

**POSTGRADUATE INSTITUTE OF MEDICINE**  
**UNIVERSITY OF COLOMBO**

**SELECTION EXAMINATION IN MD (RESTORATIVE DENTISTRY)**  
**OCTOBER 2021**

**Date:** 17<sup>th</sup> December 2021

**Time:** 9.00 a.m. -11.00 a.m.

**PAPER I**

Answer two (02) questions from each part.  
Answer each question in a separate book.

**PART A (GENERAL ANATOMY)**

1.

- 1.1 Describe the autonomic innervation of the lacrimal gland (50 marks)
- 1.2 State **three (03)** parasympathetic injuries in the head and neck region indicating their clinical presentation (25 marks)
- 1.3 Explain the anatomical basis of Frey's syndrome (25 marks)

2.

- 2.1 Describe the development of the right atrium (45 marks)
- 2.2 "The site of origin of the recurrent laryngeal nerve is different on the left and right side of the body" Explain the embryological basis of the above statement (20 marks)
- 2.3 Describe the embryological basis of Fallot's tetralogy (35 marks)

3.

- 3.1 List the layers in the pharyngeal wall (10 marks)
- 3.2 Describe the nerve supply to the pharynx (35 marks)
- 3.3 List the muscles of the tongue (15 marks)
- 3.4 Explain how the muscles mentioned in 3.3 help in the movement of the tongue (40 marks)

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**PART B (DENTAL ANATOMY)**

- 4.
- 4.1. Name the functional stages of the life cycle of cells in the inner dental epithelium (10 marks)
- 4.2 State the function/s of the cells at each stage mentioned in 4.1 (10 marks)
- 4.3. During the maturation stage of amelogenesis, state the changes that take place in the
- 4.3.1. structure and functions of ameloblasts (25 marks)
- 4.3.2 structure of enamel (20 marks)
- 4.4. Explain how the knowledge of enamel structure is important in clinical dentistry (15 marks)
- 4.5. State **four (04)** structural adaptations seen in the enamel in order to withstand functional demands (20 marks)
- 5.
- 5.1 List **four (04)** common factors that alter the cementum formation and state how they affect its structure (20 marks)
- 5.2 “Cementum is less readily resorbed, a feature that is important for permitting orthodontic tooth movements”. State **four (04)** possible reasons for the above (25 marks)
- 5.3 Describe the functional significance of the post-eruptive tooth movement (30 marks)
- 5.4 Explain the reasons why root is more prone to resorb at apical region (25marks)

- 6.
- 6.1 Describe the structure of a myoepithelial cell (20 marks)
- 6.2 List the functions of myoepithelial cells? (30 marks)
- 6.3 State the differences between
- 6.3.1. woven bone and lamellar bone (20 marks)
- 6.3.2. cementocytes and osteocytes (10 marks)
- 6.4. Describe the clinical significance of pulp stem cells (20 marks)

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DECEMBER 2021**

Date: 17<sup>th</sup> December, 2021

Time: 11.45 a.m.- 1.45 p.m.

**PAPER- II**

**Answer two questions from each part.**

**Answer each question in a separate book.**

**PART A (PHYSIOLOGY)**

1. A 60-year-old diabetic patient who has good glycaemic control with oral hypoglycaemic agents collapses on the dental chair during a procedure. The patient has been waiting 5 hours for treatment.
  - 1.1. Explain the biological process of the above scenario. (40 marks)
  - 1.2. Describe the rationale of the emergency management of this patient. (30 marks)
  - 1.3. Outline the action of insulin in glucose homeostasis. (30 marks)
  
2. Explain the physiological basis of the following
  - 2.1. Fever is caused by bacterial infections. (40 marks)
  - 2.2. Proton pump inhibitors are used in the treatment of peptic ulcers. (30 marks)
  - 2.3. Carbon monoxide poisoning causes hypoxia. (30 marks)
  
3. A 48-year-old patient with an atrial septal defect from childhood develops right ventricular failure gradually over the years. He was also found to be cyanosed and polycythaemic.

Explain the mechanisms that lead to,

  - 3.1. Right ventricular failure (50 marks)
  - 3.2. Polycythaemia and cyanosis (50 marks)

Contd.../2

**PART B (PATHOLOGY)**

4.
  - 4.1. List four (04) features that can be used to differentiate a malignant tumour from a benign tumour (20 marks)
  - 4.2 List four (04) classes of normal regulatory genes that are principal targets of cancer-causing mutations (20 marks)
  - 4.3 Indicate one (01) example for each of the four classes of genes mentioned in 4.2 (10 marks)
  - 4.4 Outline the steps involved in chemical carcinogenesis (40 marks)
  - 4.5 Mention one (01) tumour produced by each of the following chemicals
    - 4.5.1 Aflatoxin B (05 marks)
    - 4.5.2 Nitrites/Nitrosamines (05 marks)
5.
  - 5.1 What are the three (03) pathological events that take place in acute inflammation? (15 marks)
  - 5.2 Outline the process of phagocytosis and intracellular destruction of microbes (25 marks)
  - 5.3 List the steps involved in producing fever due to acute inflammation (30 marks)
  - 5.4 Describe the histopathological features that you would observe in a lesion which forms due to human herpes virus type 1 (HHV1) infection (30 marks)
6.
  - 6.1. List five (05) causes of cell injury (10 marks)
  - 6.2. What do you understand by the terms "Necrosis" and "Apoptosis"? (22 marks)
  - 6.3. Outline the mechanisms of apoptosis (32 marks)
  - 6.4. List six (06) morphological presentations of necrosis with one (01) example each (36 marks)