linked and sex influenced traits.
- c) What is the genetic code and how is it important?

(10+5+5=20 Marks)

SECTION-D

- Q. No. 7** a) What is meant by reproductive isolation? How does it play its role in Speciation? Discuss types of Speciation.
- b) Who was Lamarck? How did he explain the process of Evolution in his theory of inheritance of acquired characters?

(10+10=20 Marks)

- Q. No. 8** a) What is meant by Allelic Frequency? How it can remain constant generation after generation? Explain your answer with the help of Hardy-Weinberg Equilibrium.
- b) Write an essay on Mutation including kinds of Point Mutation and causes of Mutation.

(10+10=20 Marks)

SECTION-E

- Q. No. 9** a) What is acid rain? What kinds of pollutants contribute to its formation?
- b) Why chlorofluorocarbons are thought to contribute to the skin cancer?
- c) What are biogeochemical cycles? Discuss carbon and sulphur cycle in detail.

(5+5+10=20 Marks)

- Q. No. 10** a) Differentiate between following:
- Lotic and Lentic Ecosystem
 - Primary Succession and Secondary Succession
 - Pioneer Community and Climax Community
 - Grazers and Browsers
 - Keystone Species and Dominant Species
- b) Differentiate between arctic tundra and alpine tundra. Write various adaptations in organisms for deserted mode of life.

(10+10=20 Marks)

