

# Question Paper

Exam Date & Time: 19-Jun-2024 (10:00 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER B.Sc. EXERCISE AND SPORTS SCIENCES DEGREE EXAMINATION - JUNE 2024  
SUBJECT: ESS1103- PHYSIOLOGY FOR EXERCISE AND SPORTS SCIENCE  
(SCHEME 2020)

Marks: 100

Duration: 180 mins.

Answer all the questions.

- 1) What is motor-end plate? Explain how impulse is transmitted in neuromuscular junction with a diagram? Describe skeletal muscle contraction and relaxation mechanism with a diagram. Name the factors affecting muscle contraction and briefly explain how (20)  
(2+6+8+4 = 20 marks)
- 2) Name different phases of cardiac cycle and the duration of each phase of a healthy adult at rest. (20)  
Describe the pressure and volume changes that occur during a cardiac cycle. Relate cardiac cycle phases to the ECG waves. Describe the mechanisms that regulate heart rate and blood pressure.  
(4+6+2+8 = 20 marks)
- 3) Describe how brain centers and chemical changes in the blood control breathing. (10)
- 4) Name different types of sensory receptors. Write a brief note on saltatory conduction. Explain the process of synaptic transmission in electrical synapses with a diagram. (10)  
(2+3+5 = 10 marks)
- 5A) Explain how HCl is synthesized and secreted in stomach lumen from parietal cells (5)
- 5B) What is micturition? Explain mechanical and neuronal regulation of micturition. (5)  
(1+4 = 5 marks)
- 5C) What is the relationship between hemoglobin (Hb) and  $P_{O_2}$ ? How do temperature,  $H^+$ ,  $P_{CO_2}$ , and BPG influence the affinity of Hb for  $O_2$ ? (5)  
(3+2 = 5 marks)
- 5D) Describe the sequence of events in protein synthesis within a cell. (5)
- 5E) Name the hormones secreted from hypothalamus and pituitary gland. Write main function of these hormones. (5)  
(2+3 = 5 marks)
- 5F) Prepare a labelled diagram of the major hormonal changes that occur during the ovarian cycles. (5)
- 6A) What is Goiter? (2)
- 6B) Write a short note on GFR. (2)
- 6C) What is the role of pepsin in digestion? (2)
- 6D) What is the difference between innate immunity and adaptive immunity? (2)
- 6E) Write a short note on Frank-Starling law of the heart (2)

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