

[Time: 3 Hours]

[ Marks: 100]

Please check whether you have got the right question paper.

- N.B:
1. All questions are compulsory.
  2. Figures to the right indicate full marks.
  3. Draw neat and labeled diagrams wherever necessary.

- Q.1** A) Fill in the blanks by choosing the correct option given in the bracket: **05**
- a) Fossils in which only hard parts of organisms remain while the soft parts decay are called \_\_\_\_\_. (East, Mould, Petrification)
  - b) Evolution of resistance to pesticides is an example of \_\_\_\_\_ selection. (stabilizing, disruptive, directional)
  - c) Large scale phenotypic changes in populations at or above the species level in called \_\_\_\_\_. (microevolution, macroevolution, megaevolution)
  - d) \_\_\_\_\_ research is also called decisional research. (Translational, Basic, Applied)
  - e) In \_\_\_\_\_ research investigator uses already available facts which are analyzed and critically evaluated. (abstract, applied, analytical)
- Q.1** B) Match the columns I and II and rewrite: **05**
- | <b>Column A</b>            | <b>Column B</b>                    |
|----------------------------|------------------------------------|
| a) Phylogenetic trees      | 1) Postzygotic isolating mechanism |
| b) Weismann                | 2) Prezygotic isolating mechanism  |
| c) Hybrid breakdown        | 3) Alexander Fleming               |
| d) Habitat isolation       | 4) Germplasm theory                |
| e) Discovery of Penicillin | 5) DNA sequencing                  |
- Q.1** C) Mention whether the given statement is **True or False**: **05**
- a) Whales lost their hindlimbs as a consequence of the inherited effect of disease.
  - b) In IAEC, 'I' stands for India.
  - c) Presence of two or more morphs in the same habitat is called polymorphism.
  - d) When a population is in genetic equilibrium no evolution takes place.
  - e) A good introduction in research paper should be unipartite.
- Q.1** D) Answer the following in one sentence: **05**
- a) Define endosymbiosis
  - b) Define connecting link
  - c) Define the term gene pool
  - d) What is allele frequency?
  - e) Define dissertation
- Q.2** A) Explain Mutation theory and Weismann's germ plasm theory of evolution. **10**
- OR**
- A) Give a detailed account of the origin of eukaryotic cell. Add a note on geographical evidences in favour of organic evolution. **10**

- Q.2 B) Answer **any two** of the following: **10**
- a) Explain in brief Darwinism.
  - b) Describe chemical evolution with Haldene and Oparin theory.
  - c) Give an account of homologous organs.
  - d) Write a note on vestigial organs.

- Q.3 A) Describe the role of genetic drift and natural selection in evolution. **10**
- OR**
- A) Describe the various sources of genetic variation within a population. **10**

- Q.3 B) Answer **any two** of the following: **10**
- a) Explain adaptive radiation with examples.
  - b) Describe the biological species concept.
  - c) Write a note on parapatric speciation.
  - d) Describe how migration disrupts Hardy Weinberg equilibrium in a population.

- Q.4 A) Give an account of two broad approaches of scientific reasoning. **10**
- OR**
- A) Give a brief account of approval from forest department to conduct research in protected area. **10**

- Q.4 B) Describe **any two** of the following: **10**
- a) Review paper writing.
  - b) Role of critical thinking in scientific research.
  - c) Scientific research: Definition and characteristics
  - d) Key features of popular report.

- Q.5 Write short notes on **any four**: **20**
- a) Neo-Darwinism
  - b) Recapitulation theory
  - c) Sympatric speciation
  - d) Role of geographical isolation in speciation
  - e) Application of knowledge gained by research
  - f) Informed consent in clinical research

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