



**ARKA JAIN University**  
Jharkhand



[ 17/01/2025 ]

END SEM EXAMINATION  
School of Health and Allied  
Science

Program	Bachelor of Science (Biotechnology)	
Subject Name	English	
	Semester	I
	Year	January, 2025
Time: 1.5 Hour Max. Marks : 35	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; don't Write on the 1st Page Backside</li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Five out of Six of Section B</li> <li>Answer Any Two out of Four of Section C</li> <li>Possession of <u>Mobile Phones</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u></li> </ul>	
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing K5 : Evaluating K6 : Creating

**Section A (Each question Carry 01 Marks from Q1-i to v) – 05 Marks**

Q.N	QUESTIONS	Marks	COs	KL
1				
i	That wasn't a good idea - you _____ thought about it more carefully. a) Have to b) Ought have c) Should have d) Must have	01	CO1	KL1
ii	I _____ been hit by a car, but luckily I just managed to get out of the way. a) Could have b) Can have c) Should have d) Must have	01	CO1	KL3
iii	Put _____ bag on _____ table, then give me _____ apple and _____ bar of chocolate. a) the ... the ... a ... a b) a ... the ... an ... the c) a ... a ... the ... the d) the ... the ... an ... a	01	CO1	KL3
iv	This house is _____, but also _____. a) more big ... expensive b) more big ... more expensive c) bigger ... expensive d) bigger ... more expensive	01	CO3	KL2

1 SET X GRAY



Course Outcomes	CO1	Use the formal way of presentation & comprehension of simple words and phrases used in day to day context.
	CO2	Relish the different aspects of literature.
	CO3	Use basic knowledge about English Grammar, used in Presentation and conversation.
<b>GRAPHICAL REPRESENTATION</b>		
<p style="text-align: center;"><b>COURSE OUTCOME WISE MARKS DISTRIBUTION</b></p> <p style="text-align: center;"> <span style="margin-right: 20px;">20</span> <span style="margin-right: 20px;">15</span> <span style="margin-right: 20px;">10</span> <span style="margin-right: 20px;">5</span> <span>0</span> </p> <p style="text-align: center;"> <span style="margin-right: 20px;">CO1</span> <span style="margin-right: 20px;">CO2</span> <span>CO3</span> </p> <p style="text-align: center;"> <small>*Level 1 *Level 2 *Level 3 *Level 4 *Level 5 *Level 6</small> </p>		

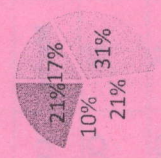
v	Casualties Which is intended to cause the most casualties? a) Abombing Raid b) A Nuclear Attack c) A Drone Strike d) None Of The Above	01	CO3	KL2
		<b>Section B (Answer any FIVE out of SIX) – 10 Marks</b> (Each question Carry 02 Marks)		
Q. No.	QUESTIONS	Marks	COs	KL
2	Define Communication Process and explain with example.	02	CO3	KL3
3	What are some practical ways to improve speaking and communication skills?	02	CO3	KL3
4	What is business letter writing? Write notes on the different types of business letter writing.	02	CO2	KL4
5	Explain what euphuism is in grammar and state examples.	02	CO2	KL4
6	Elaborate the meaning of prefix and suffix with five example each.	02	CO1	KL5
7	What are homonyms? Give five examples.	02	CO1	KL5
<b>Section C (Answer any TWO out of FOUR) – 20Marks</b> (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Effective speaking and communication skills are vital in the business world. Reflect your thoughts with supporting examples.	10	CO3	KL6
9	Body language reveals whether you are interested in hearing what another person has to say. Elaborate	10	CO3	KL5
10	Communication barriers are obstacles that prevent a message from being understood correctly. Discuss the communication barriers.	10	CO2	KL6
11	Listening is a crucial communication skill that can help you in many ways, including, state your agreement/disagreement with examples.	10	CO2	KL5



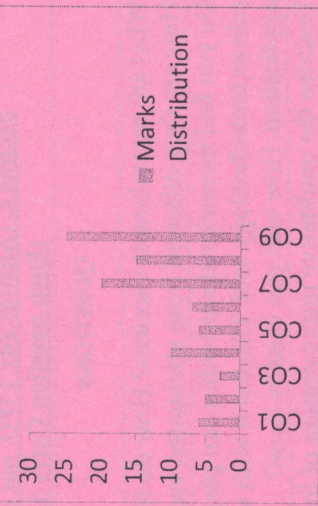
CO1	Students will have knowledge on Biotechnology role in industry (fermentation)
CO2	To clearly know the biotechnology process in protein engineering
CO3	To know about biotechnology role in agriculture sector
CO4	To clearly know about plant microbes interaction
CO5	To clearly explain biotechnology application in environment
CO6	To understand and explain about biodegradable materials to protect environment pollution
CO7	To learn about biotechnology application in forensic science
CO8	To clearly explain about DNA finger printing

**GRAPHICAL REPRESENTATION**

Bloom's Level wise Marks Distribution



Marks Distribution



**ARKA JAIN University**  
Jharkhand

**NAAC GRADE A**  
ACCREDITED UNIVERSITY

**END SEM EXAMINATION**  
School of Health & Allied Science

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**Program** Bachelor of Science ( Biotechnology )

**Subject Name** Biotechnology and Human welfare

**Semester** I  
**Year** January, 2025

**Time:** 3 Hour  
**Max. Marks :** 60

- Start writing from 2nd page onwards; don't Write on the 1st Page Backside
- Answer all Questions of Section A (Compulsory)
- Answer Any Four out of Six of Section B
- Answer Any Two out of Four of Section C
- Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under Unfair Means and will Result in the Cancellation of the Papers.

**Knowledge Level (KL)**

K1 : Remembering	K3 : Applying	K5 : Evaluating
K2 : Understanding	K4 : Analysing	K6 : Creating

Q. N1	QUESTIONS	Marks	COs	KL
i	In gene therapy, the genetic defect is corrected by delivery of _____ gene into the individual. a. incorrect b. mutant c. normal d. jumping	01	CO9	KL2
ii	Which of the following is not the application of DNA fingerprinting a. Forensic science b. Disputed Parentage c. Diagnosis of inherited disorder d. All the above	01	CO7	KL4
iii	What is a tumour-inducing plasmid widely used in producing transgenic plants? a. Escherichia coli b. Bacillus thuringiensis c. Staphylococcus aureus d. Agrobacterium tumefaciens	01	CO3	KL1
iv	What has been designed with <i>Bacillus thuringiensis</i> strains (Bt)? a. Biofertilizers	01	CO3	KL4



**Section B (Answer any FOUR out of SIX) – 20 Marks**  
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	What biotechnologist can do in sector of healthcare and diagnostics?	05	CO9	KL3
3	What is IPR? Classify different types of IPR	05	CO7	KL1
4	Define protein engineering. Write its applications with examples.	05	CO2	KL2
5	Describe the degradation of chlorinated organic pollutant.	05	CO6	KL2
6	Discuss any one plant microbe interaction.	05	CO4	KL2
7	What is biosensor? Write the application of biosensor.	05	CO5	KL3

**Section C (Answer any TWO out of FOUR) – 30Marks**  
(Each question Carry 15 Marks)

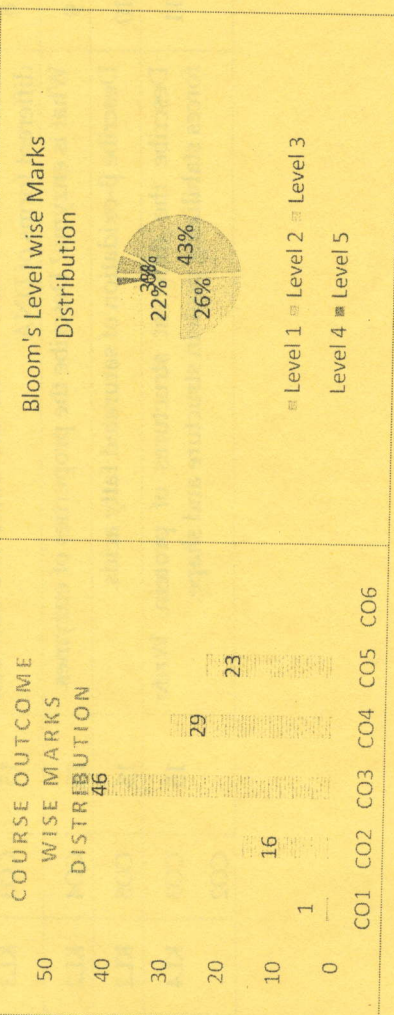
Q. No.	QUESTIONS	Marks	COs	KL
8	What are recombinant vaccines? How do they work? How are they different from attenuated vaccines?	15	CO9	KL3
9	Do you feel monoclonal antibodies can play important role as biotechnology tool. Discuss it with various application. How will you classify them?	15	CO8	KL4
10	Describe the qualitative improvement of livestock.	15	CO5	KL2
11	Discuss role of biotechnologist in Forensic Science, Explain in detail any one role. Do you feel it is important?	15	CO7	KL4

v	b. Bio-metallurgy process c. Insulin d. Bioinsecticidal plants Which of the following pesticide degradation methods is harmless for the environment? a. Microorganisms b. Chemical methods c. Physical methods d. Invertebrates	01	CO5	KL2
vi	Which of the following is produced commercially using genetically engineered bacteria? a. Thyroxine b. Human insulin c. Testosterone d. None of these	01	CO1	KL3
vii	What was the first human hormone produced using recombinant DNA technology? a. Insulin b. Estrogen c. Thyroxin d. Progesterone	01	CO9	KL4
viii	The hybridoma are made by a. Fusing T cells with myeloma cells b. Using B cells with myeloma cells c. Using M cells with myeloma cells d. None of the above	01	CO9	KL4
ix	In gene therapy, the genetic defect is corrected by delivery of _____ gene into the individual. a. incorrect b. mutant c. normal d. jumping	01	CO9	KL2
x	Introduction of healthy gene into cells, tissue or organ cultured invitro and reimplanting back into patient is called a. Germ line therapy b. Somatic cell therapy c. Ex vivo therapy d. In vivo therapy	01	CO9	KL1



CO1	Foundational understanding of the chemical constituents of cells, the basic units of living organisms.
CO2	Explain various types of weak interactions between the biomolecules.
CO3	Know how the simple precursors give rise to large biomolecules such as proteins, carbohydrates, lipids, nucleic acids.
CO4	Know about biocatalyst and their role
CO5	Know how biomolecules metabolized to produces energy and other precursor molecules.
CO6	Able to critically evaluate, interpret and correlate the biochemical information

**GRAPHICAL REPRESENTATION**



**ARKA JAIN University**  
Jharkhand

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**END SEM EXAMINATION**  
School of Health & Allied Science

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**Program** Bachelor of Science (Biotechnology)

**Subject Name** Biochemistry & Metabolism

**Semester** I

**Year** January, 2025

- Start writing from 2nd page onwards; don't Write on the 1st Page Backside
- Answer all Questions of Section A (Compulsory)
- Answer Any Four out of Six of Section B
- Answer Any Two out of Four of Section C
- Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.

Time: 3 Hour  
Max. Marks : 60

**Knowledge Level (KL)**  
K1 : Remembering    K3 : Applying    K5 : Evaluating  
K2 : Understanding    K4 : Analysing    K6 : Creating

**Section A (Each question Carry 01 Marks from Q1-i to x) – 10 Marks**

Q.N	QUESTIONS	Marks	COs	KL
i	Oxidation of which substance in the body yields the most calories a) Glucose b) Glycogen c) Protein d) Lipids	01	CO1	KL2
ii	Ring formation in alpha d glucose involves a) Between carbon 1 and 3 b) Between carbon 1 and 4 c) Between carbon 1 and 5 d) Between carbon 1 and 6	01	CO2	KL3
iii	β-pleated sheets are examples of protein's a) Primary Structure b) Secondary Structure c) Tertiary structure d) Quaternary structure	01	CO3	KL1
iv	A Holoenzyme is a) Functional unit b) Apo enzyme c) Coenzyme d) All of these	01	CO4	KL2



v	During complete beta oxidation of Palmitic acid there are a) 7 cycles to produce 8 Acetyl CoA b) 8 cycles to produce 7 Acetyl CoA c) 7 cycles to produce 7 Acetyl CoA d) 8 cycles to produce 8 Acetyl CoA	01	CO5	KL5
vi	Which of the following is key regulatory enzyme of glycolysis? a) Phosphoglycerate kinase b) Phosphofructo kinase c) Hexokinase d) Pyruvate kinase	01	CO5	KL5
vii	The kinetic effect of purely competitive inhibitor of an enzyme a) Increases $K_m$ without affecting $V_{max}$ b) Decreases $K_m$ without affecting $V_{max}$ c) Increases $V_{max}$ without affecting $K_m$ d) Decreases $V_{max}$ without affecting $K_m$	01	CO4	KL5
viii	Enzymes, which are produced in inactive form in the living cells, are called a) Coenzyme b) Lysozymes c) Apoenzymes d) Proenzymes	01	CO4	KL2
ix	The net number of ATP formed per mole of glucose in anaerobic glycolysis is a) 1 b) 2 c) 6 d) 8	01	CO5	KL4
x	The following is purely ketogenic amino acid a) Aspartate b) Phenylalanine c) Valine d) Leucine	01	CO3	KL4
<b>Section B (Answer any FOUR out of SIX) – 20 Marks</b> (Each question Carry 5 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Write short notes on a) Phospholipids b) Essential amino acid	05	CO3	KL2
3	Draw structure of different nitrogen base and sugar present in DNA	05	CO4	KL2

4	Describe fate of pyruvate under aerobic and anaerobic conditions.	05	CO5	KL4
5	Draw diagram of peptide bond mentioning with bond length, bond angle and rotation.	05	CO3	KL3
6	What is lipid? Write the properties of fatty acids.	05	CO3	KL1
7	What is enzyme inhibition? Describe non-competitive enzyme inhibition.	05	CO4	KL3
<b>Section C (Answer any TWO out of FOUR) – 30 Marks</b> (Each question Carry 15 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	What is nucleic acid? Write the difference between different forms of DNA.	15	CO3	KL3
9	What is enzyme? Describe the properties of enzymes.	15	CO4	KL2
10	Describe $\beta$ -oxidation of saturated fatty acids.	15	CO5	KL2
11	Describe the different structures of protein. Write forces stabilizing protein structure and shape.	15	CO3	KL4

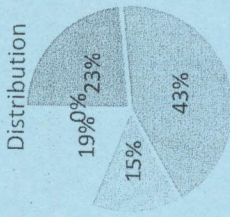


CO1	Recall structure and function of a prokaryotic and eukaryotic cells (both plant and animal cells)
CO2	Understand structure of different cell organelles such as mitochondria, nucleus, Golgi apparatus etc
CO3	Understand role of each and every cell organelle
CO4	Different cell signalling pathways
CO5	Understand molecular basis of cancer and agents that cause cancer
CO6	Regulation of receptor expression and function.
CO7	Recent advancements in cell biology research and technologies

**GRAPHICAL REPRESENTATION**

COURSE OUTCOME WISE MARKS DISTRIBUTION

Bloom's Level wise Marks Distribution



40									
30	31								
20	27	17	17	22					
10									
0									

Level 1 Level 2 Level 3  
Level 4 Level 5 Level 6

22/1/25 33

**ARKA JAIN University**  
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**END SEM EXAMINATION**  
School of Health & Allied Science

<p><b>Program</b> Bachelor of Science (Biotechnology)</p>	<p><b>Semester</b> I</p>	<p><b>Year</b> January, 2025</p>
<p><b>Subject Name</b> Cell Biology</p>		
<p><b>Time: 3 Hour Max. Marks : 60</b></p> <ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u></li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Four out of Six of Section B</li> <li>Answer Any Two out of Four of Section C</li> <li>Possession of <u>Mobile Phones</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers.</u></li> </ul>		
<p><b>Knowledge Level (KL)</b></p>	<p>K1 : Remembering K2 : Understanding</p>	<p>K3 : Applying K4 : Analysing K5 : Evaluating K6 : Creating</p>

Q. N	QUESTIONS	Marks	COs	KL
1				
i	Which organelle in a eukaryotic cell is the site for electron transport chain a) Golgi complex b) Endoplasmic reticulum c) Mitochondria d) Nucleus	01	CO3	KL1
ii	The chromosome in which centromere is situated exactly in the middle are a) Areocentric b) Metacentric c) Telocentric d) Sub-telocentric	01	CO3	KL2
iii	Which cell organelle is involved in apoptosis? a) Golgi complex b) Mitochondria c) Endoplasmic reticulum d) Nucleus	01	CO5	KL3
iv	Which is the secondary messenger a) ATP b) Hormones c) Ca+2 d) All of these	01	CO4	KL3



v	Which among the following is not a part of Cytoskeleton? a) Lamin b) Tubulin c) Keratin d) Fibrin	01	CO4	KL2
vi	The glycosylation of protein occur in a) Plasma membrane b) Golgi complex c) Lysosome d) glyoxysome	01	CO6	KL2
vii	The cells of malignant tumor showed a) Metastasis b) Contact inhibition c) Uncontrolled growth d) All of these	01	CO5	KL4
viii	The ion require for the assembly of small and large subunit of ribosome is a) $Ca^{+2}$ b) $Mg^{+2}$ c) $Mn^{+2}$ d) $Na^{+1}$	01	CO2	KL2
ix	The immortality exhibited by the cancer cells is due to presence of a) Telomerase b) Nuclease c) Kinase d) Protease	01	CO5	KL3
x	Which of the following is a cell surface receptor? a) Enzyme-linked receptors b) G protein-linked receptors c) Ion-channel linked receptors d) All of the above	01	CO6	KL4

**Section B (Answer any FOUR out of SIX) - 20 Marks**

(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
1	Write short notes on a) Extracellular Matrix b) Cell surface receptors	05	CO6	KL2
3	What is endoplasmic reticulum? Describe structure and functions of ER.	05	CO2	KL2
4	What is cytoskeleton? Write the difference between different types of cytoskeletons.	05	CO3	KL3

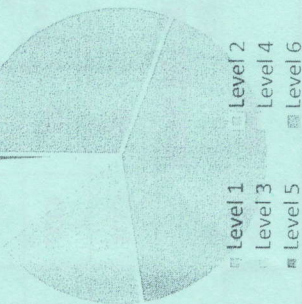
5	Describe genome of mitochondria.	05	CO2	KL2
6	Draw label diagram of nuclear pore complex.	05	CO3	KL1
7	Write the difference between prokaryotic and eukaryotic ribosome.	05	CO2	KL3
<b>Section C (Answer any TWO out of FOUR) - 30Marks</b>				
<b>(Each question Carry 15 Marks)</b>				
Q. No.	QUESTIONS	Marks	COs	KL
8	Describe structure and functions of Chloroplast.	15	CO3	KL1
9	What is signal transduction? Describe any one molecular mechanism of signal transduction.	15	CO6, CO4	KL2
10	What is plasma membrane? Describe the chemical compositions and functions of plasma membrane.	15	CO2	KL4
11	What is cancer? Describe the different characteristics of cancer cancerous cell.	15	CO5	KL2



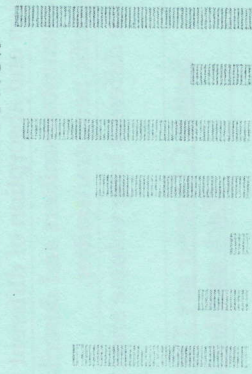
CO1	Physiology of respiration
CO2	Mechanism of digestion & absorption
CO3	Mechanism of working of heart
CO4	Mechanism of blood circulation
CO5	Muscle physiology and muscle contraction
CO6	Excretion and Osmoregulation
CO7	Nervous and endocrine coordination

**GRAPHICAL REPRESENTATION**

Bloom's Level wise Marks Distribution



COURSE OUTCOME WISE MARKS DISTRIBUTION



24/1/25 33

	<b>ARKA JAIN University</b> Jharkhand		END SEM EXAMINATION School of Health & Allied Science	
			Program Bachelor of Science (Biotechnology)	Semester I
Subject Name Mammalian Physiology			Year January, 2025	
Time: 3 Hour Max. Marks: 60	• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Two out of Four of Section C • Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under <b>Unfair Means</b> and will <b>Result in the Cancellation of the Papers.</b>			
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating	
	K2 : Understanding	K4 : Analysing	K6 : Creating	

Section A (Each question Carry 01 Marks from Q1-i to x) – 10 Marks				
Q.N	QUESTIONS	Marks	COs	KL
i	Which of the following prevents the alveoli from collapsing? a) Residual volume b) Tidal volume c) Expiratory reserve volume d) Inspiratory reserve volume	01	CO1	K2
ii	Which of the following factors play a role in the oxygen-hemoglobin saturation/dissociation curve? a) Temperature b) pH c) BPG d) All of the above	01	CO1	K3
iii	The first heart sound represents which portion of the cardiac cycle? a) Atrial systole b) Ventricular systole c) Closing of the atrioventricular valves d) Closing of the semilunar valves	01	CO3	K2



iv	Which valve separates the left atrium from the left ventricle? a) Mitral b) Tricuspid c) Pulmonary d) Aortic	01	CO3	K2
v	The functional unit of muscle contraction is a) Sarcoplasm b) Sarcomere c) Sarcolemma d) Sacosphere	01	CO5	K1
vi	Net filtration pressure (NFP) in Bowman's capsule is equal to a) 55mm Hg b) 30 mm Hg c) 15 mm Hg d) 10 mm Hg	01	CO6	K3
vii	Graves' disease is associated with a) Hyperthyroidism b) Hypothyroidism c) Hyperparathyroidism d) Hyperparathyroidism	01	CO7	K3
viii	Long, striated and branched structure is the characteristic of a) Smooth muscle b) Cardiac muscle c) Skeleton muscle d) All of these	01	CO5	K1
ix	Voltage-gated Na <sup>+</sup> channels open upon reaching what state? a) Resting Potential b) Threshold c) Repolarization d) Overshoot	01	CO7	K5
x	Chemical signalling that affects neighbouring cells is called _____. a) Autocrine b) Paracrine c) Endocrine d) Neuron	01	CO7	K2

<b>Section B (Answer any FOUR out of SIX) – 20 Marks</b> (Each question Carry 5 Marks)				
Q. No	QUESTIONS	Marks	COs	KL
2	Enumerate the digestive enzymes secreted by the pancreas and describe their specific functions in the digestive process.	05	CO2	K2
3	What is a neuron? Discuss the structural characteristics of a synapse in detail.	05	CO7	K1
4	Write the difference between different types of muscles.	05	CO5	K4
5	Draw a label diagram of nephron. Mention the secretion and absorption of different biomolecules.	05	CO6	K2
6	Define neurotransmitters and describe the function of one specific neurotransmitter.	05	CO7	K1
7	Describe different lung volume and capacity.	05	CO1	K4
<b>Section C (Answer any TWO out of FOUR) – 30 Marks</b> (Each question Carry 15 Marks)				
Q. No	QUESTIONS	Marks	COs	KL
8	What are hormones? List the hormones secreted by the pituitary gland along with their functions and the disorders caused by their hypersecretion and hyposecretion.	15	CO7	K2
9	Illustrate the structure of a sarcomere and explain the process of skeletal muscle contraction.	15	CO5	K3
10	Describe the transport of oxygen and carbon dioxide in blood.	15	CO1	K1
11	Discuss the composition of blood in detail and provide a comprehensive explanation of the mechanism underlying blood coagulation.	15	CO4	K2