Name:

Enrolment No:

UPES

End Semester Examination, December 2023

Course: Anatomy and physiology **Duration: 3 Hours**

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

Semester: 3rd

Program: B. Tech Biomedical Engineering

Instructions: Attempt all the questions

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1	What is the main function of the peripheral nervous system (PNS)?	1.5	CO4
Q 2	Differentiate between the somatic and autonomic nervous systems.	1.5	CO4
Q 3	Which division of the autonomic nervous system is responsible for the "fight or flight" response?	1.5	CO3
Q 4	Name the neurotransmitter released by postganglionic neurons in the parasympathetic nervous system.	1.5	CO3
Q 5	What is the origin of spinal nerves?	1.5	CO3
Q 6	How many pairs of cranial nerves are there?	1.5	CO3
Q 7	What is the primary function of the cornea in the eye?	1.5	CO3
Q 8	Which part of the ear is responsible for maintaining balance and spatial orientation?	1.5	CO2
Q 9	Name the primary olfactory receptor cells in the nose.	1.5	CO2
Q 10	What is the primary function of taste buds on the tongue?	1.5	CO2
Q 11	What is the main function of the heart?	1.5	CO3
Q 12	What is the primary function of the coronary arteries?	1.5	CO3
Q 13	Where does hemopoiesis occur in adults?	1.5	CO3

Q 14	Which vitamin is essential for blood clotting?	**1.5**	**CO2**
Q 15	What blood type is considered the universal donor?	**1.5**	**CO2**
Q 16	What is the primary risk associated with mismatched blood transfusions?	**1.5**	**CO2**
Q 17	What is the medical term for a deficiency of red blood cells or hemoglobin?	**1.5**	**CO2**
Q 18	What is the primary function of lymphatic vessels?	**1.5**	**CO1**
Q 19	Name the largest lymphatic organ in the body.	**1.5**	**CO1**
Q 20	Name the pigment responsible for skin color.	**1.5**	**CO1**
Section B (4Qx5M=20 Marks)			
Q 1	(A) Explain the concept of "fight or flight" in the context of the sympathetic nervous system and how it contrasts with the functions of the parasympathetic nervous system. (2.5) (B) Provide an example of a situation where both systems work simultaneously and describe the physiological responses. (2.5)	**5**	**CO4**
Q 2	(A) Compare and contrast the functions of spinal and cranial nerves. How do their origin and distribution contribute to their respective roles in the peripheral nervous system? (2.5) (B) Provide an example of a reflex involving both spinal and cranial nerves. (2.5)	**5**	**CO4**
Q 3	(A) Discuss the structural and functional aspects of the eye, ear, nose, and tongue. How do sensory receptors in these organs facilitate perception? (2.5) (B) Provide an example of a disorder affecting one of these sensory organs and its impact on daily life. (2.5)	**5**	**CO3**
Q 4	(A) Explain how the nervous system regulates sensory input from the eye, ear, nose, and tongue. (2.5) (B) Discuss the role of neural pathways and brain structures in processing and interpreting sensory	**5**	**CO2**

	information. Provide an example of how these processes contribute to a coordinated response. (2.5)		
Section C (2Qx15M=30 Marks)			
Q 1	(A) Explore the concept of cross-modal integration in sensory perception. How do the senses of sight, sound, smell, and taste interact in the brain to create a unified perceptual experience? (10) (B) Provide an example of a real-world situation illustrating cross-modal integration. (5)	**15**	**CO4**
Q 2	(A) Explain the role of the cardiac conduction system in coordinating the heartbeat. (5) (B) How does the autonomic nervous system regulate heart rate, and what are the implications of sympathetic and parasympathetic stimulation on the heart's function? (10)	**15**	**CO3**
Section D (2Qx10M=20 Marks)			
Q 1	(A) Define cardiac output and stroke volume. (5) (B) How do these parameters contribute to overall cardiovascular function, and what factors influence their regulation? (5)	**10**	**CO4**
Q 2	(A) Discuss the significance of an electrocardiogram (ECG) in assessing heart function. (5) (B) What are the common types of arrhythmias, and how do they impact the heart's electrical activity? (5)	**10**	**CO3**