

Tanta University
Faculty of Medicine
Chest Department

21 /03/ 2021
Time Allowed: 3Hours

MD: Examination
Physiology (Semester I)
Total marks 90



All Questions should be answered

(Marks)

Q1	Discuss intra-pleural pressure, definition, normal values, causes of negativity, measurement and significance?	10
Q2	Discuss Respiratory centers types, functions and locations?	15
Q3	Give short account on coronary blood flow and factor affecting with special reference in COPD?	10
Q4	Explain innate (nature) immune system?	10
Q5	Summarize Chloride shift phenomena?	10
Q6	Discuss oxygen debt definition, mechanism, measurement and significance?	10
Q7	Give short account on I. Significance of FEV1 II. Oxygen transport system?	7 8
Q8	MCQ (20 questions) ملحوظه هامه تسلم ورق أسئلة هذا السؤال مع ورقة الأجابه	10

لجنة الأمتحان

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أ.د هدى مختار بحر

أ.د باسم الشافعى

Good Luck

Choose one answer for each of the following question:

- 1- Which of the following is mainly concerned with regulation of heart rate and arterial blood pressure?
 - a) Alam-Smirk reflex.
 - b) Marey's law.
 - c) Starling law.
 - d) None of the above.

- 2- Respiratory sinus arrhythmia is a:
 - a) Pathological condition.
 - b) Normal phenomenon.
 - c) Disease of SA node.
 - d) Disease of conducting system.

- 3- Buffer nerves are branches of:
 - a) Vagus and glossopharyngeal nerves.
 - b) Trigeminal nerves.
 - c) Facial nerves.
 - d) None of the above.

- 4- Which of the following is **FALSE** concerning the production and role of lung surfactant?
 - a) It is part of a lipoprotein called dipalmitoyl phosphatidyl-choline.
 - b) It is synthesized by alveolar type II cells.
 - c) As the alveolar surface area decreases during the compression curve, the surfactant decreases the surface tension at a constant rate.
 - d) When surfactant density is decreased during expansion, surface tension initially rises rapidly, then slows down until it reaches the starting point. c

- 5- The cardiac reserve refers to the increase than can be attained in the:
 - a) Cardiac work.
 - b) Cardiac output.
 - c) Stroke volume.
 - d) All of the above.

- 6- Cardiac output is decreased:
- On standing up.
 - During stimulation of sympathetic to the heart.
 - By increasing the end-diastolic volume of the heart.
 - On cutting the vagal nerve to the heart.
- 7- Which of the following is **FALSE** concerning airway resistance?
- Up to 50% is in the nose.
 - The maximum resistance in the bronchial tree occurs at the fourth generation
 - In the later generations, the radii are smaller, increasing the total resistance at each successive generation.
 - Airway resistance can be increased by loss of tissue elasticity and contraction of bronchial smooth muscles.
- 8- The angiotensin converting enzyme (ACE):
- Is normally absent in the plasma and pulmonary epithelium.
 - Causes arteriolar V.C.
 - It converts angiotensin I into angiotensin II.
 - It converts angiotensinogen into angiotensin I.
- 9- Pitting edema is produced by all the following factors **EXCEPT**:
- Renal disease.
 - Congestive heart failure.
 - Liver disease & hypoproteinaemia.
 - Elephantiasis & malignant or inflammatory lymphatic obstruction.
- 10- In hemorrhage, the heart rate increased due to all the following causes **EXCEPT**?
- Decreased arterial blood pressure.
 - Increased adrenaline secretion.
 - Bainbridge reflex.
 - Hypoxia.
- 11- Which of the following concerning average lung volumes and capacities of a person at rest is **TRUE**?
- TLC>VC>TV>FRC
 - TLC>FRC>VC>TV
 - TLC>VC>FRC>TV
 - TLC>FRC>TV>VC

- 12- Which of the following is **NOT** a normal occurrence with increasing age?
- Vital capacity of the lung decreases.
 - Residual volume increases.
 - Functional residual capacity increases.
 - Inspiratory capacity decreases.
 - Expiratory reserve volume increases.
- 13- 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.
- 14- Which of the following is **NOT** a function of dead space?
- Warms expired air to body temperature.
 - Saturates inspired air with water vapor.
 - Removes bacteria and other particulate matter.
 - Conducts the warmed air to the respiratory membranes.
- 15- Which of the following is **NOT** a form by which CO₂ can be transported in the blood?
- As bicarbonate
 - dissolved in the blood.
 - Bound to the amino end groups in proteins.
 - Bound to the imidazole ring of glutamate.
- 16- Which of the following is **FALSE** concerning the closing volume for the lung?
- Comes between Phase 3 and Phase 4 on the single breath N₂ washout curve.
 - Marks the point where the alveoli at the apex close.
 - Marks a sudden increase in nitrogen concentration in the expelled breath.
 - Marks when the overinflated, poorly ventilated alveoli at the apex expel their air with high N₂ concentrations.

- 17- Which of the following can cause stagnant hypoxia?
- a) COPD
 - b) Shock or heart failure.
 - c) Cyanide poisoning.
 - d) Carbon monoxide poisoning.
- 18- Which of the following is **FALSE** concerning the relationships of the variables in diffusion of O₂ across a membrane?
- a) Doubling the thickness of the membrane would cut the total flow of O₂ in half.
 - b) Doubling the area of the membrane would double the total flow of O₂.
 - c) If you increased the alveolar concentration of O₂, you would increase the total flow of O₂ across the alveolar membrane.
 - d) The lower the diffusion coefficient, the higher the total flow.
 - e) Increasing the arterial concentration of O₂ would decrease the total flow of O₂.
- 19- Which of the following pairs is **INCORRECT** concerning central nervous systems and a factor they respond to by affecting respiration?
- a) Cerebellum: Mechanoreceptor input
 - b) Limbic system: emotional states
 - c) Cerebral cortex: voluntary control
 - d) Cerebral motor cortex: exercise
- 20- C-wave in jugular venous pulse occurs in:
- a) Isometric contraction phase.
 - b) Isometric relaxation phase.
 - c) Maximum ejection phase.
 - d) Atrial systole phase

ملحوظه هامه تسلم ورق أسئلة هذا السؤال مع ورقة الأجابه