

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO
SELECTION EXAMINATION IN MD (ORTHODONTICS)
OCTOBER 2009

Date : 5th October 2009

Time : 2.00 p.m. – 5.00p.m.

PAPER 1.2

Answer three (03) questions from each part.

Answer each question in a separate book.

Part A (General Anatomy)

1.
 - 1.1. Describe the structure of the temporomandibular joint including its nerve supply and blood supply. (65 marks)
 - 1.2. Discuss its movements. (25 marks)
 - 1.3. List the medical relations of the joint. (10 marks)
2.
 - 2.1. Illustrate the triangles of the neck using a labelled diagram. (20 marks)
 - 2.2. List the cranial nerves present in each of the triangles mentioned in 2.1. (30 marks)
 - 2.3. Describe the course in the neck, of **one** of the cranial nerves mentioned in 2.2. (50 marks)
3.
 - 3.1. List the muscles of the soft palate. (20 marks)
 - 3.2. Give an account of the attachments and actions of each muscle mentioned in 3.1. (60 marks)
 - 3.3. Explain briefly the anatomical basis of the clinical/functional problems commonly seen in patients with clefts of the soft palate. (20 marks)

4.
 - 4.1. Describe how sutures help in the growth of the craniofacial skeleton. (60 marks)
 - 4.2. What effects would you expect to see in the face with an early fusion of these sutures? (40 marks)

Part B (Dental Anatomy)

5.
 - 5.1. List the differences between the adult mandible and that of a neonate. (20 marks)
 - 5.2. Explain the mechanisms responsible for the postnatal growth of the mandible. (50 marks)
 - 5.3. List the conditions that may affect the growth of the mandible and state the effects. (30 marks)
6.
 - 6.1. List the components of the periodontium. (10 marks)
 - 6.2. Describe the structural and compositional characteristics of the components mentioned in 6.1. which are related to their function. (70 marks)
 - 6.3. Indicate how you would utilize the above information in clinical practice. (20 marks)
7.
 - 7.1. Describe the role of the periodontal ligament in tooth eruption. (50 marks)
 - 7.2. Explain why teeth continue to erupt after they have reached their functional position. (30 marks)
 - 7.3. List the causes of delayed eruption. (20 marks)

- 8.
- 8.1. Describe how the normal occlusion of the deciduous dentition differs from that of the permanent dentition. (20 mark)
 - 8.2. Explain the process of transition from the normal occlusion of the deciduous dentition to that of the permanent dentition. (40 marks)
 - 8.3. List common deviations that could be seen in the process mentioned in 8.2. (20 marks)
 - 8.4. What is dental age and indicate how this is useful in clinical Practice ? (20 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
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SELECTION EXAMINATION IN MD (ORAL SURGERY),
MD (RESTORATIVE DENTISTRY), MD (ORTHODONTICS)
OCTOBER 2009

Date : 6th October 2009

Time : 9.00 a.m. -12.00 noon.

PAPER 1I

Answer three (03) questions from each part.
Answer each question in a separate book.

Part A (Physiology)

1.
 - 1.1 List the functions of blood. (10 marks)
 - 1.2 Briefly describe the haemopoiesis. (30 marks)
 - 1.3 List the changes that could occur in whole blood during storage. (30 marks)
 - 1.4 Write a brief account of haemophilia. (30 marks)

2.
 - 2.1 List five (05) physiological functions of plasma calcium. (05 marks)
 - 2.2 Describe the physiological mechanisms of the following hormones involved in calcium homeostasis.
 - 2.2.1. Parathyroid hormone (PTH) (30 marks)
 - 2.2.2. Calcitonin (15 marks)

- 2.3. Explain the mechanisms of bone remodeling in each of the following.
- 2.3.1. Paget's disease of bone (10 marks)
 - 2.3.2. Orthodontic tooth movement. (15 marks)
 - 2.3.3. Periodontal disease. (15 marks)
- 2.4. Outline the action of bisphosphonates and its clinical implications. (10 marks)
- 3.
- 3.1. List the stages of swallowing. (15 marks)
 - 3.2. Describe the physiological processes involved in the stages of swallowing. (70 marks)
 - 3.3. List the causes of dysphagia. (15 marks)
- 4.
- 4.1. Define the term glomerular filtration rate (GFR) (05 marks)
 - 4.2. List four factors that determine GFR in a healthy adult. (10 marks)
 - 4.3. Describe the physiological basis of the changes in GFR that you would observe in the following conditions :
 - 4.3.1. In severe haemorrhage. (25 marks)
 - 4.3.2. Ureteral obstruction. (20 marks)
 - 4.3.3. Liver disease. (20 marks)
 - 4.4. Explain the physiological basis of hypertension observed in a patient with renal artery stenosis. (20 marks)

- 5.
- 5.1. Explain the term “Shock” in clinical practice. (10 marks)
- 5.2. List five (05) types of shock with two clinical examples for each type mentioned. (20 marks)
- 5.3. List the stages of shock and indicate the clinical significance. (30 marks)
- 5.4. Describe the pathogenesis of shock as a result of sepsis. (40 marks)
- 6.
- 6.1. “Metastasis of a malignant neoplasm is a complex process”. Explain the above statement. (60 marks)
- 6.2. Explain as to why some tumours have selective sites for metastasis. (20 marks)
- 6.3. Briefly explain the process of malignant cachexia. (20 marks)
- 7.
- 7.1. Define the term “antibiotic” (10 marks)
- 7.2. List five (05) different groups of antibacterial agents with one example for each group. (20 marks)
- 7.3. Briefly explain the mode of action of antibiotics using examples. (25 marks)
- 7.4. Give possible causes for failures in antibiotic treatment. (25 marks)
- 7.5. List (i) one indication
(ii) one contraindication / precaution
In each of the following agents when used in clinical practice.
- (a) Amoxicillin (b) Metranidazole (c) Doxycycline
(b) Clindamycin (20 marks)

- 8.
- 8.1. Define the term “thrombosis” (05 marks)
 - 8.2. Briefly explain the pathogenesis of thrombosis. (30 marks)
 - 8.3. List the predisposing factors for thrombosis. (20 marks)
 - 8.4. How would you prevent thrombosis in a high risk patient ? (25 marks)
 - 8.5. Compare and contrast a thrombus with a postmortem clot. (20 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
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SELECTION EXAMINATION IN MD (ORTHODONTICS)
OCTOBER 2010

Date : 6th October 2010

Time : 2.00 p.m. – 5.00 p.m.

PAPER 1.2

Answer three (03) questions from each part.
Answer each question in a separate book.

PART A (General Anatomy)

1.
 - 1.1. Describe the structure of the lateral wall of the nose. (80 marks)
 - 1.2. Discuss its blood supply and sensory innervation. (20 marks)

2.
 - 2.1. Describe the macroscopic anatomy of the oropharynx including the palatine tonsil. (80 marks)
 - 2.2. Explain the first stage of deglutition. (20 marks)

3.
 - 3.1. Describe the development of the face. (60 marks)
 - 3.2. Discuss the embryological basis of its congenital defects. (40 marks)

4.
 - 4.1. Give an account of the muscles of facial expression. (70 marks)
 - 4.2. State how these muscles could be used to examine the facial nerve. (30 marks)

PART B (Dental Anatomy)

- 5.
- 5.1 Explain briefly how the mucosal structure of the hard palate is adapted to perform its functions. (40 marks)
- 5.2 State how the mucosa of the floor of the mouth is modified from that of the palate. (30 marks)
- 5.3 State the clinical significance of the modifications mentioned in 5.2 (30 marks)
- 6.
- 6.1 State the different types of tooth movements that are taking place in a 10 year old boy, with examples. (30 marks)
- 6.2 Describe the associated changes that occur in the tooth and its surrounding tissue during each movement mentioned in 6.1. (50 marks)
- 6.3 State how the above knowledge could help in clinical practice. (20 marks)
- 7
- 7.1 Describe the postnatal growth of the middle third of the facial skeleton. (50 marks)
- 7.2 State the clinical conditions that may affect this growth. (20 marks)
- 7.3 Discuss briefly the possible effects due to the conditions mentioned in 7.2. (30 marks)
- 8.
- 8.1 Explain briefly the growth and development of alveolar bone. (40 marks)
- 8.2 Indicate the clinical conditions that may affect alveolar bone and their possible effects. (30 marks)
- 8.3 Compare and contrast the principal features of alveolar bone and cellular cementum. (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
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SELECTION EXAMINATION IN MD (ORAL SURGERY),
MD (RESTORATIVE DENTISTRY), MD (ORTHODONTICS)
OCTOBER 2010

Date : 7th October 2010

Time : 2.00 p.m. – 5.00 p.m.

PAPER 1I

Answer three (03) questions from each part.
Answer each question in a separate book.

PART A (Physiology)

1.
 - 1.1. Define the term haemostasis ? (05 marks)
 - 1.2 Explain the factors that prevent blood clot formation within the normal vascular system. (30 marks)
 - 1.3 Explain the physiological significance of the following tests of haemostasis, giving examples of clinical conditions.
 - 1.3.1 Bleeding time (25 marks)
 - 1.3.2. Prothrombin time (20 marks)
 - 1.3.3 Activated partial thromboplastin time (APTT) (20 marks)
2.
 - 2.1 Define the following terms:
 - 2.1.1 Systolic blood pressure
 - 2.1.2 Diastolic blood pressure
 - 2.1.3 Mean arterial pressure
 - 2.1.4. Ejection fraction (10 marks)

- 2.2 Explain the physiological basis of giving angiotensin converting enzyme inhibitors (ACEIs) to patients with hypertension. (30 marks)
- 2.3 Describe the physiological mechanisms responsible for regulation of blood pressure in the following conditions.
- 2.3.1 Moving from supine to erect position (35 marks)
- 2.3.2. Excessive salt intake (25 marks)
- 3.
- 3.1.
- 3.1.1 Hyperventilation causes carpopedal spasms. (25 marks)
- 3.1.2 Increased haemorrhagic tendency in obstructive jaundice. (25 marks)
- 3.1.3 Kussmaul's breathing in diabetes ketoacidosis. (25 marks)
- 3.1.4. Anaemia in chronic renal failure. (25 marks)
- 4.
- 4.1. Define the term oedema. (10 marks)
- 4.2 Describe the physiological basis of oedema in the following conditions.
- 4.2.1. Right heart failure (25 marks)
- 4.2.2. Cirrhosis (20 marks)
- 4.2.3. Lymphatic obstruction (25 marks)
- 4.2.4 Nephrotic syndrome (20 marks)

PART B (Pathology)

- 5.
- 5.1 Define the term "Neoplasm" (20 marks)
 - 5.2 Name two (02) neoplasms each, arising from
 - 5.2.1 Muscles (02 marks)
 - 5.2.2 Nerves (02 marks)
 - 5.2.3 Blood vessels (02 marks)
 - 5.2.4 Bone (02 marks)
 - 5.2.5 Cartilage (02 marks)
 - 5.3 "The p53 Gene is the guardian of the genome". Justify this statement. (35 marks)
 - 5.4 Describe the steps in tumour invasion and metastasis. (35 marks)
- 6.
- 6.1 What is suppurative inflammation ? (20 marks)
 - 6.2 List the common bacteria causing suppurative inflammation in wounds. (30 marks)
 - 6.3 Describe the sequelae of suppurative inflammation. (50 marks)
- 7.
- 7.1 Describe the basic stages in the fracture healing. (50 marks)
 - 7.2 List the factors that adversely affect fracture healing. (10 marks)
 - 7.3. List the common complications that could occur in fracture healing. (10 marks)
 - 7.4 Describe briefly the pathophysiological mechanism of 'Distraction Osteogenesis' of craniofacial skeleton. (30 marks,

- 8.
- 8.1. What is an embolus ? (10 marks)
 - 8.2 Name Four (04) common types of emboli. (20 marks)
 - 8.3 Describe the effects of pulmonary embolism. (50 marks)
 - 8.4 Explain the role of therapeutic embolisation in clinical practice. (20 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
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SELECTION EXAMINATION IN MD (ORTHODONTICS)

OCTOBER 2011

Date ; 12th October 2011

Time ; 1.00 p.m.– 4.00p.m.

PAPER 1.2

Answer three (03) questions from each part.

Answer each question in a separate book.

PART A (GENERAL ANATOMY)

1. In respect of the infratemporal fossa
 - 1.1. Name the bones that form the boundaries (30 marks)
 - 1.2. List the nerves found in it (20 marks)
 - 1.3. Describe the course and distribution and the clinical significance of the nerves mentioned in 1.2 (50 marks)

2.
 - 2.1. Describe the macroscopic appearance of the internal surface of the pharynx and state the clinical relevance. (40 marks)

 - 2.2. Describe the arrangement and attachments of the muscles forming the wall of the pharynx and discuss their innervations (60 marks)

3.
 - 3.1. Critically discuss the major growth theories in order to explain the primary determinant of craniofacial growth (60 marks)

 - 3.2. State how this knowledge would help in the clinical practice. (40 marks)

4.
 - 4.1. Describe the development of the hyoid bone (30 marks)
 - 4.2. List the structures that are attached to the hyoid bone. (30 marks)
 - 4.3. State the precise site of attachment of the above structures to the hyoid bone (40 marks)

PART B (DENTAL ANATOMY)

5.
 - 5.1. State the components and their functions of the enamel organ at the "late bell" stage. (20 marks)
 - 5.2. Describe the role of the enamel organ after the formation of the crown of an upper 1st permanent molar tooth. (50 marks)
 - 5.3. List three (03) consequences that can occur due to malfunction of the enamel organ in the stage mentioned in 5.2 and indicate their clinical relevance. (30 marks)

6. Describe the structure of the following indicating the importance of this knowledge for clinical practice.
 - 6.1. Dentinoenamel junction (35 marks)
 - 6.2. Mucous membrane of the dorsum of the tongue (40 marks)
 - 6.3. Cementoenamel junction (25 marks)

- 7.
- 7.1. Describe the tooth eruption and its stages (50 marks)
 - 7.2. Indicate the factors that influence tooth emergence (30 marks)
 - 7.3. State the nonsuccedaneous teeth and how the space is secured for them (20 marks)

- 8
- 8.1. State the origin of the cells of the periodontal ligament (20 marks)
 - 8.2. List the functions of the periodontal ligament (20 marks)
 - 8.3. Discuss the statement “Orthodontics tooth movement is primarily a periodontal ligament phenomenon” (60 marks)

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SELECTION EXAMINATION IN MD (ORAL SURGERY),
MD (RESTORATIVE DENTISTRY), MD (ORTHODONTICS)
OCTOBER 2011

Date : 13th October 2011

Time : 9.00 a.m. – 12.00 noon

PAPER 1I

Answer three (03) questions from each part.

Answer each question in a separate book.

PART A (PHYSIOLOGY)

1. A 60 year old woman was suffering from an endocrine disorder.

She was found to have hyperpigmentation of the skin, lips, oral mucosa and gingivae

Her blood pressure was 80/50 mmHg

Her serum Na⁺ was 130 mEq/L, K⁺ 6.5 mEq/L and HCO₃⁻ 20 mEq/L

She had lost 6 kg of body weight during past few months

- 1.1. What is the possible endocrine disorder this woman is suffering from? (05 marks)
- 1.2. List three (03) groups of hormones secreted by the affected endocrine gland and mention one (01) example for each group (15 marks)
- 1.3. Explain the physiological basis of
- 1.3.1. Hyperpigmentation of the skin, lips, oral mucosa and gingivae (20 marks)
- 1.3.2. Blood pressure of 80/50 mmHg (20 marks)
- 1.3.3. Serum HCO₃⁻ 20 mEq/L (20 marks)
- 1.3.4. Weight loss (20 marks)

2. Explain the physiological basis of the following
 - 2.1. A patient with chronic renal failure presents with osteomalacia (30 marks)
 - 2.2. Acute obstruction in the urinary tract leading to reduction in glomerular filtration rate (20 marks)
 - 2.3. Polyurea in patients with diabetes mellitus (25 marks)
 - 2.4. Primary hyperparathyroidism leading to hypercalcaemia and hypophosphataemia (25 marks)
3.
 - 3.1. Explain the term “reflex” (10 marks)
 - 3.2. Explain the physiological basis of the following reflexes giving examples
 - 3.2.1. Stretch reflex (40 marks)
 - 3.2.2. Withdrawal reflex (30 marks)
 - 3.2.3. Neurohumoral reflex (20 marks)
4. Explain the physiological basis of
 - 4.1. Intermittent claudication (30 marks)
 - 4.2. Referred pain (30 marks)
 - 4.3. Cyanosis in tetralogy of Fallot (40 marks)

PART B (PATHOLOGY)

5.
 - 5.1. What are the cardinal signs of acute inflammation ? (10 marks)
 - 5.2. Describe the underlying pathological process for each of the signs mentioned in 5.1 (40 marks)
 - 5.3. Explain the sequelae of acute inflammation (50 marks)

6.
 - 6.1. Define the term “neoplasia” (10 marks)
 - 6.2. Explain the process of “multistage carcinogenesis” (40 marks)
 - 6.3. Describe the steps involved in metastasis of a malignancy (50 marks)

7.
 - 7.1. Define the term “infarct” (10 marks)
 - 7.2. Mention the characteristics of red and white infarcts (20 marks)
 - 7.3. List the factors that influence in the development of an infarct (30 marks)
 - 7.4. Describe briefly the consequences and complications of myocardial infarction (40 marks)

8.
 - 8.1. List different types of “hypersensitivity reactions” (10 marks)
 - 8.2. Outline the basic immune mechanisms involved in each type mentioned in 8.1 (60 marks)
 - 8.3. Give two (02) examples of diseases for each type you mentioned in 8.1 (30 marks)