

PG Degree Regular/Supplementary Examinations in Physiology (M.D)**PAPER I – Basic sciences as applied to the subject (General and cellular physiology including genetic basis and historical perspectives)****Time: Three Hours****Maximum: 100 Marks****Essay:****(20)**

1. Discuss role of ion channels in health and disease.

Short Essays**(8 x10 = 80)**

2. Molecular basis of cellular signaling
3. Structural modification of nephrons in relation to its functions
4. Signal transduction by G proteins
5. Contributions of Sir Charles Scott Sherrington to physiology
6. Physiological basis of Gene therapy
7. Theories of aging
8. A 12 month old baby was brought to the paediatrician for having recurrent cough and foul smelling stools. The baby was found to be underweight for the age. Chest x-ray revealed a hyper inflated lung with small airway obstruction. Diagnosis of a congenital condition was arrived at.
 - a) What would be the clinical condition
 - b) What is the reason for the recurrent cough and foul smelling stools
 - c) Why is the lung hyper inflated
 - d) Discuss the underlying fundamental abnormality for the recurrent symptoms
9. A 40 year old man was admitted to the hospital with severe gastric pain. He had persistent nausea and vomiting for the last four days. An upper GI endoscopy revealed a pyloric ulcer and a gastric outlet obstruction. On examination he was having orthostatic hypotension. Ventilatory rate was also decreased. Blood investigations revealed decreased serum Potassium and Chloride. Clinical diagnosis was confirmed from arterial blood gas analysis.
 - a) What would be the clinical diagnosis
 - b) What is the physiological basis of the gastric pain?
 - c) Why does he have orthostatic hypotension?
 - d) What is the physiological basis of treatment adopted?