الفرقة الاولى
فسيولوجى
دور أول

قسم الفيسيولوجي
Time: 3hours

جامعه سوهاج
Date: 19 – 5 - 2018

1st year final exam

Give an account on:

I- CVS:

1- First heart sound **(5 marks)**
2- Alam smirk reflex **(5 marks)**
3- Effect of heart rate on cardiac output (COP) and effect of COP on arterial blood pressure. **(10 marks)**

II- Blood:

1- Role of liver in erythropoiesis. **(5 marks)**
2- Anticoagulants. **(10 marks)**

III-GIT:

1- Gastrin hormone (stimulus for release & actions) **(5 marks)**
2- Factors affecting gastric emptying. **(5 marks)**

IV-Respiration:

1- Give an account on pulmonary surfactant (definition, mechanism of action & functions). **(10 marks)**

V- ANS: (10)

1- Sympathetic supply to the head and neck (origin, relay & functions). **(5 marks)**
2- Acetylcholine receptors. **(5 marks)**

VI-N&M:

1- The Coverings of the axon; (names and function) **(5 marks)**
2- Factors affecting conduction velocity of a nerve fiber **(5 marks)**
3- Mention and arrange sources of ATP during muscle contraction **(5 marks)**

VII- MCQs: **(20 marks)**

1- During After - depolarization of an axon, the ion responsible will move through cell membrane by a process named,

A) Simple diffusion
B) Leak
C) Passive transport
D) Facilitated diffusion

2- A band,

A) is located within a single sarcomere
B) is located In between sarcomers
C) Contain Myosin filament only
D) Contain Z line

3- During Absolute refractory period in an axon

A) Stronger stimulus is required to stimulate the axon
B) The axon is more excitable
C) 2nd action potential can occur
D) Voltage gated Na channel cannot be activated

4- Simple diffusion and facilitated diffusion share which of the following characteristics?

A) Can be blocked by specific inhibitors
B) Do not require adenosine triphosphate (ATP)
C) Require transport protein
D) Transport solute against concentration gradient

5- An increase in sympathetic stimulation to the heart causes:

A) a fall in diastolic time
B) a decrease in stroke volume
C) vasoconstriction of the coronary vasculature
D) a decrease in myocardial oxygen consumption

6- Stimulation of alpha-adrenergic receptors will cause:

A) vasoconstriction of the coronary arteries
B) relaxation of the bladder neck muscle
C) vasodilatation of blood vessles
D) bronchodilation

7- Surfactant:

A) is a mucopolypeptide
B) results in the same surface tension for different sized alveoli
C) causes an increase in compliance
D) production is reduced after a prolonged reduction in pulmonary blood flow

8- Which of the following is the first branching of the bronchial tree that has gas exchanging capabilities?

A) Terminal bronchioles.
B) Respiratory bronchioles.
C) Alveoli
D) alveolar ducts.

9- Which of the following concerning average lung volumes and capacities of a person at rest is TRUE?

A) TLC>VC>TV>FRC
B) TLC>FRC>VC>TV
C) TLC>VC>FRC>TV
D) TLC>FRC>TV>VC

10- Which of the following is NOT a part of the specialized conduction system of the heart?

A) Cells of the SA node.
B) Cells of the AV node.
C) Working myocardial cells.
D) Purkinje fibers.

11- Which of the following is NOT true of the parasympathetic control of the heart?

A) It affects muscarinic receptors.
B) It decreases heart rate via the SA node.
C) It decreases conduction velocity via the AV node.
D) It can be blocked by beta blockers, e.g. propranolol.

12- Which of the following is the property of a cardiac cell to initiate and fire an action potential on its own without external stimulation?

A) Contractility
B) Excitability
C) Rhythmicity
D) Conductivity

13- Which of the following NOT increases stroke volume?

A) increased end-diastolic volume
B) increased contractility of the heart
C) increased end-systolic volume
D) increased venous return

14- Which of the following vessels has the largest effect on total peripheral resistance?

A) Arteries.
B) Arterioles.
C) Veins.
D) Venules.

15- Which of the following is NOT involved in swallowing?

A) Contracture of the upper esophageal sphincter.
B) Coordination by the swallowing center in the medulla oblongata.
C) The approximation of the vocal cords to close the glottis.
D) The raising of the larynx to close its entrance.

16- Which of the following does NOT regulate gastric acid secretion?

A) Vagus nerve stimulation.
B) Cholecystokinin.
C) Histamine
D) Gastrin

17- Defective parietal cells would result in malabsorption of which vitamin?

A) Vitamin B1
B) Vitamin B2
C) Vitamin B12
D) Folic acid.

18- The adhesion of platelets to subendothelial collagen is impaired in the absence of:

A) von Willebrand factor
B) plasmin
C) heparin
D) antithrombin III

19- The extrinsic pathway is triggered by the release of:

A) factor VII
B) tissue factor
C) tissue factor pathway inhibitor
D) contact factor

20- The aortic valve opens

A) when ventricular pressure exceeds aortic pressure.
B) at the start of systole.
C) at the maximum ventricular pressure.
D) immediately after atrial contraction.

GoodLuck

الفرقة الثانية
فسيولوجي
دور ثاني

Physiology Department.

28-8-2018
Time: 3 hours

1st year Physiology final exam

Give an account on:

I- CVS:

1- Factors affecting venous return (10 marks)
2- Types and causes of edema (10 marks)
3- AV node delayed transmission (parts, causes and importance). (5 marks)

II- Blood:

1- Role of hormones in erythropoiesis. (8 marks)
2- Functions of granular leucocytes. (7 marks)

III- GIT:

1- Protective mechanisms during the second phase of swallowing. (8 marks)
2- Role of bile in digestion and absorption of fat. (7 marks)

IV- N&M:

1- Absolute refractory period; definition and causes. (5 marks)
2- Compare between Isotonic and Isometric contraction. (10 marks)

V- ANS: (10 marks)

1- Parasympathetic receptors and functions on the abdominal viscera.

2- Respiration:

1- Give an account on pulmonary surfactant (definition, mechanism of action & functions). (15 marks)
2- Factors shifting O2-Hb dissociation curve to the right. (5 marks)

3- MCQs: (25 marks)

1- Which of the following spinal cord levels contains the entire population of preganglionic sympathetic neurons?

A- C5-T1
B- C3-C5
C- T1-L2
D- T6-L1

2- Cells of the adrenal medulla receive synaptic input from which of the following types of neurons?

A- Preganglionic sympathetic neurons
B- Postganglionic sympathetic neurons
C- Preganglionic parasympathetic neurons
D- Postsynaptic parasympathetic neurons

3- **Which substance activates adrenergic alpha and beta receptors equally well?**
   A- Acetylcholine
   B- Norepinephrine
   C- Epinephrine
   D- Serotonin

4- **Simple diffusion and facilitated diffusion share which of the following characteristics?**
   A- Can be blocked by specific inhibitors
   B- Do not require adenosine triphosphate (ATP)
   C- Require transport protein
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5- **Which of the following is the first branching of the bronchial tree that has gas exchanging capabilities?**
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6- **Which of the following concerning average lung volumes and capacities of a person at rest is TRUE?**
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   B) TLC>FRC>VC>TV
   C) TLC>VC>FRC>TV
   D) TLC>FRC>TV>VC

7- **H zone is located in**
   A- Between two different A bands
   B- Inbetween sarcomers
   C- Between 2 ends of actin in the same sarcomere
   D- In the middle of I band

8- **AcetyIcholine (Ligand) –gated Na channel are present in**
   A-Axons of somatic nerve supplying skeletal muscle
   B- Transverse tubule (T –Tubule)
   C- Presynapse of Motor end plate
   D- Postsynaptic membrane of motor End plate

9- **Depolarization of an axon is caused by;**
   A- Sodium influx into the axon
   B- Potassium outflow of the axon
   C- Calcium inflow into the axon
   D- Sodium efflux of the axon

10- **Regarding conduction velocity of an axon;**
   A- Type (A alpha) fiber is the slowest fiber
   B- Type B fiber is the fastest fiber
   C- Type C fiber is more susceptible to local anesthetic effect
   D- Type (A beta) fiber is more susceptible to Oxygen lack

11- **Mechanisms which regulate the blood pressure include all the following EXCEPT:**
   A- Baroreceptor reflex
   B- Renin-Angiotensin mechanism
   C- Maintance of circulating blood volume
   D- Releases of substances P from peripheral nerve endings

12- Coronary blood flow is maximum during:

A- Isometric contraction
B- Isometric relaxation
C- Rapid ejection
D- Rapid filling

13- Acidification of the duodenum will:

A- Decrease pancreatic secretion of bicarbonate.
B- Increase secretion of gastric acid.
C- Decrease gastric emptying.
D- Increase contraction of the gall bladder.

14- Regarding the cephalic phase of gastric acid secretion, all the following are true <u>EXCEPT:</u>

A- involve the release of gastrin hormone.
B- is controlled by the vagi nerves.
C- occurs when food reaches the stomach.
D- is to both conditioned & unconditioned reflexes.

15- Obstructive jaundice is characterized by all of the following <u>EXCEPT</u>:

A- Raised plasma bilirubin.
B- Raised serum alkaline phosphatase.
C- Hemorrhage.
D- Haemolysis.

16- Antibodies belong to the class:

A- Gamma globulins. B- Beta globulins
C-Fibrenogen. D-Alpha globulins

17- The heamorrhagic tendancy in obstructive jaundice is due to:

A. Deficiency of platelets.
B. Increased serum bile salt concentration.
C. Lack of factors 2, 7, 9, and 10.
D. Deficiency of factor VIII.

18- The plasma proteins perform all the following functions except:

A. They exert an osmotic force.
B. They increase the capillary permeability.
C. They have a buffering action.
D. They play a role in the body defence mechanisms.

19- Increased R.B.C.s fragility occurs in all the following cases except:

A. Sickle cell anaemia.
B. Thalassaemia.
C. Heriditary spherocytosis.
D. Iron deficiency anaemia.

20- The maintenance of blood fluidity depends on all the following factors except:

A. The smooth intact vascular endothelium.
B. Absence of plasminogen.
C. The presence of heparin and antithrombin III.
D. An intact fibrinolytic system.

21- Most of the CO2 transported in the blood is

A. dissolved in plasma.
B. in carbamino compounds formed from plasma proteins.
C. in carbamino compounds formed from hemoglobin.
D. in HCO3.

22- A 50-year-old man with a persistent cough and difficulty breathing is referred by his family physician for pulmonary function tests. The test results show that the forced vital capacity (FVC), forced expired volume in 1st (FEV1), and functional residual capacity (FRC) are all significantly below normal. Which of the following diagnosis is consistent with these pulmonary function test results?

A- Bronchial asthma (Obstructive lung disease)
B- A plastic anaemia
C- Heart failure
D- Pulmonary fibrosis (Restrictive lung disease)

23- Starling's law of the heart states that the strength of contraction is proportional to:

A. Myocardial oxygen supply.
B. Stroke volume.
C. Initial length of the cardiac muscle.
D. Arterial blood pressure

24- Myocardial contractility is best correlated with the intracellular concentration of:

A. Na^{+}.
B. K^{+}.
C. Ca^{++}. .
D. Cl^{-}.

25- About the pacemaker potential, all the following is true except:

A. Its amplitude is from -80 to – 90 m V.
B. It is due to decreased K+ permeability.
C. Its slope is decreased by increased K+ permeability.
D. It is unstable during rest .

Good Luck