QUESTION PAPER SPECIFIC INSTRUCTIONS

Please read each of the following instructions carefully before attempting questions.

There are EIGHT questions in all, out of which FIVE are to be attempted.

Question Nos. 1 and 5 are compulsory. Out of the remaining SIX questions, THREE are to be attempted selecting at least ONE question from each of the two Sections A and B.

Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

All questions carry equal marks. The number of marks carried by a question/part is indicated against it.

Answers must be written in ENGLISH only.

Neat sketches may be drawn, wherever required.

SECTION ‘A’

1. Write short notes on the following:
   1.(a) Structure and functions of mitochondria.
   1.(b) Watson and Crick model of DNA structure.
   1.(c) Genetic basis of ABO blood group system.
   1.(d) Chemical and radiation mutagenesis.
   1.(e) International code of zoological Nomenclature.

   8×5=40

2. Write in detail about the following:
   2.(a) Describe the structure and functions of plasma membrane in cell.
   2.(b) What is genome mapping? Discuss the main goals and accomplishments of human genome project.

   20×2=40

3. Write in detail about the following:
   3.(a) What are different isolating mechanisms? Discuss their role in speciation.
   3.(b) What is Hardy-Weinberg law? Discuss how this law explains the mechanism of evolution.

   20×2=40
4. Answer the following:  
   10×4=40
4.(a) What is protein synthesis? Discuss the role of messenger RNA and ribosomes in protein synthesis.  
4.(b) Write down the application of cladistics analysis in summarizing phylogenetic relations.  
4.(c) What is DNA fingerprinting? Explain the principles and applications of DNA fingerprinting.  
4.(d) What are zoogeographical realms? Describe the salient features of Indo-Malayan realm.  

SECTION ‘B’

5. Write short notes on the following:  
   8×5=40
5.(a) Glycolytic pathway  
5.(b) Properties of water soluble vitamins.  
5.(c) Structure and functions of immunoglobulin G.  
5.(d) Structure and functions of a mammalian nephron.  
5.(e) Excitatory and inhibitory neurotransmitters.  

6. Write in detail about the following:  
   20×2=40
6.(a) What is blood coagulation? Describe the intrinsic pathway of blood coagulation.  
6.(b) Describe the different types of human muscles and their properties.  

7. Comment on the following:  
   10×4=40
7.(a) Monosaccharides and disaccharides.  
7.(b) Saturated and unsaturated fatty acids.  
7.(c) Steroid and peptide hormones.  
7.(d) Choriovittelline and chorioallantoic placentas.  

8. Answer the following:  
   10×4=40
8.(a) Describe the fate map of gastrula with reference to chick.  
8.(b) Discuss the basic principles of teratogenesis.  
8.(c) Describe in vitro fertilization and embryo transfer techniques.  
8.(d) Elaborate the Baer’s laws of embryology.