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**Question Paper Code: 53B02**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2018

Third Semester

Biomedical Engineering

15UBM 302 -HUMAN ANATOMY AND PHYSIOLOGY

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Which of the following lists best illustrates the idea of increasing levels of complexity? CO1- U
  - (a) Cells, tissues, organelles, organs, systems
  - (b) Tissues, cells, organs, organelles, systems
  - (c) Organs, organelles, systems, cells, tissues
  - (d) Organelles, cells, tissues, organs, systems
  
2. The endoplasmic reticulum is best described as a CO1- R
  - (a) Formless liquid
  - (b) Cellular inclusion
  - (c) Network of interconnected membranes
  - (d) Membranous sac
  
3. Blood flows from the right ventricle of the heart into which of the following structures? CO2- R
  - (a) Inferior vena cava
  - (b) Aorta
  - (c) Pulmonary arteries
  - (d) Pulmonary veins

4. How is oxygen used by living organisms? CO2- U  
(a) It controls the amount of heat produced  
(b) Its a source of energy  
(c) It is used to release energy that is stored in food  
(d) It is part of water and is necessary to keep organisms hydrated
5. Which of the following is the point at which an impulse is transmitted from one neuron to another neuron? CO3- R  
(a) Dendrite                      (b) Glial cell                      (c) Axon                      (d) Synapse
6. Which of the following statement is correct about Cerebellum? CO3- U  
(i) It is the largest part of the brain.  
(ii) It regulates the muscular movement for locomotion.  
(iii) It controls involuntary action.  
(iv) It is a part of brain.  
(a) Only (i)                      (b) Both (ii) and (iii)                      (c) Both (ii) and (iv)                      (d) Only (iv)
7. At which of the following locations does bile enter the digestive tract? CO4- R  
(a) Pyloric sphincter                      (b) Duodenum                      (c) Ileocecum                      (d) Jejunum
8. The cluster of blood capillaries found in each nephron in the kidney is? CO4- R  
(a) Renal tubule                      (b) Loop of Henle                      (c) Glomerulus                      (d) Renal pelvis
9. The flexible connective tissue that is attached to bones at the joints? CO5- R  
(a) Tendon                      (b) Cartilage                      (c) ligament                      (d) Adipose
10. When the cornea or lens is uneven, and light rays cannot be evenly focused on the retina, causing a fuzzy image to form, the person is said to \_\_\_\_\_. CO5- U  
(a) be nearsighted                      (b) be farsighted                      (c) have astigmatism                      (d) have ataracts

PART – B (5 x 2= 10Marks)

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|--|---------|
| 11. Recount the function of apparatus  | CO1-U   |
| 12. List in order the events of the cardiac conduction system.                               | CO2-App |
| 13. What is the role of the CNS [Central Nervous System]?                                    | CO3- R  |
| 14. Brief layers and function of muscularis mucosa in Gastro Intestinal (GI) Tract?          | CO4-U   |
| 15. Classify and mention the function of the 5 classes of receptors in human sensory system. | CO5-U   |

PART – C (5 x 16= 80 Marks)

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|---|----------|------|
| 16. (a) Summarize the structure and function of eukaryotic cell with emphasize on the organelles.           | CO1- U   | (16) |
| Or  |          |      |
| (b) Summarize cell cycle and cell division with reference to Mitosis and Meiosis as end note.               | CO1- U   | (16) |
| 17. (a) Relate anatomy of heart with its conducting physiology to understand heart functions.               | CO2- App | (16) |
| Or  |          |      |
| (b) Illustrate gas transfer and Lung Function to understand respiratory system                              | CO2- App | (16) |
| 18. (a) Exemplify the structure and operation of neuron and also illustrate the components of a Reflex Arc. | CO3- U   | (16) |
| Or  |          |      |
| (b) Summarize Autonomic Nervous System with its inhibition and exhibition operations for visceral control.  | CO3- U   | (16) |
| 19. (a) Explain organization of digestive system with its specialized features in each section of GI tract. | CO4- U   | (16) |
| Or  |          |      |
| (b) Relate renal circulation with Nephron functional overview for renal clearance.                          | CO4- U   | (16) |

20. (a) Describe the physiological events involved in hearing from the entrance of a pressure wave into the external auditory canal to conduction of an electrical signal along the vestibulocochlear nerve. CO5- U (16)

Or

(b) Explain the structure and functional similarities in gustation and olfaction. CO5- U (16)