

# BIOLOGY HSSC-II

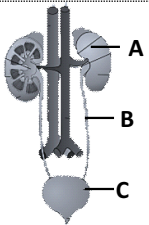
**Time allowed: 2:35 Hours**

**Total Marks Sections B and C: 68**

## SECTION – B (Marks 42)

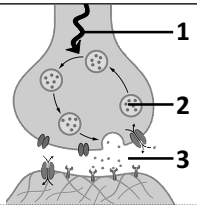
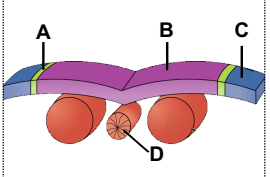
**Q. 2 Answer the following questions briefly.**

**14x3=42**

(i)	If people do not have ligaments, what would happen to them? Compare tendons with ligaments.	1+2	OR	Explain the role of bacteria in nitrogen cycle.	03
(ii)	<p>Complete the concept map by using the given terms:</p> <ul style="list-style-type: none"> <li>• Neurons</li> <li>• Cell body</li> <li>• Neurotransmitter</li> <li>• Axon</li> <li>• Dendrites</li> <li>• Synapse</li> </ul>	03	OR	<p>Identify the organs A, B and C in the figure of the urinary system. Write function of each as well.</p> 	03
(iii)	Dead S-strain bacteria injected into mice did not harm the mice; but when mixed with living non-virulent R-strain bacteria, it killed them. Why?	03	OR	A colour-blind father has a daughter with normal vision. The daughter marries a man with normal vision. What is the probability of her children to be colour-blind? Explain with the help of pedigree chart.	03
(iv)	Describe the path an oxygen molecule takes as it travels from nose to body cell. (Enlist each structure of respiratory system through which it passes.)	03	OR	What is gene mutation? Briefly explain the causes and symptoms of Sickle cell anaemia as an example.	1+2
(v)	What are the functions of male reproductive system? What might happen to sperm production if a male has a high fever?	2+1	OR	How is sewage treated? (Write down the three stages of sewage treatment process briefly.)	03
(vi)	Why is an embryo most vulnerable to drugs and other harmful substances taken by mother if it is between 2 to 7 weeks old? Also state how a foetus gets nourishment from mother.	03	OR	Differentiate between: <b>I</b> Nucleosome & Primosome <b>II</b> Heterochromatin & Euchromatin <b>III</b> Sense codon & Non Sense codon	03
(vii)	How would the inheritance pattern of an X linked dominant trait be different from that of X linked recessive trait?	03	OR	"Migration may increase or decrease the effect of selection." Comment on the statement.	03
(viii)	How does inheritance of homologous and analogous structures result in convergent and divergent evolution?	03	OR	What is animal husbandry? Briefly state the role of livestock in national economy.	1+2
(ix)	Discuss the role of microbes in industrial production.	03	OR	Draw a flow chart to show how hormones control the function of male reproductive cycle.	03
(x)	Briefly explain the process of gene amplification through PCR (Polymerase Chain Reaction).	03	OR	Briefly explain polygenic inheritance.	03
(xi)	Compare the anchorage dependent and anchorage independent techniques of animal cell culture.	03	OR	How inhaled air in the respiratory tract is cleaned before it reaches the lungs? Describe briefly.	03
(xii)	Briefly explain haematoma formation. How is callus made during repair of bone structure?	1+2	OR	What is drug addiction? Write down any two effects of drug addiction on central nervous system (CNS).	1+2
(xiii)	How kidneys help in maintaining homeostasis in the body? (Write role of kidney briefly)	03	OR	Briefly explain the principle and process of Gel electrophoresis.	03
(xiv)	Describe the antagonistic effect of insulin and glucagon.	03	OR	Briefly explain any three methods of plant breeding for crop improvement.	03

## SECTION – C (Marks 26)

**Note: Attempt the following questions.**

Q.3	The diagram shows how neurons communicate. Name the process and identify the parts 1, 2 & 3. Explain the whole process in detail.	2+4	OR	What is meant by innate behavior? Describe different types of orientation and non-orientation behavior with examples.	1+5										
															
Q.4	The diagram shows the neurulation in human embryo. Identify the labelled parts and state events of neurulation. Enlist the structures derived from neural crest cells.	2+4+1	OR	Describe the components of recombinant DNA technology under the following headings:	07										
															
				<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 20%;">(i)</td> <td>Gene of interest</td> </tr> <tr> <td>(ii)</td> <td>Molecular scissor</td> </tr> <tr> <td>(iii)</td> <td>Molecular glue</td> </tr> <tr> <td>(iv)</td> <td>Molecular carrier</td> </tr> <tr> <td>(v)</td> <td>Expression system</td> </tr> </tbody> </table>	(i)	Gene of interest	(ii)	Molecular scissor	(iii)	Molecular glue	(iv)	Molecular carrier	(v)	Expression system	
(i)	Gene of interest														
(ii)	Molecular scissor														
(iii)	Molecular glue														
(iv)	Molecular carrier														
(v)	Expression system														
Q.5	Why multiple alleles provide many different phenotypes for a trait? Explain with the help of ABO blood group system.	06	OR	Explain ecological succession. Write in detail about kinds of succession.	2+4										
Q.6	Describe the mechanism of breathing in humans. How is breathing controlled? Explain in detail.	5+2	OR	Discuss the concept of genetic drift. Also describe speciation and different modes of speciation.	3+4										