

2022

Time - 3 hours

Full Marks - 60

*Answer **all groups** as per instructions.
Figures in the right hand margin indicate marks.
Candidates are required to answer
in their own words as far as practicable.
Draw labelled diagrams wherever necessary.*

GROUP – A

1. Answer all questions and fill in the blanks as required. [1 × 8]
 - (a) Eggs containing large amount of yolk are known as _____ eggs.
 - (b) During development, one spermatogonium produces _____ number of mature sperm cells.
 - (c) Which type of cleavage can completely divide the zygote into two ?
 - (d) On the basis of distribution of yolk, the insect eggs are _____.
 - (e) Binding of blastocyst to endometrium is known as _____.
 - (f) Which germ layer gives rise to nervous system ?

[2]

- (g) Mammals can regenerate _____.
- (h) The repair by cell division in the damaged tissue is called _____.

GROUP – B

2. Answer any eight of the following questions within two to three sentences each. [1½ × 8

- (a) Define gametogenesis.
- (b) What are the basic requirements for fertilization ?
- (c) What is morula ?
- (d) What is amphimixis ?
- (e) What is the basic difference between determinate and indeterminate cleavage ?
- (f) What is the difference between implantation and placentation ?
- (g) What are the functions of amniotic fluid ?
- (h) What is blastema ?
- (i) Write the meaning of life span and life expectancy ?
- (j) Define teratogenesis.

[3]

GROUP – C

3. Answer any eight of the following questions within 75 words each.

[2 × 8

- (a) Differentiate between external and internal fertilization.
- (b) How many types of eggs are found in chordates on the basis of yolk content ?
- (c) Write different types of blastula with examples.
- (d) Differentiate between radial and spiral cleavage.
- (e) Write different types of embryonic induction.
- (f) What is the fate of endoderm ?
- (g) Explain the functions of extra embryonic membranes in chick.
- (h) What are the factors affecting regeneration ?
- (i) Discuss the characteristics of stem cells.
- (j) What are telomeres and how do they indicate ageing ?

GROUP – D

Answer **any four** questions within 500 words each.

- 4. Give an account of spermatogenesis. [6
- 5. Give an account of egg membranes. [6
- 6. Discuss various types of cleavage with examples. [6

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7. Give an account on development of chick up to gastrulation. [6]
8. Describe the process of implantation in human embryo. [6]
9. Discuss the mechanism of regeneration in amphibians. [6]
10. Describe the method of In-Vitro Fertilization (IVF). [6]

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GROUP – A

1. Answer all questions and fill in blanks as required. [1 × 8]
- (a) Name the type of fossil of organism which are less than 0.5 mm in size.
- (b) Who proposed the theory of 'Natural Selection' ?
- (c) _____ is the random variation in allele frequencies between generations due to sampling error in finite population.
- (d) The number of individuals present in a subjectively designed geographic range is called as _____.
- (e) Some hybrids are sterile due to less developed testes and are called _____.

- (f) The population live in the same regions but occupy different habitats is known as _____ isolation.
- (g) The age of tools of stones and bones is known is _____.
- (h) Fossils of which man was discovered by W.C. Pei (1924) near Peking ?

GROUP – B

2. Answer any eight of the following questions within two to three sentences each. [1½ × 8

- (a) What is heteroploidy ?
- (b) What is 'winter rule' ?
- (c) Define 'Mortality'.
- (d) What is kin selection ?
- (e) What is genetic drift ?
- (f) What is ring species ?
- (g) What is geographical isolation ?
- (h) What is zygotic mortality ?
- (i) Define mesolithic age.
- (j) Define Neanderthal man.

[3]

GROUP – C

3. Answer any eight of the following questions within 75 words each. [2 × 8]

- (a) Write about five major mass extinctions.
- (b) Define point mutation.
- (c) Define genetic variation.
- (d) What are the types of natural selection ?
- (e) Write a short note on age structure.
- (f) Define parapatric speciation.
- (g) Define polymorphic species.
- (h) Define cladistic species concept.
- (i) Write the characters of *homo habilis*.
- (j) Define phylogenetic tree.

GROUP – D

Answer **any four** questions within 500 words each.

- 4. Enumerate Darwinism. Add a note on Neo-Darwinism. [6]
- 5. What is mutation ? Describe different types of mutation. [6]
- 6. Describe the concept of natural selection. [6]
- 7. Describe kin selection with examples. [6]

8. Describe different modes of speciation. [6]
9. Give an account of adaptive radiation with examples. [6]
10. What is hominid ? Describe unique hominin characters. [6]

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GROUP – A

1. Answer all questions and fill in blanks as required. [1 × 8]
- (a) In bioluminescence, the chemical substance secreted is _____.
- (b) Fin and tail rot disease in fish is a _____ disease.
- (c) The vitamins rich in fish liver oil are _____.
- (d) Tail fin is also known as _____.
- (e) Scale type of cartilaginous fish.
- (f) Land adapted fish found in mangroove area.
- (g) The parasite which live in the interior of the host.
- (h) Fish that contains genes from another species.

[2]

GROUP – B

2. Write notes on any eight of the following within two to three sentences each. [1½ × 8

- (a) Bio-floc technology
- (b) Amphidromous migration
- (c) Plankton feeder
- (d) Polyculture
- (e) Electric organ in torpedo
- (f) Cryogenic Freezing
- (g) Anti-Freeze protein in fishes
- (h) Hypophysation
- (i) Breeding Happa
- (j) Capture fishery

GROUP – C

3. Write notes on any eight of the following within 75 words each.

[2 × 8

- (a) Dorsal and Ventral fins
- (b) Ctenoid scale

- (c) Drag net
- (d) Line fishing
- (e) Viviparity in fishes
- (f) Uses of fish skin
- (g) Catadromous migration
- (h) Advantages of polyculture
- (i) Applications of transgenic fish
- (j) Sun drying of fish

GROUP – D

Answer any four questions within 500 words each.

4. Describe types of scales and its functions in fishes. Write a note on use of scales in determination of age of fish. [6]
5. Give an account of marine fishing crafts and gears used in India. [6]
6. Define composite fish culture. Give its objectives and method used in composite fish culture in India. [6]
7. Describe the technique of induced breeding in fishes and its significance. [6]

8. Give an account on inland fisheries in India. [6]
9. What are the diseases caused by bacteria, virus and parasites in fishes ? Write down its diagnosis and treatment. [6]
10. Write down processing and preservation of harvested fish. [6]