- 1. DESCRIPTION: Understand the anatomy and physiology of the human body systems below.

 A TEAM OF UP TO: 2

 APPROXIMATE TIME: 50 Minutes
- 2. EVENT PAPAMETERS: Each team may bring one 8.5" x 11" sheet of paper that may contain information on both sides in any form and from any source along with 2 non-programmable, non-graphing calculators. The sheet may not be contained in a sheet protector or any annotations affixed but MAY be laminated.
- 3. THE COMPETITION: Participants will complete a written test limited to the following topics. Topics listed in *italics* will only be assessed at the National Tournament
 - a. RESPORATORY SYSTEM
 - i. Anatomy and functions of the reparatory system
 - ii. Mechanisms of pulmonary ventilation
 - iii. Patterns of breathing
 - iv. Measures of pulmonary ventilation
 - v. Gas exchange and O2 transport including oxygen disassociation curves
 - vi. Effects of exercise and high altitude on the reparatory system
 - vii. Additional diseases/disorders of: tuberculosis, pulmonary edema, Pleurisy, small cell and nonsmall cell Lung Cancer
 - viii. Blood chemistry and the respiratory rhythm
 - ix. Regulation of the respiratory system
 - x. Ability to read a spirogram as related to pulmonary ventilation
 - xi. Treatments and/or preventions (drugs, surgery, etc.) for ALL listed conditions

b. DIGESTIVE SYSTEM

- i. Anatomy and functions of the digestive system
- ii. Basic anatomy of the component parts o the alimentary canal and accessory organs of digestion
- iii. Anatomy of the four layers of the wall of the alimentary canal
- iv. Comparison o the lining of the esophagus, stomach, small intestine and large intestine
- v. Compare and contrast mechanical and chemical digestion
- vi. Physiology of chemical digestion of proteins, fats, carbohydrates
- vii. Effects of exercise and obesity on the digestive system
- viii. The diseases on each level from the cell to the whole person as listed: stomach and duodenal ulcers, cancers of the digestive system, diarrhea, lactose intolerance, hepatitis, appendicitis
 - ix. Additional diseases; diverticular disease, GERD, Crohn's Disease and celiac disease
 - x. The function of the liver and pancreas in the digestive system; including Kupffer cell function
 - xi. Treatments and/or prevention (drugs, surgery, etc.) for ALL listed conditions listed above.

c. IMMUNE SYSTEM

- i. Anatomy and functions of the immune system
- ii. Anatomy and physiology of nonspecific defense system
- iii. Anatomy and physiology of specific defense system
- iv. The physiology of the immune response and allergic reactions
- v. Rome of the Lymph System in immunity
- vi. Disorders: immunodeficiencies (AIDS) autoimmune diseases (multiple sclerosis, rheumatoid arthritis & Graves Disease), and hypersensitivities (contact dermatitis)
- vii. Types of Organ Transplants and Prevention of Rejection (allograft and autograft)
- viii. Additional disorder: systemic lupus erythematosus and psoriatic arthritis
- ix. Treatments and/or prevention for ALL listed conditions.
- 4. SCORING: High score wins. Selected questions will be used to break ties.