**Mid Term Assignment (2020)**

**Course Title: Basic Physiology (DT– 2nd) Instructor: Dr. Irfan Ali Khan**

**Multiple Choice Questions Time: 48 hours**

**Class Code. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name/Class Roll no: MAHNOOR KHATTAK (16185) Note:**

* **Attempt all questions from this section. Select the best answer from given choices.**
* **Use Blue / Black Ink only. Do not use red color.**
* **Tick or encircle only one option in each given question.**

It’s an open book Conceptual Assignment paper. Time to Use your brain now.

1. **A short Gap in the myelin sheath around a nerve fiber is called (Answer : C)**
2. Dendrite
3. Axon terminal
4. Node of Ranvier
5. None of these
6. **The maximum amount of carbon dioxide in the human body is transported as**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Answer : A)
7. Bicarbonate
8. Carbide
9. Amylase
10. None of the above
11. **The lungs are protected by\_\_\_\_\_\_\_\_\_\_\_ (Answer : A)**
12. Ribcage
13. Sternum
14. Backbone
15. All of the above
16. **The three different cells found in the stomach (Answer : D)**

a) Chief cells, renal cells, nephron

b) Renal cells, mucous cells, hepatic cells

c) Nephrons, hepatic cells, parietal cells

d) Chief cells, parietal cells, mucous cells

1. **For action potential to occur, (Answer: C)**
2. The stimulus should reach or exceed threshold
3. Na+ influx must exceed K+ efflux
4. Both A & B
5. None of these
6. **During rising phase of action potential, (Answer : A)**
7. Voltage gated Na+ channels open
8. Voltage gated K+ channels open
9. Voltage gated Na+ channels close
10. Voltage gated K+ channel close

**Stay home, stay Safe**

1. **The movement of an esophagus to help the food down the GI tract \_\_\_\_\_\_\_\_\_\_ (Answer : C)**

a) Mastication

b) Emulsification

c) Peristalses

d) Ejection

1. **Simple diffusion is \_\_\_\_\_\_\_\_. (Answer: B)**
2. Movement of molecules against the conc. gradient
3. Movement of molecules down the conc. gradient
4. Both A & B
5. None of these
6. **97% of Oxygen is carried in blood from lungs is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Answer: B)**
7. Bound to Sulphate ion
8. Bound to Hemoglobin
9. Dissolved in plasma
10. All of these
11. **Intrinsic factor secreted in stomach helps in(Answer: C)**
12. Absorption of vitamin D
13. Absorption of vitamin K
14. Absorption of vitamin B12
15. Removal of vitamin B12

**Midterm Assignment(2020)**

**Course Title: Basic Physiology (DT- 2nd) Instructor: Dr. Irfan Ali Khan**

**Time: 72 Hours A Section 2**

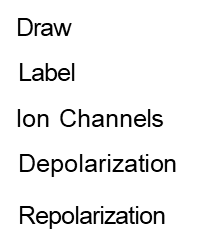
**Name: MAHNOOR KHATTAK Class/Roll.no: 16185**

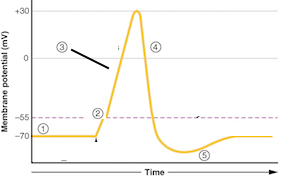
**Note:**

* **Attempt all questions from this section.**
* **Use only Blue / Black Ink other than diagrams**
* **Answer Briefly and to the point, avoid un-necessary details**

1. **Draw and Label the Action Potential in a large myelinated nerve fiber. Which ion channels are involved in its different stages?**

**Key points:**





1. **What is the role of oxygen, carbon dioxide and hydrogen ions in control of respiration? Marks 10**

**SECTION 2**

**Answer 1:**

**As an action potential travels down an axon there is a change in polarity across the membrane of the axon. In response to a signal from another neuron, sodium (Na+) and potassium (K+) gated ion channels open and close as the membrane reaches its threshold potential. Na+ channels open at the beginning of the action potential, an Na+ moves into the axon, causing depolarization, repolarization occurs when K+ channels open and K+ moves out of the axon, creating a change in polarity between the outside of the cell and the inside. The impulse travels down the axon in one direction only, to the axon terminal where it signals other neurons.**

1. **Stimulus**
2. **Threshold**
3. **Depolarization**
4. **Repolarization**
5. **Hyperpolarization**
6. **Stimulus starts change in action potential and sufficient current must be administered to the cell to raise the voltage above the threshold voltage to start membrane depolarization.**
7. **Depolarization is caused by a rapid rise in membrane potential opening of Na+ channels in cellular membrane, resulting in a large influx of Na+ ions.**
8. **Membrane repolarization results from Na+ channels inactivation as well as large efflux of potassium ions resulting from activated K+ channels.**
9. **Hyperpolarization is a lowered membrane potential caused by the efflux of K+ ions and closing of the K+ channels.**

**Answer 2:**

**The major activity of the lungs is the process of respiration, the process of gas exchange. The function of respiration is to provide oxygen to body during cellular respiration and eliminate CO2**

**ROLE OF OXYGEN**

**Carbon dioxide is more soluble in blood than oxygen. Oxygen is transported in blood but O2 is not very soluble in blood. Small amount of O2 is dissolve in blood and transported in bloodstream. Only 1.5% of the total.**

**Majority of O2 is bound to hemoglobin is composed of four iron containing rings structure (hemes). Each iron atom can bind and release an O2 molecules.**

**Hemoglobin permits transport of 0.2 milliliter of O2 per milliliter of blood. Hemoglobin is partially saturated when only some have units are bound to O2.**

**As the potential pressure of O2 increase the more readily hemoglobin binds to O2**

**On the other hand temperature, pH and partial pressure of CO2 can inhibit the binding of hemoglobin and O2 as well. Fetal hemoglobin has different structure than adult hemoglobin, which results that fetal hemoglobin has greater affinity for O2 that adult hemoglobin.**

**ROLE OF CARBON DIOXIDE**

**Carbon dioxide is transported in blood by three different mechanisms as dissolved carbon dioxide, as bicarbonate, or as Carbaminohemoglobin largest amount of CO2 transported is as bicarbonate formed in erythrocytes.**

**CO2 combined with water with carbonic anhydrase (enzyme), which forms carbonic acid, which spontaneously dissociates into bicarbonate and H+ ions.**

**As bicarbonate builds in erythrocytes, moved into plasma in exchange for chloride ions by a mechanisms called chloride shift.**

**Carbon dioxide diffuses out of erythrocytes and across respiratory membrane into the air. CO2 binds directly to hemoglobin to form carbaminohemoglobin influence how readily hemoglobin binds**

**CO2. Less saturated hemoglobin lower**

**ROLE OF HYDROGEN IONS**

**Metabolism generates protons (H+) which are extruded to intestinal fluid surrounding cells and eventually enter the blood by diffusion. As blood flows through the tissues, a fraction of the oxy-hemoglobin (O2-Hb) loses its oxygen to become deoxy-Hb. Deoxy-Hb has a much higher affinity for H+ and thus binds most of the newly generated H+.**

**The H+ reacts with the bicarbonate (HCO3-) in the blood to give carbonic acid which dissociates to H2O + CO2. The CO2 diffuses into the alveoli to be expired. Normally all of the H+ will be removed by this process and none will appear in the arterial blood.**

**The partial pressure of carbon dioxide will rise and the arterial**

**H+ concentration will rise. Increased arterial H+**

**Concentration due to CO2 retention is called respiratory**

**Acidosis.**

**If aperson is hyperventilating, then partial pressure of CO2**

**and H+ concentration will decrease producing respiratory**

**alkalosis. S**

**The end**