Duration: 2 h **Maximum Marks: 50**

Instructions-

1. All questions are compulsory.
2. All questions carry equal marks.
3. Draw neat and labeled diagram wherever necessary.
4. Answer precisely with a suitable example if necessary

Q. 1 Attempt **any four** questions from the following. 10

a) Write a note on origin and ancestry of Protochordates. 2.5
b) Give salient features of Ostracoderm. 2.5
c) Describe deep sea adaptation of fishes. 2.5
d) Give an account on origin of mammals. 2.5
e) Write a note on archinephros. 2.5
f) Describe Splanchnocranium in vertebrates. 2.5
g) How does the lateral line sense organ function in Pisces? 2.5
h) Write a note on migration in birds. 2.5

Q. 2 Attempt **any two** questions from the following. 10

a) Describe the characteristics of subphyla Urochordates and Cephalochordates. 5
b) Discuss the life history of Herdmania and its phylogenetic affinities. 5
c) Differentiate the resemblances between Cyclostomes and Vertebrates. 5

Q. 3 Attempt **any two** questions from the following. 10

a) Describe the general characters of Dipnoi and their affinities with fishes. 5
b) Discuss the concept of paedomorphosis with examples from amphibians. 5
c) Explain the cursorial and arboreal theories of flight origin. 5

Q. 4 Attempt **any two** questions from the following. 10

a) Describe the anatomy of brain in vertebrates. 5
b) Explain the structure of lungs in amphibians and reptiles. 5
c) Illustrate male and female reproductive and urinary ducts of Aves with suitable diagram. 5

Q. 5. Attempt **any two** questions from the following. 10

a) Describe the venom apparatus and biting mechanism in snakes. 5
b) Discuss the evolutionary significance of Labyrinthodonts in Amphibia. 5
c) Compare the mechanisms of jaw suspension in mammals. 5

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Duration: 2 Hours **Maximum Marks: 50**

Instructions: -
1. All questions are compulsory.
2. All questions carry equal marks.
3. Draw neat and labelled diagrams wherever necessary.
4. Answer precisely with a suitable example if necessary

Q. 1 Attempt **any four** questions from the following.	**10**
a) Reproduction in Amphioxus	2.5
b) Reproduction in Aves	2.5
c) Describe the biochemistry of mammalian sperm.	2.5
d) Describe courtship behaviour in Pisces.	2.5
e) Describe the significance of adult stem cells	2.5
f) Describe Induced breeding techniques in fish	2.5
g) Comment upon Heavy metals as teratogens	2.5
h) Discuss morphogenetic developmental constraints on evolution	2.5
Q. 2 Attempt **any two** questions from the following.	**10**
a) Describe briefly the reproductive system in Tunicates.	5
b) Describe the male reproductive system of mammalians.	5
c) Comment briefly upon the accessory reproductive glands in human.	5
Q. 3 Attempt **any two** questions from the following.	**10**
a) Describe molecular mechanisms of Sperm capacitation	5
b) What are pheromones. Comment upon their significance in mammals.	5
c) Courtship behaviour in Pisces.	5
Q. 4 Attempt **any two** questions from the following.	**10**
a) Describe Germ cell migration in Zebrafish briefly.	5
b) What are Embryonic stem cells? Comment on their significance.	5
c) Describe the Cryopreservation techniques of stem cells.	5
Q. 5. Attempt **any two** questions from the following.	**10**
a) Describe the role of temperature in sex determination in turtles.	5
b) Enlist various epigenetic factors causing aging in human.	5
c) Describe the causative factors of teratogenesis.	5

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Duration: 1 Hour **Maximum Marks: 25**

General instructions-

1. All questions are compulsory.
2. All questions carry equal marks except question no. 1 that carries 9 marks.
3. Draw neat and labelled diagram wherever necessary.
4. Answer precisely with suitable example if necessary.

Q. 1 Attempt **any three** questions from the following. **9**

a) Write biological significance of thermal properties of water 3

b) Write monomer structure of Carbohydrates 3

c) What is glycolysis? Describe it in short. 3

d) What is C-value paradox? Describe it in short 3

e) Write about transcription in eukaryotes 3

f) Describe about BAC vector 3

Q. 2 Attempt **any two** questions from the following. **8**

a) Write about molecular structure and solvent properties of water 4

b) Write classification in short and functions of chylomicrons 4

c) Describe Glycogenesis in brief 4

Q. 3 Attempt **any two** questions from the following. **8**

a) Write molecular model of DNA replication. 4

b) Write in brief about Microarrays 4

c) Describe bioremediation with suitable example 4

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Duration: 1 Hrs **Maximum Marks: 25**

General instructions-

1. All questions are compulsory.
2. All questions carry equal marks except question no. 1 that carries 9 marks.
3. Draw neat and labelled diagram wherever necessary.
4. Answer precisely with suitable example if necessary.

Q. 1 Attempt **any three** questions from the following. 9

a) What are the importance of fibers in food? 3
b) Describe the types of nutrients for growth and development. 3
c) Discuss the remedies for combating Anemia. 3
d) Explain the causes and strategies for stress management 3
e) Describe the initiatives for prevention of water-borne disease. 3
f) Elaborate on Millennium Development Goals (MDGs)? 3

Q. 2 Attempt any two questions from the following. 8

a) Explain Food pyramid and its benefits in planning diet for different age groups. 4
b) Describe the concept of BMI and its use in determining health status. 4
c) Elaborate on symptoms and remedies of Gastritis and Peptic Ulcers. 4

Q. 3 Attempt any two questions from the following. 8

a) Describe the vision and objective of National Rural Health Mission. 4
b) Discuss the influence of Media on food choice. 4
c) How Yoga and Meditation helps in maintaining active and healthy life? 4

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