Name: Enrolment No:	

UPES

End Semester Examination, December 2024

Course: Anatomy and Physiology

Semester:1st

Program: B.Tech Biomedical Engineering **Duration: 3 Hours**

Course Code: HSCC1023 **Max. Marks: 100**

Instructions: Attempt all questions

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1	The electrocardiogram (ECG) is used to measure blood pressure. (True/False)	1.5	CO1
Q 2	Arteries carry oxygenated blood from the heart to the rest of the body. (True/False)	1.5	CO2
Q 3	Which of the following blood vessels carries deoxygenated blood to the heart? a) Pulmonary artery b) Aorta c) Pulmonary vein d) Coronary artery	1.5	CO2
Q 4	The heart's electrical conduction system includes all of the following except: a) Sinoatrial (SA) node b) Atrioventricular (AV) node c) Bundle of His d) Pulmonary veins	1.5	CO1
Q 5	What are the primary causes of hypertension, and how does it affect the cardiovascular system?	1.5	CO1
Q 6	What is the cardiac output, and how is it regulated?	1.5	CO1
Q 7	The retina is responsible for detecting sound in the ear. (True/False)	1.5	CO1
Q 8	The sympathetic nervous system decreases heart rate and digestive activity. (True/False)	1.5	CO2

Q 9	Which of the following cranial nerves is responsible for vision? a) Olfactory nerve b) Optic nerve c) Vagus nerve d) Facial nerve	**1.5**	**CO2**
Q 10	The sympathetic nervous system prepares the body for: a) Rest and digestion b) Fight or flight response c) Long-term energy storage d) Immune defense	**1.5**	**CO3**
Q 11	What are the structural differences between the sympathetic and parasympathetic nervous systems?	**1.5**	**CO4**
Q 12	Lymphatic vessels transport oxygenated blood from the heart to the body. (True/False)	**1.5**	**CO3**
Q 13	Blood plasma is primarily responsible for carrying oxygen throughout the body. (True/False)	**1.5**	**CO4**
Q 14	Which of the following is true about blood plasma? a) It is composed mainly of water, proteins, and dissolved gases b) It is mainly made up of red blood cells c) It helps in immune defense by producing antibodies d) It is responsible for blood clotting	**1.5**	**CO4**
Q 15	Which blood component is responsible for clot formation? a) Red blood cells b) Platelets c) Plasma d) White blood cells	**1.5**	**CO2**
Q 16	What is the difference between plasma and serum in blood?	**1.5**	**CO2**
Q 17	The dermis contains blood vessels and sensory receptors. (True/False)	**1.5**	**CO2**
Q 18	Smooth muscle is striated and under voluntary control. (True/False)	**1.5**	**CO2**
Q 19	The layer of skin responsible for producing new skin cells is called: a) Epidermis b) Dermis c) Hypodermis d) Stratum corneum	**1.5**	**CO4**
Q 20	Which of the following is not a function of the skeletal system? a) Support b) Movement c) Blood cell production d) Hormone regulation	**1.5**	**CO3**
Section B **(4Qx5M=20 Marks)**			

Q 1	Explain the levels of structural organization in the human body, from cells to the organism level. *(2.5 marks)* Include examples of each level. *(2.5 marks)*	**5**	**CO4**
Q 2	Discuss the structure and functions of the skin. *(2.5 marks)* How does the skin contribute to homeostasis and protect the body from external threats? *(2.5 marks)*	**5**	**CO3**
Q 3	Describe the composition of blood and its major functions. *(2.5 marks)* Explain how the components of blood work together to maintain homeostasis in the body. *(2.5 marks)*	**5**	**CO4**
Q 4	Compare and contrast the sympathetic and parasympathetic nervous systems in terms of structure, function, and their roles in maintaining body balance.	**5**	**CO1**
Section C (2Qx15M=30 Marks)			
Q 1	Explain the structure and functions of the integumentary system, focusing on the skin, hair, nails, and associated glands. *(5 marks)* Discuss how the skin acts as a barrier, regulates temperature, and contributes to sensory perception. *(10 marks)*	**15**	**CO2**
Q2	Describe the composition and functions of blood. *(5 marks)* Explain the process of hematopoiesis and how blood components (red blood cells, white blood cells, platelets, and plasma) work together to maintain homeostasis. *(10 marks)*	**15**	**CO3**
Section D (2Qx10M=20 Marks)			
Q 1	Explain the different types of cells signaling, such as contact-dependent, paracrine, synaptic, and endocrine signaling. *(5 marks)* Discuss the mechanisms by which these signals are transmitted and how they influence cellular responses. *(5 marks)*	**10**	**CO4**
Q2	Describe the organization of the skeletal system, including the classification of bones and types of joints. *(5 marks)* Discuss the structure and function of the axial and appendicular skeletons and explain how different joint types facilitate movement. *(5 marks)*	**10**	**CO2**