



Tanta University
Faculty of Medicine
Department of Physiology.

Examination for (MSC Orthopedic)
Course Title: Physiology
Total Assessment Marks:50

Course Code:
TMED.03:A12
Time Allowed:
Physio.Bio.+
Pharma
Three Hours

Date:8/4/2013

Term : Final

All the questions are to be answered:-

Q1- State: Functions of the thalamus and thalamic syndrome. (15 marks)

Q2- Explain briefly: The roles of different hormones affecting the development, growth & proper functioning of bone. (10 marks)

Case study: An 18-month-old boy presents with delayed dentation, short stature, difficulty and painful walking, and bowing of the legs. In vitamin D deficiency, which of the following is defective in bone?

- Bone formation by osteoblasts.
- The composition of bone collagen.
- Calcification of the bone matrix.
- Bone resorption by osteoclasts.
- The blood supply to the haversian canals.

Explain your answer (10 marks)

Answer the following MCQ by the most probable one choice: (15 marks)

Q.1. The thrombocytes are:

- Is about 250 /mm³.
- Formed in the lymphatic organs from the megakaryocytes.
- Help in blood haemostasis.
- They have life span 120 days.
- Is about 50 /mm³.

Q.2. Erythropoietin hormone:

- Secreted from kidney in hypoxia.
- Secreted from kidney when oxygen increase at tissue.
- Decrease RBCs production.
- Stimulates WBCs formation.
- Secreted from liver.

Q.3. The neuromuscular transmitter at the motor endplate is:

- Adrenaline.
- Atropine.
- Noradrenalin.
- Adrenaline.
- Acetyl choline.

Q.4. Anemic hypoxia is caused by:

- CO -poisoning.
- Polycythemia.
- Living at high altitude.
- Cyanide poisoning.
- Alcohol poisoning.

Q.5. The paracrine secretion responsible for inhibiting gastric acid secretion is:

- Histamine.
- Somatostatin.
- Acetylcholine.
- Pepsin.
- Gastrin.

Q.6. The distribution of the body fluids is as follows:

- Intracellular fluid constitutes the largest compartment.
- Interstitial fluid is about 3 litres.
- Intravascular fluid is about 5 litres.
- Total body water is about 5 litres.
- Intravascular fluid constitutes the largest compartment.

Look in the back →

Q.7. The secretion of ACTH is correctly described in which of the following statements?

- a. It shows circadian rhythm in humans.
- b. It is decreased during periods of stress.
- c. It is inhibited by aldosterone.
- d. It is stimulated by glucocorticoids.
- e. It is stimulated by epinephrine.

Q.8. Myxedema is:

- a. Decrease T3 and T4 in infants.
- b. Decrease T3 and T4 in adult.
- c. Decrease GH in infants.
- d. Decrease cortisol hormone.
- e. Increase cortisol hormone.

Q.9. Referred pain has all these characteristics EXCEPT :

- a. Originates in somatic structures.
- b. May appear to come from the left shoulder and upper arm if the source of pain is the heart.
- c. May be blocked if local anaesthetic is applied to the area to which the pain is referred.
- d. Has clinical significance.
- e. Arises in an area sharing the same segmental innervations as the organ causing the pain.

Q.10. Systolic blood pressure:

- a. Accurately measured by palpation.
- b. Is indicated at the point of disappearance of sound during auscultatory measurement.
- c. Is the primary determinant of coronary blood flow.
- d. Is primarily dependent on left ventricular output.
- e. Is higher in the pulmonary vein than in pulmonary artery.

Q.11. Irritation of the peritoneum covering the diaphragm produces pain which is usually referred to :

- a. Head region.
- b. Shoulder.
- c. Anterior abdominal wall.
- d. Skin between 11 th & 12 th ribs.
- e. Inguinal region.

Q.12. Which of the following is true about the level of ionized calcium in the blood:

- a. Its normal concentration lies between 4-5 mmol/L.
- b. It regulates the formation of 25 - hydroxycholecalciferol in the liver
- c. Is controlled mainly by the action of calcitonin.
- d. An increase in concentration increase the excitability of peripheral nerves.
- e. An increase in concentration stimulates release of calcitonin.

Q.13. In haemorrhagic shock all of the following occurs EXCEPT:

- a. Decreased circulating blood volume.
- b. Bradycardia.
- c. Inadequate tissue oxygenation.
- d. Sympathetic vasoconstriction.
- e. Cold sweating.

Q.14. Hypertension can be produced by any of the following EXCEPT:

- a. Renal ischemia.
- b. Weakness of the myocardium.
- c. Salt and water retention.
- d. Neurosis.
- e. Hypervolemia.

Q.15. Assuming production of a normal fixed acid load, what is this patient's acid-base status?

- a. Normal.
- b. Respiratory acidosis.
- c. Metabolic acidosis.
- d. Respiratory alkalosis.
- e. Metabolic alkalosis.

Oral exam will be on Sunday 21 April 2013 at 9 am in physiology department.

Chairman of Department

Prof Dr. Sahar elsawy





Tanta University
Faculty of Medicine
Department of Physiology.

Examination for (MSC Internal Medicine)
Course Title: Physiology
Total Assessment Marks:75

Course Code:
TMED.03:A01
Time Allowed:
Physio. + Bio.
Three Hours

Date:10/4/2013

Term : Final

All the questions are to be answered:-

Q1-Dicusse: Acid base balance and its functions tests

(20 marks)

Q2- Explain briefly:

- a) Glucocorticoids hormone, functions, control of secretion and its disorders. (10 marks)
b) Afferent impulses affecting heart rate. (20 marks)

Case study: A 46-year-old man presents to his physician with a 12-week history of headaches, mainly frontal, are worse in the morning and have begun to wake him at night. A trans - sphenoidal biopsy shows an infectious, chronic inflammatory process that is diagnosed as neurohypophysitis. Which one of the following best describe his urine?

- a. A higher than normal flow of hypotonic urine.
b. A higher than normal flow of hypertonic urine.
c. A normal flow of hypertonic urine.
d. A lower than normal flow of hypotonic urine.
e. A lower than normal flow of hypertonic urine.

Explain your answer

(10marks)

Answer the following MCQ by the most probable one choice: (15 marks)

Q.1. Surfactant:

- a. Increases surface tension of the fluid lining the alveoli.
b. Helps lung expansion.
c. Helps lung collapse.
d. Maintains a negative intrapleural pressure.
e. Is secreted by the pleura.

Q.2. Cyanosis is seen when the amount of:

- a. Deoxygenated Hb increases.
b. Deoxygenated Hb decreases.
c. Oxygenated Hb decreases.
d. Oxygenated Hb increases.
e. Percentage saturation of Hb decreased.

Q.3. Administration of atropine may produce:

- a. Weakness of skeletal muscle by blocking acetylcholine receptors in the motor endplate.

- b. Pupillary constriction (meiosis).
c. An increase in the heart rate at rest.
d. Excessive salivation.
e. Diarrhoea.

Q.4. Which of the following is a non-selective B adrenergic blocker:

- a. Butaxamine.
b. Phentolamine.
c. Phenoxybenzamine.
d. Atenolol.
e. Propranolol.

Q.5. Haemostasis involves all of the following processes EXCEPT:

- a. Vascular constriction.
b. Platelet aggregation.
c. Clot formation.
d. Plasmin formation.
e. Thrombin formation.

Look in the back →

Q.6. Diastolic pressure in the pulmonary artery is normally about:

- a. 8-10mm Hg.
- b. 20mm Hg.
- c. 30mm Hg.
- d. 60mm Hg.
- e. 80mm Hg.

Q.7. Most of the peripheral resistance to the flow of blood is present in:

- a. Systemic capillaries.
- b. Systemic arterioles.
- c. Pulmonary arterioles.
- d. Venules.

Q.8. Haemophilia shows the following:

- a. The bleeding time is increased.
- b. Platelet count is reduced.
- c. Clotting time is normal.
- d. Is sex-linked disease.
- e. Commonly affects females.

Q.9. Visceral pain is characterized by all the following EXCEPT:

- a. It may radiate.
- b. It is poorly localized.
- c. It may be associated with nausea.
- d. Its receptors are insensitive to distension.
- e. It may produce reflex contraction of nearby muscles.

Q.10. Deep pain has all the following characteristics, EXCEPT:

- a. Originates in muscles, tendons, and joints.
- b. Sensation is carried to the spinal cord along spinal nerves.
- c. Has an aching quality.
- d. Impulses are carried to the spinal cord along sympathetic nerves.
- e. May show the phenomena of referred pain.

Q.11. Adrenocorticotrophic hormone (ACTH):

Oral exam will be on Wednesday 17 April 2013 at 9 am in physiology department.

- a. Is produced by cells in the hypothalamus.
- b. Is released when circulating cortisol level falls.
- c. Is the main control for aldosterone secretion.
- d. Is produced by the acidophil cells of the anterior pituitary.
- e. Is produced by the zona reticularis of the adrenal cortex.

Q.12. The hydrostatic pressure within the capillaries is dependent on:

- a. Arterial pressure.
- b. Venous pressure.
- c. Precapillary resistances.
- d. Postcapillary resistances.
- e. All of the above.

Q.13. Cortisol:

- a. Inhibit peripheral glucose utilization.
- b. Enhances protein synthesis in all body cells.
- c. Enhances immunity.
- d. Enhances inflammatory response to allergy.
- e. Inhibits gluconeogenesis.

Q.14. Diabetes mellitus in adults is characterized by:

- a. Low serum cholesterol.
- b. Poor appetite.
- c. Presence of insulin secretion.
- d. Progressive weight gain.
- e. Depression of FFA utilization.

Q.15. The reactive hyperaemia is due to:

- a. Increased body temperature.
- b. Release of catecholamines.
- c. Accumulation of vasodilator metabolites.
- d. Increased arterial blood pressure.
- e. Increased venous return.

Chairman of Department

Prof Dr. Sahar elsayy



Tanta University
Faculty of Medicine
Department of Physiology.

Examination for (MSC 2nd Paper)

Course Title: Physiology

Total Assessment

Marks:100

Course Code:

TMED.03:B03

Time Allowed:
Three Hours

Date:13/4/2013

Term : Final

All the questions are to be answered:-

1. **Discuss:** Factors maintaining the arterial blood pressure. Account on types and physiological basis of hypertension. (15 marks)
2. **Mention:** The receptors of parietal cell and the mechanism of HCL pump and their blockers. (10 marks)
3. **Describe:** The reciprocal and complementary action of autonomic nervous system. (10 marks)
4. **Explain briefly:** Pathophysiology of jaundice. (10 marks)
5. **State:** Functions of middle ear. (10 marks)
6. **Discuss:** Chemical regulations of respiration. (10 marks)
7. **Explain:** Endocrine functions of the kidney. (10 marks)

Case study: A young skier with normal pulmonary function (minute volume 4 L; pulmonary blood flow 5 L/min) who is recovering from a tibial fracture suddenly develops right-sided chest pain and tachypnea. Embolic occlusion of the right pulmonary artery is suspected. Which of the following alveolar gas measurements would immediately confirm the diagnosis?

PO₂ (mmHg) PCO₂ (mmHg)

- | | |
|--------|----|
| a. 125 | 60 |
| b. 125 | 20 |
| c. 100 | 40 |
| d. 80 | 20 |
| e. 80 | 60 |

Explain your answer (10 marks)

Answer the following MCQs by the most probable one choice: (15 marks)

Q.1. Which of the following represents the pressure difference that acts to distend the lungs?

- a. Alveolar pressure.
- b. Airway opening pressure.
- c. Transthoracic pressure
- d. Transpulmonary pressure
- e. Esophageal pressure.

Q.2. Which of the following is FALSE concerning the closing volume for the lung?

- a. Comes between Phase 3 and Phase 4 on the single breath N₂ washout curve.
- b. Marks the point where the alveoli at the apex close.
- c. Marks a sudden increase in nitrogen concentration in the expelled breath.
- d. Marks when the overinflated, poorly ventilated alveoli at the apex expel their air with high N₂ concentrations.
- e. Come between phase 1 and 2 on the single breath N₂ washout curve.

Look in the back \longrightarrow

Q.3. In what situation would the gas exchange ratio be decreased compared to the respiratory quotient:

- During slowed breathing.
- Holding your breath.
- During hyperventilation.
- Impossible. The two are always equivalent.
- None of the above.

Q.4. Metabolic functions of the lung include which one of the following:

- Inactivates ADH .
- Converts Angiotensin II to Angiotensin I
- Activates bradykinin .
- Inactivate serotonin (5HT).
- Activation of prostaglandins.

Q.5. All of the following histamine effects are mediated by H₂- receptors EXCEPT:

- Vasodilation. d. Bronchoconstriction.
- Gastric acid secretion. e. Tachycardia.
- Relaxation of uterus.

Q.6. Obligatory water loss from body:

- 400mls in faeces. d. 300 mls from lung.
- Insensible water loss. e. 500 ml in urine.
- Loss from skin & lung.

Q.7. Left ventricular end diastolic volume:

- 10-30 mls. d. 30-50 mls.
- 50-70 mls. e. 70-100 mls.
- 100-130 mls.

Q.8. The atrial component of ventricular filling:

- 5%. d. 10%.
- 30%. e. 50%.
- 80%.

Q.9. Coronary blood flow is:

- Dominant in left coronary artery in 60% of people.
- Better supply to subendocardium in systole.
- Better supply to subendocardium in diastole.
- Better supply to left ventricle in systole.
- Left > right during systole.

Q.10. The term capacitance vessels is applied to:

- Pulmonary capillaries. d. Shunts.
- Thoroughfare channels. e. Veins.
- Arteries.

Q.11. Which of the following structures are not innervated:

- Arterioles.
- Postcapillary venules.
- AV anastomosis.
- Precapillary sphincters.
- Venule.

Q.12. Hypocalcemia is associated with QT prolongation because:

- It is invariably associated with bundle branch block.
- It increases ventricular activation time.
- It lengthens the duration of ventricular repolarization.
- It accelerates opening of potassium channels.
- It shortens the duration of ventricular repolarization.

Q.13. When flow through the mitral valve is restricted by mitral stenosis:

- Exercise can induce acute pulmonary edema.
- Left ventricular preload increases.
- Left atrial pressure diminishes.
- Right ventricular end diastolic pressure decreases.
- Central venous pressure decreases.

Q.14. The hormone involved in the initiation of the migrating motor complex is:

- Gastrin. d. Motilin.
- Secretin. e. Cholecystokinin.
- Enterogastrone.

Q.15. The rate of gastric emptying increases with an increase in:

- Intragastric volume.
- Intraduodenal volume.
- Fat content of duodenum.
- Osmolality of duodenum.
- Acidity of duodenum.

Chairman of Department

Prof Dr. Sahar elsayy





Tanta University
Faculty of Medicine
Department of Physiology.

Examination for (MSC 1st Paper)

Course Title: Physiology

Total Assessment

Marks:100

Course Code:

TMED.03:B03

Time Allowed:

Three Hours

Date:6/4/2013

Term : Final

All the questions are to be answered:-

1. **Discuss:** Signal processing in the central nervous system. (15 marks)
2. **Mention:** The mechanism of long and short memory. (10 marks)
3. **Describe:** The mechanism and physiological significance of fibrinolytic system. (10 marks)
4. **Explain briefly:** Placental hormones. (10 marks)
5. **State:** The physiological actions of cortisol. (10 marks)
6. **Discuss:** The pathophysiology of fever. (10 marks)
7. **Explain:** Excitation –contraction coupling. (10 marks)

Case study: Chief Complaint: 8-year-old girl with excessive thirst, frequent urination, and weight loss. History: 8-year-old girl in previously good health, has noticed that, in the past month, she is increasingly thirsty. She gets up several times a night to urinate, and . At the dinner table, she seems to be eating twice as much as she used to, yet she has lost 3 kilo in the past month. In the past three days, she has become nauseated, vomiting on three occasions At the doctor's office, blood and urine samples are taken. The following lab results are noted:

blood glucose level = 545 mg/dl (normal = 50 - 170 mg/dl)

blood pH level = 7.23 (normal = 7.35 - 7.45)

urine = tested positive for glucose and for acetone / acetoacetate

Why her blood-glucose level is elevated?

Explain your answer (10 marks)

Answer the following MCQs by the most probable one choice: (15 marks)

Q.1. The hormones produced by the ovary include:

- a. Estrogens.
- b. Relaxin.
- c. All of the above.
- d. Progesterone.
- e. Inhibin.

Q.2. Which of the following hormone is not a glycoprotein:

- a. Erythropoietin.
- b. FSH.
- c. LH.
- d. TRH.
- e. hCG.

Q.3. Which one of the following is NOT an energy releasing hormone:

- a. Growth hormone.
- b. Cortisol.
- c. Insulin.
- d. Epinephrine.
- e. Glucagon

Q.4. Thyroxine does not increase O₂ consumption in the:

- a. Heart.
- b. Brown adipose tissue.
- c. None of the above.
- d. Skeletal muscle.
- e. Adult brain

Q.5. The force of skeletal muscle contraction cannot be increased by:

- a. Increasing the frequency of activation of motor units.
- b. Increasing the number of motor units activated.
- c. Increasing the amplitude of action potentials in motor neurons
- d. All of the above.
- e. None of the above.

Look in the back →

Q.6. Saltatory conduction:

- a. Occurs in unmyelinated nerve fibres.
- b. Can occur in muscle fibres.
- c. Takes place at the node of ranvier.
- d. Is independent of Na⁺ and K⁺ fluxes.
- e. Is a slow type of conduction.

Q.7. The sodium ions:

- a. Flow down their concentration gradient at rest.
- b. Have larger concentration inside the nerve than on its exterior.
- c. Play no role in the production of action potential.
- d. Are pumped by the sodium pump to the cell's interior.
- e. Are attracted to the cell's exterior by the electrical gradient.

Q.8. All of the following substances are normally circulating in the plasma EXCEPT:

- a. Prothrombin.
- b. Plasminogen.
- c. Anti-haemophilic globulin.
- d. Plasmin.
- e. Fibrinogen.

Q.9. Iron deficiency anaemia:

- a. Is characterized by large hyperchromic RBCs.
- b. Is characterised by large hypochromic RBCs.
- c. Causes decrease in bleeding time.
- d. Is typically found following chronic blood loss from body.
- e. Should generally be treated by transfusing patient with blood.

Q.10. Process whereby white blood cells can squeeze through the pores of blood vessels:

- a. Chemotaxis.
- b. Osmosis.
- c. Pinocytosis.
- d. Diffusion.
- e. Diapedesis.

Q.11. The respiratory Quotient of the brain when a person is normally fed is:

- a. 0.70.
- b. 0.80.
- c. 1.5.
- d. 0.99.
- e. 0.85.

Q.12. The mechanical efficiency of the human body has an upper limit of:

- a. 20%.
- b. 50%.
- c. 100%.
- d. 30%.
- e. 75%.

Q.13. Prolonged physical training results in all the following EXCEPT:

- a. More complete O₂ extraction.
- b. Greater reduction in splanchnic blood flow during exercise.
- c. Addition of new capillaries.
- d. Less fatiguability.
- e. Hypertrophy of muscle fibre.

Q.14. The following is true about O₂ debt EXCEPT:

- a. It is the amount of O₂ in excess of the resting metabolic needs consumed after completion of exercise.
- b. It is associated with arise in blood lactate.
- c. It is related to the ability of skeletal muscles to function temporarily anaerobically.
- d. Its main use is to remove lactic acid.
- e. It is related to deficient oxygenation of blood in the lungs during severe exercise.

Q.15. When a person slowly rotates toward the right:

- a. The stereocilia on the hair cells in the right horizontal semicircular canal bend away from the kinocilium.
- b. Both the left and right eyes deviate toward the left.
- c. The hair cells in the left horizontal semicircular canal become depolarized.
- d. The visual image on the retina becomes unfocused.
- e. The endolymph in the left and right horizontal semicircular canals moves in opposite directions.

Chairman of Department

Prof Dr. Sahar elsawy