

BIOLOGY HSSC-II

Time allowed: 2:35 Hours

Total Marks Sections B and C: 68

SECTION – B (Marks 42)

Q.2 Answer the following questions briefly.

14x3=42

(i)	Describe the structure of rib cage. Briefly explain the advantages of having some ribs that are not attached directly to sternum.	2+1	OR	What is the function of nephron? How is the rate of blood filtration with in the Bowman’s capsule affected if blood pressure in the afferent arteriole is decreased?	2+1
(ii)	People with type I diabetes do not produce any insulin. What effect would it have on cells and metabolisms if left untreated?	03	OR	Identify and describe the three different processes involved in embryonic development.	03
(iii)	The given pedigree shows a particular trait. Analyse the pedigree and draw conclusion.	03	OR	What are chromosomes and genes? How are they related?	03
(iv)	In Griffiths experiment, do you think the heat treatment that killed the bacteria also inactivated the bacterial DNA? Why or why not?	03	OR	Differentiate between convergent and divergent evolution on the basis of inheritance of homologous and analogous structure.	03
(v)	Why is nasal breathing generally considered superior to mouth breathing? Also write down sequence of muscle contraction that takes place during inhalation and exhalation.	1+2	OR	Compare Klinefelter syndrome with Turner’s syndrome with reference to Karyotype, Cause and Symptoms.	03
(vi)	FSH and LH get their names from events of female reproductive cycle but they also function in males. How their functions are similar in female and male?	03	OR	Briefly explain Darwin’s theory of natural selection.	03
(vii)	Differentiate between A. Ammonification and denitrification B. Xerarch and hydarch succession	03	OR	Briefly explain Integrated disease management.	03
(viii)	Briefly describe the procedure for the construction of Genomic library.	03	OR	Compare and contrast the sympathetic and para sympathetic nervous systems.	03
(ix)	Briefly describe the following terms: A. Genetic marker B. Genomics C. Genome maps	03	OR	Local anaesthesia blocks the opening of sodium channels in the nerve cells. How this would affect the transmission of pain impulses? Explain briefly.	03
(x)	Why biomass present at one trophic level of an ecosystem decreases at higher trophic level? Explain briefly.	03	OR	How is it possible for a child to have a blood group O if the parents have blood group A and B.	03
(xi)	Write down any three applications of DNA analysis.	03	OR	What is meant by home gardening? List at least four benefits of home gardening?	1+2
(xii)	State Mendel’s law of segregating. Make a cross between round seed and wrinkled seed pea plant.	1+2	OR	What are the three major steps in sequencing of DNA?	03
(xiii)	What is epistasis? How is it different from dominance?	1+2	OR	Briefly explain characterises of Growth, Distribution and Carrying capacity of a population.	03
(xiv)	Briefly explain the role of vaccination as an effective method of preventing infectious diseases.	03	OR	A plant with yellow flower was crossed with a plant with red flowers. The F1 progeny obtained had orange flowers. What is the inheritance pattern? Explain briefly.	03

SECTION – C (Marks 26)

Note: Attempt the following questions.

Q.3	Identify the labelled parts and correlate these with major events of foetus development in the first trimester.	2+4	OR	Identify the labelled parts E, F, G and H. Write down the major events of menstrual cycle in human females.	(2+4)
Q.4	Explain Habituation, Conditioning, Latent learning and insight learning by giving examples from human behaviours.	07	OR	How is the information present in DNA used for the synthesis of RNA? Explain in detail. Also list down the post transcriptional modifications of mRNA.	5+2
Q.5	What are the two methods used for gene therapy? Explain the role of successful gene therapy for cystic fibrosis.	2+4	OR	Why anterior lobe of pituitary gland is called master gland? Enlist the hormones produced by anterior gland. Write down the functions of each hormones as well.	1+2+3
Q.6	Describe the transport of oxygen and carbon dioxide through blood in humans.	07	OR	Explain in detail the Sliding filament model of muscle contraction.	07