

# Faculty of Science

## End Semester Examination May 2025

### BT3CO06 Mammalian Physiology

<b>Programme</b>	:	B.Sc.	<b>Branch/Specialisation</b>	:	-
<b>Duration</b>	:	3 hours	<b>Maximum Marks</b>	:	60

**Note:** All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.

<b>Section 1 (Answer all question(s))</b>				<b>Marks</b>	<b>CO</b>	<b>BL</b>
<b>Q1.</b> Which of the following acid is secreted in the stomach?				1	1	1
<input type="radio"/> Sulphuric acid			<input type="radio"/> Nitric acid			
<input type="radio"/> Phosphoric acid			<input checked="" type="radio"/> Hydrochloric Acid			
<b>Q2.</b> Which part of the human lungs provide surface for the exchange of gases?				1	1	1
<input checked="" type="radio"/> Alveoli			<input type="radio"/> Bronchioles			
<input type="radio"/> Bronchi			<input type="radio"/> Diaphragm			
<b>Q3.</b> Which blood vessel carry pure blood from the lungs to the heart?				1	2	1
<input type="radio"/> Cardiac vein			<input checked="" type="radio"/> Pulmonary veins			
<input type="radio"/> Pulmonary arteries			<input type="radio"/> Cardiac artery			
<b>Q4.</b> What is the opening between the left auricle and the left ventricle called?				1	1	1
<input checked="" type="radio"/> Mitral valve			<input type="radio"/> Aortic valve			
<input type="radio"/> Tricuspid valve			<input type="radio"/> Pulmonary valve			
<b>Q5.</b> What is the significance of the 'A' band during muscle contraction?				1	1	1
<input type="radio"/> It shortens during muscle contraction as the actin filament slides past the myosin filaments			<input checked="" type="radio"/> It remains unchanged in length during contraction as the thick and thin filaments overlap			
<input type="radio"/> It is where the Z-lines are attached to the thin filaments			<input type="radio"/> It is the area where only thin (actin) filaments are found			
<b>Q6.</b> Which of the following required for the breaking of cross-bridge during muscle contraction?				1	1	1
<input type="radio"/> ATP and $\text{Ca}^{++}$			<input type="radio"/> ADP and $\text{Ca}^{++}$			
<input type="radio"/> Only $\text{Ca}^{++}$			<input checked="" type="radio"/> Only ATP			
<b>Q7.</b> A membrane potential is the difference in electrical charge between.				1	1	1
<input type="radio"/> Potassium and sodium ions			<input checked="" type="radio"/> The inside and outside of the cell			
<input type="radio"/> Phosphoric acid and glycolipid layers			<input type="radio"/> Resting and action potentials			
<b>Q8.</b> Thyroid gland produces a hormone called 'thyroxin' which-				1	1	1
<input type="radio"/> Controls blood glucose levels			<input type="radio"/> Control ovulation			
<input checked="" type="radio"/> Control metabolic rate			<input type="radio"/> More than one of the above			
<b>Q9.</b> What changes are included in circadian rhythms?				1	1	1
<input type="radio"/> Physical			<input type="radio"/> Mental			
<input type="radio"/> Behavioural			<input checked="" type="radio"/> All of the above			

**Q10.** Caisson's disease' occurs in-

1 1 1

- Person living on high altitude
- A diver who has been beneath the sea for a long period
- Person who smokes heavily
- Person whose alveoli are acutely inflamed

### Section 2 (Answer all question(s))

Marks CO BL

**Q11.** Give brief overview of outline of respiratory system.

2 1 1

Rubric	Marks
Outline of respiratory system	2

**Q12.** Explain the function of different parts of the respiratory system.

3 2 2

Rubric	Marks
Name of parts of respiratory system- 1 mark, Function - 2 marks	3

**Q13. (a)** What is digestion? Explain about the mechanism of digestion.

5 2 2

Rubric	Marks
Digestion definition-2 mark, Mechanism of digestion-3	5

(OR)

- (b)** What is absorption? Give brief explanation about the absorption of carbohydrate, protein, lipid and nucleic acid in digestive tract.

Rubric	Marks
Absorption introduction- 1 mark, Absorption of carbohydrate, protein, lipid and nucleic acid in digestive tract-4marks	5

### Section 3 (Answer all question(s))

Marks CO BL

**Q14.** What is cardiac output?

2 2 2

Rubric	Marks
cardiac output	2

**Q15. (a)** What are the plasma proteins and also explain their role in detail.

8 2 2

Rubric	Marks
Plasma proteins- 2 marks, Explanation of their role in detail- 6	8

(OR)

- (b)** Explain working mechanism of heart with well-labelled diagram.

Rubric	Marks
well-labelled diagram of heart with nomenclature-4 marks, Explanation of their role in detail- 4 marks	8

### Section 4 (Answer all question(s))

Marks CO BL

**Q16.** What is muscle contraction? Explain All or None rule of muscle contraction?

3 2 1

Rubric	Marks
muscle contraction-1 marks, All or None rule of muscle contraction- 2 marks	3

**Q17. (a)** What is the mechanism of muscle contraction? Explain physical, chemical and electrical events of muscle contraction.

7 2 2

Rubric	Marks
mechanism of muscle contraction- 3 marks, physical, chemical and electrical events of muscle contraction- 4 marks	7

**(OR)**

**(b)** Draw the structure of smooth muscles with nomenclature. Explain about Isotonic and Isometric contraction of muscles.

Rubric	Marks
structure of smooth muscles with nomenclature - 3 marks, Explain about Isotonic and Isometric contraction of muscles - 4 marks	7

### Section 5 (Answer all question(s))

Marks CO BL  
4 4 1

**Q18.** Describe the detailed structure of neuron.

Rubric	Marks
detailed structure of neuron.	4

**Q19. (a)** What is endocrine gland? Explain the thyroid gland and its releasing hormones in detail.

6 2 2

Rubric	Marks
endocrine gland- 2 mark, Explanation the thyroid gland and its releasing hormones in detail- 4 marks	6

**(OR)**

**(b)** What is mixed gland? Explain its exocrine & endocrine functions.

Rubric	Marks
Mixed gland Introduction- 2 marks, Also its exocrine and endocrine functions- 4 marks	6

### Section 6 (Answer any 2 question(s))

Marks CO BL  
5 2 2

**Q20.** Explain effects & preventive measures of hypobaric & hyperbaric environment.

Rubric	Marks
effects of hypobaric and hyperbaric environment-2.5 marks, Explain the preventive measures of hypobaric and hyperbaric environment in detail- 2.5 marks	5

**Q21.** What is stress? Describe the role of endocrine system in managing stress.

5 2 2

Rubric	Marks
Introduction to stress - 2 marks, Role of endocrine system in managing stress- 3 marks	5

**Q22.** What is hormone? Explain the role of adrenocortical and penial hormones.

5 2 2

Rubric	Marks
Hormone definition- 2 marks, Role of adrenocortical and penial hormones- 3 marks	5