

DEPARTMENT OF ZOOLOGY

+3 3rd Year Science

Zoology Honours

5th Semester, Core – 11 (Developmental Biology)

Short Questions (1 mark each):

1. What is embryogenesis?.
2. How is embryology different from developmental biology?
3. State the epigenetic theory.
4. What is encasement theory?
5. _____ is the father of modern embryology.
6. What are cytoplasmic determinants?
7. Define asymmetric cell division.
8. What is induction?
9. What is pattern formation?
10. Define differentiation.
11. What is oogenesis?
12. What is spermatocytogenesis?
13. What is the role of sertoli cells in spermatogenesis?
14. Define telolecithal egg.
15. What is vitellogenesis.
16. Define fertilization.
17. Name two organisms that exhibit spiral cleavage during embryonic development.
18. What are fate maps?
19. Define endogenous induction.
20. What brings about adhesion of sperm with egg?
21. What is allantois?
22. What is parturition?
23. Define syndesmochorial placenta.
24. What is cotyledonary placenta?
25. What is the function of an amnion?
26. What is serosa?
27. The hormone secreted by chorion is _____.
28. What is endometrium?
29. What do you mean by foetal membrane?
30. What is primitive streak?
31. Name different types of post embryonic development.
32. Define metamorphosis.
33. Name the hormones that are necessary for biochemical and morphological changes during anuran metamorphosis.
34. What is retrogressive metamorphosis?
35. Define restorative regeneration.
36. What is epimorphosis?
37. What is morphallaxis?

38. State the neuroendocrine theory of ageing.
39. What is teratogenesis?
40. Name three teratogens.
41. Define IVF.
42. Why is virus regarded as a teratogenic factor?
43. What are the basic steps of IVF?
44. Mention two factors affecting IVF.
45. What are stem cells?
46. Classify stem cells based on their potency.
47. What is amniocentesis?
48. What are teratogenic effects?
49. Gene-phene action
50. Monster

Long Questions (8 marks each):

1. Discuss various theories of embryology.
2. Write an essay on differential gene expression.
3. Write a brief note on cytoplasmic determinants and how they affect cell division.
4. What is pattern formation? Describe the mechanism of pattern formation.
5. Describe the structure, function and types of mature sperms.
6. Describe the structure of an ovum and different types of eggs.
7. Describe various events that occur during fertilization.
8. Explain the concept of embryonic induction.
9. What is cleavage? Describe various patterns of cleavage and their control.
10. Give an account of formation and fate of germ layers in embryonic development.
11. With suitable diagram discuss the extra-embryonic membranes in birds and their functions.
12. Describe the process of implantation of human embryo.
13. Describe the structure, types and functions of human placenta.
14. Describe the process of metamorphosis in amphibians and its hormonal regulation.
15. Define regeneration. Describe various types of regeneration in animals.
16. Give an account of various types of changes in ageing process.
17. What is teratogenesis? Discuss the various teratogenic agents and their effect on embryonic development.
18. Discuss the method of IVF and describe its significance.
19. What are stem cells? Discuss stem cell culture with examples.
20. What is amniocentesis? Describe its process and significance.

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Zoology Honours

5th Semester, Core – 12 (Molecular Biology)

Short Questions (1 mark each):

1. DNA is acidic due to the presence of _____.
2. DNA double helix model was proposed by _____.
3. What is DNA replication?
4. Which enzyme is responsible for DNA replication?

5. How are B-DNA and Z-DNA different?
6. Formation of RNA and DNA is called as _____.
7. Which RNA carries the genetic information for protein synthesis?
8. Where does rRNA formation takes place?
9. What is the function of tRNA?
10. Clover leaf shape is attained by _____ molecule after maturation?
11. Define transcription.
12. What are the components of a transcription unit?
13. _____ means a unit of gene expression and regulation.
14. Which enzyme, in prokaryotes, controls transcription of all the three types of RNA?
15. mRNA in eukaryotic cell is transcribed by _____.
16. What is a promoter?
17. What is consensus sequence?
18. What are enhancers?
19. _____ RNA is complementary to chromosomal DNA.
20. What is mRNA splicing?
21. Define genetic code.
22. Why are codons called triplets?
23. What happens if mutation causes a change in nucleotide of a codon at 3rd position?
24. _____ is an initiation codon.
25. For translating a codon, its corresponding anticodon is present on _____.
26. What is Wobble hypothesis?
27. Which process in protein synthesis requires hydrolysis of GTP?
28. Which are the inhibitors of protein synthesis?
29. Give one difference between pro- and eukaryotic translation.
30. What is polyribosome?
31. What is globin?
32. Structure of globin mRNA.
33. What is split gene?
34. What are introns?
35. What are exons?
36. Define splicing.
37. Give one step of splicing mechanism.
38. What is alternative splicing?
39. What is exon shuffling?
40. What is RNA editing?
41. Define miRNA and siRNA.
42. What is the role of lac operon?
43. What is the role of trp operon?
44. How transcription is regulated in eukaryotes?
45. What is the function of activator?
46. What is repressor?
47. What is silencer element?
48. What is gene silencing?
49. What is gene imprinting?
50. What is RNA interference?

Long Questions (8 marks each):

1. What is DNA? Explain their types and function.
2. Write an essay on Watson and Crick structural model of DNA.
3. Write an essay on different types of RNA with diagram.
4. Write a brief note on mechanism of DNA replication.
5. What is transcription? Describe the mechanism of transcription in prokaryotic cells.
6. What are non-genetic RNAs? Describe the synthesis of mRNA and rRNA.
7. Write an essay on regulation of gene activity.
8. What is operon hypothesis? Explain it.
9. Give an account of the mechanism of protein synthesis. Compare it with prokaryotes and eukaryotes.
10. Discuss the structure and assemble process of ribosome in prokaryotes.
11. Give an account of aminoacyl tRNA synthesis and charging of tRNA.
12. Discuss the process of elongation and termination of polypeptide chain.
13. Describe in detail the structure and function of globin mRNA.
14. Write an essay about the concept of intron and exon.
15. Describe splicing mechanism and alternative splicing.
16. Describe the method of exon shuffling and RNA editing.
17. Discuss the transcription regulation mechanism in prokaryotes.
18. Give an account of lac operon. Compare it with trp operon.
19. Give an account of gene silencing and genetic imprinting.
20. Discuss RNA interference miRNA and siRNA.

QUESTION BANK

3RD YEAR SCIENCE D.S.E 1 (ZOOLOGY)

5TH SEMESTER

ANIMAL BEHAVIOUR

Part -1

[Each question carry 2 mark]

Short notes :-

1. Define behaviour ?
2. What is proximate behaviour ?
3. What is ultimate behaviour ?
4. State two objective of behaviour ?
5. What is innate behaviour ?
6. What is instinct ?
7. What is stimulus filtering ?
8. What is sign stimuli ?
9. What is code breakers ?

10. Define reflex action ?
11. Define reflex ARC?
12. What is conditioned reflex ?
13. What is unconditioned reflex ?
14. State two characters of reflex ?
15. What is latency ?
16. What is summation ?
17. What is fatigue ?
18. Define orientation ?
19. What is primary orientation ?
20. What is secondary orientation ?
21. Define kinesis ?
22. What is orthokinesis ?
23. What is klinokinesis ?
24. What is taxitropotaxis ?
25. What is klinotaxis ?
26. What is menotaxis ?
27. What is mnemotaxis ?
28. Define learning ?
29. What is associative learning ?
30. What is classical conditioning ?
31. What is operant conditioning ?
32. What is habituation ?
33. What is imprinting ?
34. State taxonomic position of honeybee ?
35. State characters of queen honeybee ?
36. State characters of worker honeybee ?
37. State characters of drone honeybee ?
38. What is social organization ?
39. What is social insect ?
40. What is nuptial flight ?
41. What is swarming ?
42. What are composition of honey ?

43. What is polytheism ?
44. What is foraging behaviour ?
45. What is round dance ?
46. What is waggle dance ?
47. What is altruism ?
48. What is hamilton's rule ?
49. What do you mean by asymmetry of sex ?
50. What do you mean by sexual dimorphism ?
51. What is intra – sexual selection ?
52. What is inter- sexual selection ?
53. What is infanticide ?
54. What is circadian rhythm ?
55. What is tidal rhythm ?
56. What is lunar rhythm ?
57. What is biological clock ?
58. What are advantages of biological clock ?
59. What is jetlag ?
60. What is entertainment ?

Part –ii

[each question carry 10mark]

Long answer type :-

1. Give an account of profiles of karl von frisch, ivan pavlon and konard Lorenz.
2. What is behaviour ? Describe various types of behaviour with suitable examples.
3. Write an essay on behaviour as a discipline of science.
4. Write an essay on behaviour as a basis of evaluation ?
5. What is innate behaviour ? Discuss with example ?

6. What is reflex action ? Describe various types of reflex action with suitable examples ?
7. What is reflex action ? Describe various characteristics of reflex action with suitable examples ?
8. What is orientation ? Describe various types of orientation with suitable examples ?
9. What is kinesis ? describe various types of kinesis with suitable examples.
10. What is learning ? Describe various kinds of learning with suitable examples .
11. What is conditioning ? Describe various types of conditioning with suitable examples .
12. Give an account of life cycle of honey bee ?
13. What is newton's hive ? Discuss detail process of formation of newton's hive ?
14. Explain Hamltons rule and inclusive fitness with suitable examples .
15. Give an account of sexual dimorphism.
16. Give an account of intra sexual selection ?
17. Give an account of inter sexual selection ?
18. Describe counter ship behaviour in three spine stickleback fish .
19. What is rhythm ? Describe various types of rhythm with suitable examples ?
20. What is biological clock ? Describe various advantages of biological clock.

QUESTION BANK

3RD YEAR SCIENCE D.S.E -II (ZOOLOGY)

5TH SEMESTER

ECONOMIC ZOOLOGY

Part –i

[Each question carry 2 mark]

Short notes :-

1. What is apiculture ?
2. State different types of honey bees ?
3. What is bee pasturage ?

4. What is apiary ?
5. What is newton's hive ?
6. What is bee veil ?
7. What is brood chamber ?
8. What is storage chamber ?
9. What is comb sheet ?
10. What is drone excluder ?
11. What is rearing equipment ?
12. What is artificial diet ?
13. What are chemical composition of honey.
14. What are uses of honey ?
15. What is beeswax ?
16. What is bee venom ?
17. What is propolis ?
18. What is sericulture ?
19. State different types of silkworms ?
20. State properties of silk ?
21. State uses of silk ?
22. What is imago.
23. What is black boxing ?
24. What is chawki rearing ?
25. What is bed clearing ?
26. What is moutage ?
27. What is cocoon ?
28. State two diseases of silk worm?
29. State two diseases of honey bee ?
30. What is dermestid beetles?
31. What is induced breeding ?
32. What is rearing pond ?
33. What is hatchery ?
34. What is nursery pond ?
35. What is aquarium ?
36. What is aquaculture ?

37. State two bacterial diseases of fish ?
38. State two viral diseases of fish ?
39. State different fish by-products ?
40. What is prawn farming ?
41. What is composite fish culture ?
42. What is pearl ?
43. State various uses of pearl ?
44. What is dairy farming ?
45. What is poultry ?
46. What is indigenous breed ?
47. What is exotic breed ?
48. What is rearing ?
49. What is rationing ?
50. State various types of poultry breeds ?

Part –ii

[each question carry 10mark]

Long answer type :-

1. Give an account of various types of honey bees ?
2. Give an account of apiculture ?
3. Write an essay on bee pasturage ?
4. What is apiary ? Discuss in detail about setting up an apiary ?
5. Describe various types of diseases of honey bee ?
6. Describe modern method of honey extraction techniques ?
7. Explain briefly about apiculture institute and honey processing units ?
8. Give an account of different types of silk worms in india ?
9. Give an account of sericulture ?
10. Describe various types of silk worm disease ?
11. Discuss in details about silk recline techniques ?
12. Give an account of induced breeding of fish ?
13. Describe briefly about the preparation and maintainance of fish diseases ?

14. Describe various kinds of fish diseases ?
15. Give an account of various fish by- products.
16. Write an essay about prawn- culture ?
17. Write an essay about crab- culture ?
18. Write an essay about pearl – culture ?
19. Give an account of dairy farm ?
20. Give an account of poultry farm ?

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Zoology Honours
6th Semester, Core – 13 (Immunology)

Short Questions (1 mark each):

1. Who is considered as father of immunology?
2. Perspective of immunology.
3. What is hematopoiesis?
4. What is inflammation?
5. What are anatomical barriers?
6. Give one example of a cell involved in immune system.
7. Give one example of a molecule involved in immune system.
8. Vaccination is artificial or natural immunity?
9. What is passive immunity?
10. What is active immunity?
11. What is epitope?
12. Pollen grain is an antigen or antibody?
13. What are immunogens?
14. What is adjuvant?
15. What is haptan?
16. Which factor influence immunogenicity?
17. Which cell provides humeral immunity?
18. Which cell provides cell mediated immunity?
19. B-cells are matured in which region?
20. T-cell matured in which gland?
21. Immunoglobulins are protein or lipids?
22. Give an important role of immunoglobulin.
23. What is serology?
24. Allergy is caused by _____.
25. What is immunoassay?
26. What is monoclonal antibody?
27. What is polyclonal antibody?
28. What is polyclonal sera?

29. What is a hybridoma?
30. How hybridoma technology operates?
31. What is endogenous pathway?
32. What is exogenous pathway?
33. What is APC?
34. What are the components of complement activation?
35. Give a pathway of complement activation.
36. What is the role of MHC?
37. What is the importance of class I MHC?
38. Class I MHC contains how many polypeptide chains?
39. The trans-membrane segment composed of how many amino acid residues?
40. Class II MHC responsible for which immune response?
41. What are cytokines?
42. What is interleukin?
43. What are interferons?
44. What are chemokines?
45. what is recombinant vaccine?
46. What is tumor necrosis factor or TNF?
47. Which immune cell secretes cytokine?
48. What is DNA vaccine?
49. Action of cytokine is local or systemic?
50. Give the type of vaccines.

Long Questions (8 marks each):

1. Give the historical perspective and theories of immunology.
2. Write an account of cells and molecules involved in innate-immunity.
3. Give details of adaptive immunity.
4. Describe the artificial and natural immunity.
5. Discuss briefly antigenicity and immunogenicity.
6. What are immunogens? Give the types of immunogens.
7. Give an account of adjuvants and haptens.
8. Write the factors influencing immunogenicity. With explanation.
9. Write the detailed structure of immunoglobulins.
10. Classify immunoglobulins and mention their function.
11. Give an account of antigen-antibody interaction.
12. Discuss the process of hybridoma technology.
13. What are monoclonal and polyclonal antibodies? Describe their mechanism of action.
14. Write the structure and function of endogenous pathway of antigen presentation.
15. Write the structure and function of exogenous pathway of antigen presentation.
16. Write the components and pathway of complement activation.
17. What is hypersensitivity? Classify hypersensitivity.
18. Give a brief description of different types of hypersensitivity.
19. What are vaccines? Describe the process of recombinant vaccination.
20. Describe the properties and functions of cytokines.
- 21.

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Zoology Honours

6th Semester, Core – 14 (Evolutionary Biology)

Short Questions (1 mark each):

1. What is chemogeny?
2. What is biogeny?
3. What is RNA world?
4. Define Lamarckism.
5. Define Darwinism.
6. Give two major causes of extinction.
7. What is the role of extinction in evolution?
8. What is K-extinction?
9. What is T-extinction?
10. Give the background of extinction.
11. What is phylogeny?
12. What is a fossil?
13. What is isotopic carbon?
14. What is dating?
15. Name different types of fossils.
16. Eohippus
17. Neanderthal man
18. Golden age of reptile is _____.
19. Golden age of birds is _____.
20. Which one is the vestigial organ of man?
21. What is variation?
22. What is isolation?
23. What is natural selection?
24. Types of natural selection.
25. Define Altruism.
26. Year of Darwin's "Origin of Species" publication.
27. Who proposed the theory of Origin of Species by natural selection?
28. Why the interspecific hybrids are sterile?
29. How the artificial selection is beneficial?
30. Genetic drift operates in _____ population.
31. What is gene pool?
32. What is gene frequency?
33. Define Hardy-Weinberg principle.
34. What is mutation pressure?
35. What is gene flow?
36. What is gene shift?
37. Explain bottle neck effect.
38. What is Baldwin's effect?
39. Who gave bottle neck effect?

40. What is population?
41. Biological concept of species.
42. Definition of species.
43. Polymorphic species.
44. Sibling species.
45. Advantages of species concept.
46. Limitations of species concept.
47. Polytypic species.
48. Allotropic mode of speciation.
49. Darwin finches.
50. What is divergence?

Long Questions (8 marks each):

1. Discuss in detail Lamarckism and Neo-Lamarckism.
2. Discuss in detail Darwinism and Neo-Darwinism.
3. What is extinction? Describe the role of extinction in evolution.
4. What are the major events in the history of life?
5. What is a fossil? Give details of fossil types.
6. What is a fossil? Give the detail process of fossil dating.
7. Describe the phylogeny of horse.
8. Describe the phylogeny of human.
9. Give an account of molecular evidences.
10. What is variation? Describe organic variations.
11. Give an account of natural selection.
12. Discuss sexual and artificial selection.
13. Write an essay about concept of gene pool and gene frequencies.
14. Narrate Hardy-Weinberg equilibrium.
15. What is mutation pressure and gene clone? How they operate in evolutionary process.
16. What is genetic drift? How it holds good in evolutionary process?
17. Define species. Give an account of biological concept of species.
18. What is species? Discuss the types of species.
19. What is speciation? Describe allopatric and sympatric modes of speciation.
20. Describe the macro-evolutionary principles.

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6th SEMESTER, Zoology Honours DSE 3 – (Microbiology)

Short Questions (1 mark each):

1. What is microbiology?
2. Pasture's effect
3. Vaccination
4. Golden era of microbiology

5. Archaeobacteria
6. Cyanobacteria
7. What is verrumimicrobiota?
8. Plasmid library
9. Spirochaetes
10. Koch's postulate
11. Capsule
12. Pili
13. Gram positive bacteria
14. Bacterial ribosome
15. Classify bacteria based on their shape
16. Types of flagellar movement
17. Cell wall of bacteria is made up of _____.
18. Name two microbes that lack cell wall.
19. Plasmids
20. Give two importance of bacteria.
21. Protozoa
22. Fungi
23. Thallus
24. Mycelium
25. Hyphae
26. Sporangia
27. Cyst
28. Pseudopodia
29. Granular part of the cytoplasm is called _____.
30. Holophytic nutrition
31. Classify virus based on their structure
32. Composition of viral envelope
33. Proteins found in viruses
34. Name two dsDNA virus.
35. The infectious part of a virus is _____.
36. Epidemiology
37. Pathogenecity
38. Amoebiasis
39. Tuberculosis
40. Hepatitis
41. Name different types of microbe interaction.
42. Immunity
43. Immune response
44. Antibiotics
45. Antiviral drug
46. Antiseptic
47. Chemotherapeutic agents
48. Name any three chemotherapeutic agents.
49. Name any two microbes that are beneficial for our environment.
50. Name some microbes that are used in industries.

Long Questions (8 marks each):

1. What is microbiology? Discuss about the contribution of some pioneer to this field.

2. Define biological diversity. Discuss about microbial diversity in the context of future prospects.
3. Discuss eight kingdom system of classification of microorganisms.
4. Discuss the contribution of Louis Pasteur and Joseph Lister in microbiology.
5. Describe in brief the structure of a typical bacterial cell.
6. Write in detail about the classification of bacteria adopted by Bergey.
7. Mention the characteristics of a bacterium. How are gram-positive and gram-negative bacteria different?
8. Write an essay on the economic importance of bacteria.
9. Give account of characters of fungi and classify them.
10. Write an essay on economic importance of fungi.
11. Describe how protists are economically beneficial.
12. Classify and write the general characters of protists.
13. Give an illustrated account of morphology and chemical composition of different viral groups.
14. Describe various methods of viral replication.
15. What do you mean by epidemiology? Write in brief the significance of study of epidemiology.
16. Give an account of a bacterial and a viral disease with reference to human as a host.
17. Write an essay on applications of microbiology in the field of food and agriculture.
18. What is immune response? Describe the role of antibiotics in immune response.
19. Give an account of different chemotherapeutic agents for the treatment of microbial disease.
20. Describe the role of microbiology in the field of industry.