Memory Test - Respiratory System & General Physiology_Online_Davidson_Plus_1

Total Mark: 100
Time: 50 Min

1. Factors shifting O2-Hb dissociation curve to Right-
A) P50
B) Hypoxia
C) Myxedema
D) HbF
E) Polycythemia
Answer: T, T, F, F, T
Discussion:
Reference: TTFFT (Ref: Ganong /25th /Page-667)

2. Biologically active substances metabolized by the lungs are
A) Surfactant
B) Serotonin
C) Histamine
D) VIP
E) Bradykinin
Answer: T, T, T, F, T
Discussion: Function of lung: Biologically Active substances Metabolism by lung: A. Synthesized and used in the lungs: Surfactant B. Synthesized or stored and released into the blood Prostaglandins Histamine Kallikrein C. Pratially removed from the blood Prostaglandins Bradykinin Adenine nucleotide Serotonin Norepinephrine Acetylcholine D. Activated in the lungs: Angiontensin I Angiotensn II
Reference: [Ref: Ganong 24th P-606 table 35.5

3. Causes of histotoxic hypoxia
A) CO poisoning
B) Cyanide poisoning
C) Narcotics
D) Right to left shunt
E) Decreased Hb
Answer: F, T, T, F, F
Discussion:
Reference: (Ref: Ganong /25th /Page-651)

4. Chemical factor in the regulation of respiration
A) PCO2 indirectly stimulate central chemoreceptor
B) PCO2 indirectly stimulate peripheral chemoreceptor
C) Central chemoreceptor situated in ventral surface of medulla
D) Peripheral chemoreceptor situated in pons
E) CO2 increase alveolar ventilation 4 fold
Answer: T, F, T, F, F
Discussion:
Reference: (Ref: Ganong /25th /Page-657)

5. Compared with the base, the apex of the upright human lungs has [Basic, MD March 18]
A) Larger alveoli
B) More compliance
C) More ventilation
D) More negative intra-pleural pressure
E) More P02
Answer: T, F, F, T, T
Discussion:
Reference: [Ref: Ganong physiology/25th/P-635-636]

6. Compliance of lung greater in-
A) Fluid filled alveoli
B) Apex of lung
C) Sitting position
D) Forceful inspiration
E) Infant than older age
Answer: T, F, F, F, F
Discussion: TF(base)F(standing)F(quiet)F(older)
Reference: [ref:Genesis 16]

7. During exercise which parameters remain unchanged-
A) Arterial PO2
B) O2 consumption
C) Arterial PCO2
D) Venous PH
E) Arterial PH
Answer: T, F, T, F, T
Discussion: TF(increased)TFT
Reference: (Ref: Ganong /25th /Page-664)

8. During quiet breathing-
A) Intra esophageal pressure lowest at mid inspiration
B) Intra alveolar pressure highest at end of expiration
C) Intra pleural pressure lowest at mid inspiration
D) Intrapulmonary pressure highest at mid expiration
E) Rate of air entry highest at mid inspiration
Answer: F, F, F, T, T
Discussion: (end of inspirtion)F(end of expiration)F(end of inspiration)TT
Reference: (Ref: Ganong /25th /Page-628)

9. Example of secondary active transport?
A) Na+ -k + pump
B) Na+ -H + exchanger
C) Ca2+ pump
D) Na+ -glucose co tansport
E) H+ pump
Answer: T, F, T, F, T
Discussion:
Reference: [Ref:BRS/P-4]

10. Non-membranous organalles are?
A) Microtubule
B) Golgi apparatus
C) Endoplasmic reticulum
D) Centrosome
E) Ribosome
Answer: T, F, F, T, T
Discussion:
Reference: (Ref: Ganong /25th /Page-643)

11. Oxygen and carbon-di-oxide transport in blood
A) About 7% CO2 transport as dissolve in water
B) 3% CO2 transport as dissolve in water
C) 7% O2 transport in the form of HCO3
D) 97% O2 transport a as O2-Hb
E) 23% CO2 transport as carbamino compound
Answer: T, F, F, T, T
Discussion:
Reference: (Ref: Ganong /25th /Page-643)

12. Oxygen consumption increases when there is an increase in the -
A) Level of oxygen in inspired air
B) Metabolic rate
C) Body temperature
D) Environmental temperature towards thermoneutrality
E) Intake of food
Answer: F, T, T, F, T
Discussion: F(This is not a determinant of oxygen consumptions) T(Metabolic rate is the prime determinant of oxygen consumption)T(This increase the rate of cellular metabolism)F(Less thermo genesis is required to maintain body temperature)T(Due to the specific dynamic action of the food particularly)
Reference:

13. Pneumocyte Type-II
A) Surface area >97%
B) Responsible for alveolus repair
C) Secretory in nature
D) Secrete Surfactant at 9th month of gestation
E) Cover 95% of alveolar epithelial surface
Answer: F, T, T, T, F
Discussion:
Reference: [Ref: Ganong/Ed-25th/P-622]

14. Pneumotaxic center –
A) Increase duration of inspiration
B) Increase rate of respiration
C) Increase depth of respiration
D) Damage causes slower respiration
E) Stimulate apneustic centre
Answer: F, T, F, T, F
Discussion: (decrease)TF(decrease)TF(inhibit) [ref:genesis 33]
Reference: (Ref: Ganong /25th /Page-655-56)

15. Rate of gas diffusion through the respiratory membrane is
A) Directly proportional to diffusion coefficient of the gas
B) Inversely proportional to the thickness of respiratory membrane
C) Inversely proportional to the pressure gradient between two sides of membrane
D) Directly proportional to molecular weight of the gas
E) Directly proportional to solubility of the gas

Answer: T, T, F, F, T
Discussion: Volume = DX (Surface are a of membrane pressure differebce)/(Thickness of membron) D= □(Salubility &Molecular Wt)
Reference:

16. Regarding Ventilation-perfusion ratio-
A) Causing respiratory failure when mismatch occur
B) Is infinity when no gas exchange
C) Is zero when no gas exchange
D) High represents physiological shunt
E) Low represents physiological dead space.
Answer: T, T, T, F, F
Discussion: (Physiological dead space) F (shunt)

Reference: (Ref: Ganong /25th /Page-636)

17. Respiratory function changes in old age
A) Loss of chest wall compliance
B) Increase reserve capacity
C) Increase ventilation perfusion mismatch
D) Reduce ventilator responses to hypoxia
E) Impaired defences against infection
Answer: T, F, T, T, T
Discussion: TF(decrease)TTT
Reference: [ref:Davidson 23rd,17.1,550]

18. Surface tension in lung-
A) Creates a collapsing pressure inversely proportional to radius
B) Having high collaping pressure in large alveoli
C) Causes atelectesis in absence of surfactant
D) Causes more difficult to keep open small alveoli
E) Is expressed as dynes/cm2.
Answer: T, F, T, T, T
Discussion: Laplace's Law:collapsing pressure(P)=(2T(surface tensioon))/(r(radius)) *large alveoli=low collapsing preesure=easy to keep open *Small alveoli=high collapsing pressure=difficult to open *dynes are unit of force acting n a mass of 1gm
Reference: [Ref:BRS physiology 120]

19. The residual volume is:
A) The gas remain at the end of full expiration

B) 500ml average in young adult
C) Reduce in obstructive airway disease)
D) Responsible for lung expansion
E) Measured by spirometry directly
Answer: T, F, F, T, F
Discussion:
Reference: [Ref: Guyton]

20. Component of cytoskeleton?
A) Mitochondria
B) Microtubules
C) Nucleus
D) Intermediate filament
E) Cell wall
Answer: F, T, F, T, F
Discussion:
Reference: (Ref: Ganong /25th /Page-38)

21. Functions of lung-
A) Synthesize surfactant for systemic use
B) Cause lysis of clot
C) Excretion of ammonia
D) Excretion of ketone body
E) Convert angiotensinogen to angiotensin-II
Answer: F, T, T, T, F
Discussion: F(local)TTTF(ang I to II)
Reference: (Ref: Ganong /25th /Page-619)

22. Hemodynamic effects of inspiration are
A) Blood pressure falls
B) JVP falls
C) Heart rates slows
D) Second heart sound fuses
E) Prolongs RV ejection
Answer: T, T, F, F, T
Discussion: (Increase) F(Split) T
Reference: [Ref: Davidson 23rd /P-447/B-16.1]

23. Obstructive airways disease is similar to restrictive lung disease in that it reduces
A) FEV1
B) Residual volume
C) Vital capacity
D) Ratio of FEV1/Vc
E) Peak expiratory flow rate
Answer: T, F, T, F, F
Discussion:
Reference: [Ref: Davidson 23rd /P-555/Box-17.4]

24. The surfactant lining the fluid of the lung alveoli increases
A) The compliance of the lungs
B) The work of breathing
C) Pulmonary capillary filtration pressure
D) The elasticity of the lungs
E) Stability of the size of alveoli
Answer: T, F, F, F, T
Discussion: Explanation: Surfactant lining of the lung alveoli: Increases 1. Compliance of lung 2. Stability of alveoli Decrease 1. Surface tension 2. Collapsing tendency of lungs 3. Pulmonary oedema 4. Pulmonary capillary filtration 5. Elastic recoil pressure 6. Work of breathing
Reference: [Ref: Ganong 25th P-631, 632+ Guyton 13th P-499, 500]

25. Vital capacity is
A) The volume of air expired from full inspiration to full expiration.
B) Reduced as one grows older.
C) Greater in men than in women of the same age and height.
D) Related more to total body mass than to lean body mass.
E) The sum of the inspiratory and expiratory reserve volumes.
Answer: T, T, T, F, F
Discussion: (lean body mass) F (Tidal volume must be added)
Reference: (Ref: Ganong /25th /Page-629)

26. A 20-year-old man attends the emergency department with an attack of asthma. Which one of the following is the most valid guide in assessing the severity of his asthma attack?
A) Severity of dyspnoea
B) Loudness of wheezing
C) Heart rate
D) Forced expiratory volume in one second (FEV1)
E) Oxygen tension of arterial blood (PaO2)
Answer: D
Discussion:
Reference: [Ref: Davidson 23rd /P-555]

27. A 25-year-old man is under water in the swimming pool and breathing through a snorkel. He has a respiratory rate of 10/min, a tidal volume of 550 ml and an effective anatomical dead space of 250 ml. Which of the following would cause the greatest increase in alveolar ventilation of this man?

A) A twofold increase in respiration rate
B) A twofold increase in tidal volume
C) A twofold increase in respiration rate and a shorter snorkel
D) A twofold increase in tidal volume and a shorter snorkel
E) A longer snorkel

Answer: D

Discussion: a twofold increase in tidal volume and a shorter snorkel Alveolar ventilation is related to respiratory rate, tidal volume and anatomic dead space by the following formula: alveolar ventilation = respiratory rate x (tidal volume —anatomical dead space volume). As much of the increase in respiratory rate simply moves air back and forth in the anatomical dead space and this does not contribute to alveolar ventilation, according to the above equation it is obvious that a shorter snorkel would decrease the effective anatomical dead space and this, accompanied by a twofold increase in tidal volume, will cause the greatest increase in alveolar ventilation.

Reference:

28. A 28-year-old man has been trekking in the Himalayas for past 2 years. He has developed an increase in ventilation rate and a muscle biopsy reveals increased number of mitochondria. Which of the following physiological changes is also expected to be seen in this man?

A) Decreased production of erythropoietin
B) Decreased 2,3-diphosphoglycerate (DPG)
C) Increased renal excretion of HCO3-
D) Increased renal excretion of H+ ions
E) Pulmonary vasodilatation

Answer: C

Discussion: (Explanation: high altitude effect)

Reference: [Ref: Ganong, 25th, P-648]

29. A lack of normal surfactant, as occur infants with respiratory distress syndrome results in

A) Increased lung compliance
B) Decreased retractive force of the lungs
C) Increased retractive force of the lungs
D) Stabilization of alveolar volume
E) Decreased filtration forces in the pulmonary capillaries

Answer: C

Discussion: (Explanation: the surfactant increased elastic recoil tendency of lung and stability of lung rest are decreased)

Reference: [Ref: Ganong, 25th, P-622]

30. A patient with carbon dioxide retention is likely to have

A) Metabolic acidosis
B) Alkaline urine
C) Cool extremities
D) Reduce cerebral blood flow
E) Raised plasma bicarbonate

Answer: E

Discussion: (Explanation: respiratory acidosis effect)

Reference: [Ref: Ganong, 25th, P-651]

31. An arterial blood gas sample from a 36 years old man shows low P(O2). If the P(O2) in the blood is low the most likely course is-
A) Anemic hypoxia
B) Histotoxic hypoxia
C) Hyperemic hypoxia
D) Hypoxic hypoxia
E) Stagnant hypoxia
Answer: D
Discussion:
Reference: (Ref: Ganong /25th /Page-647)

32. Compared with the systemic circulation,the pulmonary circulation has a
A) higher blood flow
B) lower resistance
C) higher arterial pressure
D) higher capillary pressure
E) higher cardiac output
Answer: B
Discussion: Explanation: Blood flow (or cardiac output) in the systemic and pulmonary circulationsis nearly equal; pulmonary flow is slightly less than systemic flow because about2% of the systemic cardiac output bypasses the lungs. The pulmonary circulation is characterizedby both lower pressure and lower resistance than the systemic circulation, soflows through the two circulations are approximately equal (flow = pressure/resistance
Reference:

33. Destruction of pneumotaxic center located in the pons can cause-
A) Apneustic respiration
B) Forceful expiration
C) Accelerated respiration
D) Apnea
E) Cheyne-stokes breathing
Answer: A
Discussion:
Reference: (Ref: Ganong /25th /Page-664-665)

34. Following inhibits actin-myosin interaction?

A) Acetylcholine-esterase
B) Troponin-T
C) Troponin-C
D) Troponin-I
E) Na+
Answer: D
Discussion:
Reference: [Ref: Vision physiology 7th 24]

35. Followings are increased by exercise except:

A) Pulmonary blood flow
B) Rate and depth of respiration]
C) O2 consumption
D) Arterial PO2
E) CO2 formation
Answer: D
Discussion: (only arterial PO2 decreased rest are increased)
Reference: [Ref: Ganong, 25th, P-644

36. Hypoxemia produces hyperventilationby a direct effect on the-
A) phrenic nerve
B) J receptors
C) lung stretch receptors
D) medullary chemoreceptors
E) carotid and aortic body chemoreceptors
Answer: E
Discussion: Explanation: Hypoxemia stimulates breathing by a direct effect on the peripheralchemoreceptors in the carotid and aortic bodies. Central (medullary) chemoreceptorsare stimulated by CO2 (or H+). The J receptors and lung stretch receptors are notchemoreceptors. The phrenic nerve innervates the diaphragm, and its activity is determinedby the output of the brain stem breathing center.
Reference:

37. In an experiment testing a new muscle relaxant it was noticed that this drug only affected the muscles of inspiration. Which of the following are muscles of inspiration?
A) Abdominal muscles and external intercostals

B) Diaphragm and abdominal muscles
C) Diaphragm and external intercostals
D) Diaphragm and internal intercostals
E) Internal and external intercostals
Answer: C
Discussion:
Reference: (Ref: Ganong /25th /Page-624)

38. Lung compliance is mostly determined by-
A) Negative intrapleural pressure
B) Residual volume of air in the lungs
C) Negative intraalveolar pressure
D) The elastic forces of the lung tissue itself
E) Elastic forces caused by surface tension of the fluid that lines the inside wall of the alveoli
Answer: E
Discussion:
Reference: [Ref: Guyton 13th /P-499]

39. Most of the CO2 transported in the blood is

A) In dissolved state
B) As carbamino compounds formed from plasma proteins
C) As carbamino compounds formed from hemoglobin
D) In bound form with Cl-
E) In the form of bicarbonate
Answer: E
Discussion:
Reference:

40. Nerve impulse transmit to motor end plate in skeletal muscle which incorrect
A) Impulses pass from presynaptic synaptic vesicle
B) Acetylcholine granule release
C) Na+ & Cl- influx into the cell
D) Ca++ entry
E) K+ influx
Answer: C
Discussion: (Explanation:contain genetic information from parents to offspring)
Reference: [Ref: Ganong/25th/P-105]

41. Regarding Hypoventilation which one is not correct-
A) Influx of CO2 into RBC
B) Influx of Cl- into RBC
C) Efflux of HCO3- from RBC
D) Decrease PH
E) Metabolic acidosis occurs
Answer: E
Discussion:
Reference:

42. Tetany occurs in hyperventilation due to
A) Respiratory acidosis
B) Metabolic alkalosis
C) Metabolic acidosis
D) □ H + concentration in blood
E) Increase neuronal excitability
Answer: E
Discussion:
Reference: [Ref-Ganong-25 th /Page-645]

43. The main respiratory control neurons
A) Send out regular bursts of impulse to expiratory muscles during quiet respiration
B) Are unaffected by stimulation of pain receptors
C) Are located in pons
D) Send out regular bursts of impulse to inspiratory muscles during quiet respiration
E) Are unaffected by impulses from cerebral cortex
Answer: D
Discussion:
Reference: (Ref: Ganong 25th P-667)

44. which of the following causes of hypoxemia not hypoxia,is characterized by a decreased arterial PO2 and an increased A–a gradient?
A) Hypoventilation
B) Right-to-left cardiac shunt
C) Anemia
D) Carbon monoxide poisoning
E) Ascent to high altitude
Answer: B
Discussion: [IV A 4; IV D; Table 4-4; Table 4-5]. Hypoxia is defined as decreased O2 delivery to the tissues. It occurs as a result of decreased blood flow or decreased O2 content of the blood. Decreased O2 content of the blood is caused by decreased hemoglobin concentration (anemia), decreased O2-binding capacity of hemoglobin (carbon monoxide poisoning), or decreased arterial PO2 (hypoxemia). Hypoventilation, right-to-left cardiac shunt, and ascent to high altitude all cause hypoxia by decreasing arterial PO2. Of these, only right-to-left cardiac shunt is associated with an increased A–a gradient, reflecting a lack of O2 equilibration between alveolar gas and systemic arterial blood. In right-to-leftshunt, a portion of the right heart output, or pulmonary blood flow, is not oxygenated inthe lungs and thereby "dilutes" the PO2 of the normally oxygenated blood. With hypoventilation and ascent to high altitude, both alveolar and arterial PO2 are decreased, but the A–a gradient is normal.
Reference:

45. Which one is important negative feedback mechanic of body
A) Blood pressure
B) Hormones
C) Na+
D) Body fluid
E) Blood coagulation
Answer: A
Discussion: (Explanation: the rest are positive feedback mechanism)
Reference: [Ref: Ganong/25th/P-62]

46. Which one is more important to confirm the diagnosis in obstructive lung disease-
A) FVC
B) FEV1
C) Tidal volume
D) Inspiratory capacity
E) PEFR
Answer: B
Discussion:
Reference:

47. A 62-year-old man was admitted with an exacerbation of chronic obstructive pulmonary disease. His arterial blood gases on air showed pH = 7.29, P(CO2) = 65.3 mmHg, P(O2) = 62 mmHg and standard bicarbonate = 30.5 mmo1/1. This patient had:
A) Metabolic acidosis
B) Metabolic alkalosis
C) Mixed acidosis
D) Respiratory acidosis
E) Respiratory alkalosis
Answer: D
Discussion: (compensated respiratory acidosis)
Reference: [Ref: Davidson 23rd /T-14.18/P-365]

48. Pulmonary vascular resistance increases –
A) At high altitude
B) During space flight
C) On exercise
D) With anaemia
E) On inspiring 100% oxygen
Answer: A
Discussion:
Reference: (Ref: Ganong /25th /Page-635)

49. Under normal conditions the amount of O2 taken up is a function of pulmonary blood flow; that is, normally, O2 transfer is perfusion-limited. Which of the following conditions would favour a diffusion limitation of 02 transfer from alveolar to pulmonary capillary blood?
A) Breathing hyperbaric gas mixture
B) Chronic obstructive lung disease
C) Increased ventilatory rate
D) Mild exercise
E) Pulmonary oedema
Answer: E
Discussion: Pulmonary oedema
Reference: [Ref: Guyton 13th /P- 514]

50. Which of the following is responsible for the movement of O2 from the alveoli into the blood in the pulmonary capillaries?
A) Active transport
B) Filtration
C) Secondary active transport
D) Facilitated diffusion
E) Passive diffusion
Answer: E
Discussion:
Reference: (Ref: Ganong 25th Page-638)