JRL

2011

ZOOLOGY (Optional)
Paper : II

320031

Standard : Degree **Total Marks : 200**

Nature : Conventional (Essay) Type **Duration : Three Hours**

N. B. :

1) *Answers must be written in* ***English only.***
2) *Question No. 1 is* ***compulsory.*** *Of the remaining questions, attempt* ***any four*** *selecting one question from* ***each Section.***
3) *Figures to the* ***RIGHT*** *indicate marks of the respective question.*
4) *Number of optional questions upto the prescribed number in the order in which they have been solved will only be assessed. Excess answers will not be assessed.*
5) *Credit will be given for orderly, concise and effective writing.*
6) *Illustrate your answers with suitable diagrams wherever necessary.*
7) *Candidate should not write roll number, any name (including their own), signature, address or any indication of their identity anywhere inside the answer book otherwise he/she will be penalised.*

SEAL

Marks

1. Answer **any four** of the following questions :

   (a) With suitable diagram explain the structure of mitochondria and describe the functional role of mitochondria. **10**

   (b) Explain the mechanism of basic PCR and give its variants. **10**

   (c) Give an account of antigen dependent and antigen independent differentiation of β -lymphocytes. **10**

   (d) What is poultry ? Describe Indian Poultry Breed. Explain maintenance of Poultry farm. **10**

   (e) What is DNA damage ? How damaged DNA is repaired by mismatch repair ? **10**

SECTION – A

2. Answer the following sub-questions :

   (a) Describe the process of meiosis giving labelled diagram and explain the significance of meiosis. **10**

   (b) What is chromosome ? Explain the structural and functional elements of Eukaryotic Chromosome, mention their role. **10**

P.T.O.

Marks

(c) Mention the different types of RNA present in cell and give the functional role of each of them. 10

(d) Discuss the eukaryotic transcription process by RNA polymerase II. How Eukaryotic promoters differ from prokaryotic promoters. 10

3. Answer the following sub-questions :

(a) Describe the various phases of cell cycle. What is the role of the cell cycle in a bacterium ? In a Human. Describe how do cancer cells differ from normal cell in relation to the cell cycle ? 10

(b) How would you describe the following kinds d'Chromosomal rearrangement translocations, inversions, deletions, duplication ? How does the chromosome theory explain genetic inheritance ? 10

(c) Describe prokaryotic DNA polymerase I and its importance and describe the steps involved in initiation of DNA replication. 10

(d) What are the characteristic features of genetic code ? Justify its necessity. Give the important properties of the code. 10

SECTION – B

4. Answer the following sub-questions :

(a) Describe in detail the Mendel's law of inheritance. Monohybrid ratio, Dihybrid ratio, complementary factor supplementary factor with suitable example. 15

(b) Define transfection. Explain various methods of transfection enlist different examples of transgenic animals with their significance. 10

(c) Describe the concept of Bioinformatics. Comment on the role of computer in genomic and proteomic. Add a note on DNA database. 15

5. (a) What are multiple allele ? Describe the characteristic of multiple allele with ABO types d-blood group. Describe the Rh blood group and add a note on blood transfusion in human being. 15

(b) What is DNA finger printing ? Discuss use of it forensic analysis. 10

(c) What are the features of a genome database ? Explain the following term in context of genome databases from NCBI :

(I) Definition

(II) Features

(III) Source and origin. 15

Marks

SECTION – C

6. Answer the following sub-questions :

(a) Define Carbohydrate. Explain monosaccharide possesses ring structure and write on structural polysaccharides. Describe functions carried out by carbohydrates in a cell. 15

(b) What are enzymes ? Give outline classification of enzymes and discuss lock and key and induced fit models of enzyme action. Explain the term Allosteric enzyme and km. 15

(c) Explain Hybridoma technology in detail. Give application of monoclonal antibodies. Explain the modem techniques of monoclonal and polyclonal antibody production. 10

7. Answer the following sub-questions :

(a) What are proteins ? Discuss in brief about classification based on shape and function and what are amino acids. Discuss in brief about classification on the basis of R group. 15

(b) What is a vitamin ? Describe the structure, properties and co-enzymatic functions of vitamin D and riboflavin. Explain their sources, function, deficiency diseases caused in mammals. 15

(c) Give comparative account of structure and function of immunoglobulins. Discuss the role of vaccine in prevention of disease. 10

SECTION – D

8. Answer the following sub-questions :

(a) Define Oogenesis. Describe the process of oogenesis with its significance. 10

(b) Describe holoblastic and meroblastic type of cleavages, explain characteristics, planes and significance of cleavage. 10

(c) What is a test tube baby ? In what situation test tube baby chosen as a option ? What are advantages and risk associated with this method ? 10

(d) Discuss three theories d-aging. What are the major changes in body systems that have been observed as adult age ? In what way hormones are associated with ageing ? 10

P.T.O.

Marks

9. Answer the following sub-questions :

(a) What is gametogenesis ? Describe the process of spermatogenesis with spermiogenesis. Add a note on its significance. **10**

(b) What is placenta ? Explain the different types if placentae with reference to histological peculiarities. Comment on the role of placenta as an endocrine organ. **10**

(c) What is contraception ? Explain the mechanical, chemical intervention methods as practiced in human female contraception. **10**

(d) Explain with suitable labelled diagram development of heart of frog. Add a note on contractile elements of the heart. **10**

SEAL