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Question Paper Code: 93B02

B.E./B.Tech. DEGREE EXAMINATION, MAY 2022

Fifth Semester

Biomedical Engineering

19UBM302 – HUMAN ANATOMY AND PHYSIOLOGY

(Regulation 2019)

Duration: Three hours

Maximum: 100 Marks

PART – A (10 x 2= 20Marks)

(Answer any 10 out of 15)

1. Assume that there are twenty sodium ions outside the cell and ten potassium ions inside the cell. What will happen after one cycle of the sodium-potassium pump? CO2 A
2. Why mitosis is called equational division? CO2 A
3. Calculate the Nernst potential for potassium ion at normal body temperature of 98.6°F. The in and out concentration given is 200 and 20 respectively CO2A
4. Inspiration is the active process and expiration is the passive process-justify the statement CO3 An
5. Give the Anatomical description of bronchial artery CO1 U
6. Compare physiological shunt with Physiological Dead Space CO2 A
7. Describe the divisions of nervous system CO3An
8. What is myelin sheath? What function does it perform for lungs? CO1 U
9. What contains sensory & motor nerves in the brain/body? CO3 An
10. What are villi? How they are adapted for digestion CO3 An
11. What are primary and accessory digestive organs? CO1 U
12. Kidney plays an important role in maintenance of acidbase balance. Justify CO3 An
13. Name different refractory errors of the eye. CO1 U

14. Write short notes on optics of eye CO1 U
15. Write any two characteristic features of skeletal muscle CO1 U

PART – B (5 x 16= 80 Marks)

16. (a) (i) Describe the events taking place during meiosis I with neat diagram CO1 U (8)
- (ii) List the main differences between mitosis and meiosis. CO2- A (8)
- Or
- (b) (i) Prove the normal resting membrane potential of nerves is -90mv CO2- A (8)
- (ii) Explain in detail the nerve action potential CO1-U (8)
17. (a) (i) During breath-in, explain what is happening in lungs. CO3 An (8)
- (ii) How the actions of the heart are classified? Explain in detail. CO1-U (8)
- Or
- (b) (i) Discuss with a graphical representation the intra-ventricular pressure changes during cardiac cycle. CO3 An (8)
18. (a) Brief the anatomy of gray matter of spinal cord CO1-U (16)
- Or
- Explain in detail the structure of neuron and its organization. CO1-U (16)
19. (a) Describe the movements of the large intestine CO1-U (8)
- Discuss about the wall of gastrointestinal tract CO1-U (8)
- Or
- (b) Explain bicarbonate mechanism for the process of excretion of H^+ ions in the maintenance of acid-base balance CO1-U (8)
- Discuss Glomerular Filtration. Why are large amounts of solutes filtered and then reabsorbed by the kidneys? CO1-U (8)

20. (a) (i) Write short notes on architecture of bone. CO1-U (8)
- (ii) Differentiate among parallel, pennate, convergent, and sphincter muscle types CO2 A (8)
- Or
- (b) (i) How Skeletal Muscles Produce Movements? CO2 A (8)
- (ii) What are the different types of bones? Explain in detail CO1-U (8)