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SHREE VENKATESHWARA HI-TECH ENGINEERING COLLEGE

(AUTONOMOUS)

B.E/B.Tech. DEGREE END SEMESTER EXAMINATIONS – NOVEMBER/DECEMBER 2025

Question Paper Code: 30733

Third Semester

Biomedical Engineering

23BMI31 – ANATOMY AND HUMAN PHYSIOLOGY

(Regulations 2023)

Duration: Three Hours

Maximum Marks: 100

Answer ALL Questions

PART A – (10 X 2 = 20 Marks)

Q.No.	Question	M	CO	BTL
1.	Write the Nernst equation. ✓	2	CO1	K1
2.	List two differences between endocrine and exocrine glands. ✓	2	CO1	K2
3.	State the divisions of the skeleton. ✓	2	CO2	K1
4.	What is the function of ligaments? ✓	2	CO2	K2
5.	What is hemostasis? ✓	2	CO3	K1
6.	Define tidal volume. ✓	2	CO3	K1
7.	List any two functions of the kidney. ✓	2	CO4	K1
8.	Explain glomerular filtration. ✓	2	CO4	K2
9.	Name two types of neurons. ✓	2	CO5	K1
10.	Mention the function of the myelin sheath. ✓	2	CO5	K2

PART B – (5 X 16 = 80 Marks)

11. (a) ✓ Apply the Nernst and Goldman equations to explain ion movement across membranes. 16 CO1 K3

Or

- (b) ✓ Apply tissue classification knowledge to clinical histology cases. 16 CO1 K3

12. (a) ✓ Analyze the mechanical roles of various joint types. 16 CO2 K2

Or

- (b) ✓ Compare skeletal, cardiac, and smooth muscles with structure and function. 16 CO2 K2

13. (a)✓ Apply cardiac cycle knowledge to interpret ECG abnormalities. 16 CO3 K2
Or
(b)✓ Use respiratory capacity concepts to diagnose lung diseases. 16 CO3 K2
14. (a)✓ Explain nephron structure in urine formation with neat diagram. 16 CO4 K2
Or
(b)✓ Compare digestive and excretory systems in fluid balance maintenance. 16 CO4 K2
15. (a)✓ Apply nerve conduction concepts to treat peripheral nerve injuries. 16 CO5 K2
Or
(b)✓ Implement sensory physiology to explain vision or hearing loss. 16 CO5 K2

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SHREE VENKATESHWARA HI-TECH ENGINEERING COLLEGE

(AUTONOMOUS)

B.E/B.Tech. DEGREE END SEMESTER EXAMINATIONS – APRIL / MAY 2026

Question Paper Code: 50721

Second Semester

Biomedical Engineering

25BMI21 – ANATOMY AND HUMAN PHYSIOLOGY

(Regulations 2025)

Duration: Three Hours

Maximum Marks: 100

Answer ALL Questions

PART A – (10 X 2 = 20 Marks)

Q.No.	Question	M	CO	BTL
1.	Define a cell.	2	CO1	K1
2.	State the Nernst equation.	2	CO1	K1
3.	List the types of bones.	2	CO2	K1
4.	Give two functions of cartilage.	2	CO2	K2
5.	What is Purkinje fiber?	2	CO3	K1
6.	List the parts of the respiratory system.	2	CO3	K1
7.	Outline the process of digestion.	2	CO4	K2
8.	Classify the steps of urine formation.	2	CO4	K2
9.	Interpret the functions of nervous tissue.	2	CO5	K2
10.	Relate the role of cerebrum in voluntary actions.	2	CO5	K2

PART B – (5 X 16 = 80 Marks)

11.	(a) Describe the structure and functions of major cell organelles in detail.	16	CO1	K2
	Or			
	(b) Explain the Goldman equation and compare it with the Nernst equation.	16	CO1	K2
12.	(a) Analyze the mechanical roles of various joint types.	16	CO2	K2
	Or			
	(b) Discuss the changes that occur during muscle contraction.	16	CO2	K2

13. (a) Compute cardiac output under different physiological conditions. 16 CO3 K3
- Or
- (b) Evaluate transfusion reactions based on blood group in compatibility. 16 CO3 K3
14. (a) Differentiate the roles of various parts of the alimentary canal in digestion. 16 CO4 K4
- Or
- (b) Analyze the structure of nephron in relation to its function. 16 CO4 K4
15. (a) Categorize the components of the central nervous system based on function. 16 CO5 K4
- Or
- (b) Analyze differences between somatic and autonomic nervous systems. 16 CO5 K4

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SHREE VENKATESHWARA HI-TECH ENGINEERING COLLEGE

(AUTONOMOUS)

B.E/B.Tech. DEGREE END SEMESTER EXAMINATIONS – NOVEMBER/DECEMBER 2025

Question Paper Code: 30731

Current Exam

Third Semester

Biomedical Engineering

23BMI31 - ANATOMY AND HUMAN PHYSIOLOGY

(Regulations 2023)

Duration: Three Hours

Maximum Marks: 100

Answer ALL Questions

PART A – (10 X 2 = 20 Marks)

Q.No.	Question	M	CO	BTL
1.	Write down the Nernst equation of the cell.	2	CO1	K1
2.	Interpret the functions of lysosomes and mitochondria present in the cell.	2	CO1	K2
3.	Differentiate synovial joints from other types of joints with examples.	2	CO2	K2
4.	Outline the properties of skeletal muscle.	2	CO2	K1
5.	Relate the normal range of blood pressure and recite why it is important.	2	CO3	K2
6.	Review the term tidal volume.	2	CO3	K1
7.	Draw the structure of nephron and label the parts.	2	CO4	K1
8.	Specify the key functions of the skin.	2	CO4	K2
9.	Define Synapse.	2	CO5	K1
10.	Identify the cranial nerve responsible for vision.	2	CO5	K1

PART B – (5 X 16 = 80 Marks)

11. (a) With neat sketch, present and analyze the functions of each cell organelle and their interdependence in the human body. 16 CO1 K2
- Or
- (b) Evaluate the role of homeostasis in maintaining cellular stability during stress. 16 CO1 K2
12. (a) Describe about the various muscle properties involved in the sports performance with case study. 16 CO2 K3

Or

- (b) Compare and elaborate about skeletal, cardiac, and smooth muscles 16 CO2 K3 along with its structure and functions.
13. (a) Making use of respiratory capacity concepts, illustrate about the 16 CO3 K2 diagnosis procedure of lung diseases with necessary sketch.
- Or
- (b) Distinguish between obstructive and restrictive respiratory disorders with 16 CO3 K2 suitable examples.
14. (a) With suitable block explain, urinary physiology to interpret urine 16 CO4 K2 abnormalities.
- Or
- (b) Demonstrate about the differences in digestive and excretory systems in 16 CO4 K2 fluid balance maintenance.
15. (a) Explain in detail about anatomy and physiology of hearing with neat 16 CO5 K2 diagram.
- Or
- (b) Analyze and elaborate about the differences between somatic and 16 CO5 K2 autonomic nervous systems.
