Reg. No.															

B.Tech. DEGREE EXAMINATION, NOVEMBER 2023

Fourth Semester

18BTB102T – BIOLOGY : HUMAN ANATOMY AND PHYSIOLOGY

(For the candidates admitted from the academic year 2020-2021 to 2021-2022)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours Max. Marks: 100

PART – A (20 × 1 = 20 Marks)

Answer **ALL** Questions

	Marks	BL	CO	PO
1. Identify the location where the DNA is stored in a cell (A) Cytoplasm (B) Nucleus (C) Endoplasmic reticulum (D) Mitochondrion	1	1	1,6	1
2. Match the term "cell drinking" to one of the following (A) Endocytosis (B) Exocytosis (C) Phagocytosis (D) Pinocytosis	1	1	1,6	1
3. Name the blood group that can receive blood only from O –ve blood group (A) AB –ve (B) AB +ve (C) O +ve (D) O –ve	1	1	1,6	1
4. Recall the terminology for P_K and P_{NA} in Gold-Man-Hodgkin Katz equation (A) Selective permeability (B) Relative permeability (C) Permeability (D) Semi permeability	1	1	1,6	1
5. Recognize the gap size in the synaptic junction. (A) 20 nm (B) 30 nm (C) 40 nm (D) 50 nm	1	1	2	2
6. Select the ion which enables the voltage gated ion channels to open and close in synapse. (A) Sodium (B) Potassium (C) Calcium (D) Chloride	1	1	2	2
7. What is the size of a capillary blood vessel? (A) 2 μm (B) 4 μm (C) 6 μm (D) 5 μm	1	1	2	2
8. Locate the part which has thicker myometrium in heart (A) Right atrium (B) Right ventricle (C) Left atrium (D) Left ventricle	1	1	2	2

9. Label the term which defines the lengthening of the muscles. 1 1 3 2
   (A) Excitability (B) Extensibility
   (C) Contractility (D) Elasticity

10. Interpret the condition where hemoglobin level is low in blood 1 1 3 2
   (A) Hypoxic hypoxia (B) Anemia hypoxia
   (C) Ischemic hypoxia (D) Histotoxic hypoxia

11. Where smooth muscles of the body are located? 1 1 3 2
   (A) Blood vessel (B) Heart
   (C) Lung (D) Kidney

12. Which of the following covers larynx during swallowing? 1 1 3 2
   (A) Pharynx (B) Epiglottis
   (C) Trachea (D) Oesophagus

13. Select the weight of liver in an adult woman 1 1 4 2
   (A) 1.1 kg (B) 1.3 kg
   (C) 1.5 kg (D) 1.7 kg

14. Identify the length of the oesophagus. 1 1 4 2
   (A) 15 – 20 cm (B) 25 – 30 cm
   (C) 10 – 15 cm (D) 20 – 35 cm

15. Estimate the average volume of urine in an adult body 1 1 4 2
   (A) 1.2 L (B) 1.4 L
   (C) 1.6 L (D) 1.8 L

16. Give example of a digestive enzyme in small intestine 1 1 4 2
   (A) Lipase (B) Protease
   (C) Glucose (D) Lactose

17. Associate the term hyperthyroidism with one of the following 1 1 5 2
   (A) Grave's disease (B) Goiter
   (C) Myxedema (D) Cretinism

18. Predict the condition caused by hypoactivity of posterior pituitary gland 1 1 5 2
   (A) Dwarfism (B) Gigantism
   (C) Cushing's syndrome (D) Diabetes insipidus

19. Find the name of the VIII cranial nerve 1 1 5 2
   (A) Optic nerve (B) Auditory nerve
   (C) Sacral nerve (D) Vagus nerve

20. Choose the part of the retina which is involved in color vision. 1 1 5 2
   (A) Rod (B) Cone
   (C) Bipolar cell (D) Horizontal cell

PART – B (5 × 4 = 20 Marks)

Answer **ANY FIVE** Questions

	Marks	BL	CO	PO
21. Illustrate the components of an action potential waveform.	4	2	1,6	2
22. Compare the anatomy of various blood vessels present in the human body.	4	2	2	2
23. Outline the reflex action and its pathway.	4	2	2	2
24. How will you determine the ventilator volume of the lungs?	4	3	3	2
25. Examine the structural function of joints.	4	3	3	2
26. List the various accessory organs of digestion, and their respective functions in the process of digestion.	4	3	4	2
27. Summarize the functions of the optic nerve and the topic chiasma.	4	3	5	2

PART – C (5 × 12 = 60 Marks)

Answer **ALL** Questions

	Marks	BL	CO	PO
28. a. Analyze the anatomy and physiology of a human cell.	12	4	1,6	1
(OR)				
b. Break down the various categories of blood cells, their composition and origin.	12	4	1,6	2
29. a. Evaluate the cardiac cycle and its various stages.	12	4	2	2
(OR)				
b. Organize the structure and functions of spinal cord.	12	4	2	2
30. a. Estimate the various physiological processes involved in the mechanism of gas exchange.	12	4	3	2
(OR)				
b. Inspect the sliding bridge theory of muscle contraction with neat illustrations.	12	4	3	2
31. a. Interpret the anatomy of the digestive system with neat diagram.	12	5	4	2
(OR)				
b. How will you justify the structure and function of sweat glands in the process of temperature regulation of the body?	12	5	4	2
32. a. Determine the electrophysiology of various components involved in the visual pathway.	12	5	5	2
(OR)				
b. Predict the changes in the human body based on the hyper/hypo-secretion of the pituitary gland hormones.	12	5	5	2

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