Test Bank

Subject:

All mid material

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Anatomy

بسم الله الرحمن الرحيم

1. About arytenoid cartilages, all are true except:

a. it has a facet that articulates with the inferior horn of thyroid cartilage

b. pyramidal shape and has 2 surfaces

c. attach to corniculate cartilage at its apex

2. During lower tracheostomy the most vessel liable to injury is :

a - superior thyroid artery

b- inferior thyroid artery

c- inferior thyroid vein

d- internal jugular vein

3. all of the following are present in the bronchopulmonary segment except :

a- segmental bronchus

b- segmental pulmonary vein

c- nerves

d- lymphatics

e- segmental pulmonary artery

4- pseudostratified ciliated columnar epithelium lining all the following except:

a-infraepiglottis

b-vestibular fold

c-conducting bronchiole

d-superior part of nasal cavity (or olfactory part)

e- nasopharynx

5. The lateral wall of the nose:

A- Blood supply comes from branches of both the internal and external carotid artery
B- Innervation through the ophthalmic and maxillary nerves
C- Venous drainage mainly to the cavernous sinus through a large emissary vein

D- Lymphatic drainage through the submandibular lymph nodes and retropharyngeal (upper deep cervical) lymph nodes.
E- All sinuses drain in the middle meatus or infundibulum except the sphenoidal and post ethmoidal sinuses

6. Regarding pterygopalatine fossa; maxillary artery and nerve passing in different directions through

A. pterygomaxillary fissure

B. Infratemporal fossa

C. middle cranial fossa

D. infraorbital canal

7. All of the following nerves supply the lateral wall of the nasal cavity EXCEPT:
(a) Anterior ethmoidal nerve
(b) Posterior ethmoidal nerve
(c) Anterior palatine nerve
(d) Posterior superior lateral nasal nerve
(e) Anterior superior alveolar

8. Which of the following structures is least likely to be damaged during the removal of a tumor in the root of the right lung:
(a) Phrenic nerve
(b) Pulmonary artery
(c) Azygous arch
(d) Vagus nerve
(e) Recurrent laryngeal nerve

9. Following a thyroidectomy of a 30-year-old man, the surgeon noticed that he had a weak voice and that the right vocal cord was slack. What possibly could the surgeon have tied together:
(a) Internal laryngeal nerve with the superior laryngeal artery
(b) Internal laryngeal nerve with the inferior laryngeal artery
(c) External laryngeal nerve with the superior thyroid artery
(d) Recurrent laryngeal nerve with the inferior thyroid artery
(e) Recurrent laryngeal nerve with the inferior laryngeal artery

10. A dentist accidently dropped a tooth and it fell down the respiratory tract. Which of the following is the most possible final destination of the tooth:
(a) Left lung, upper lobe, anterior segment
(b) Left lung, lower lobe, posterior segment

(c) Right lung, middle lobe, medial segment
(d) Right lung, lower lobe, apicobasal segment
(e) Right lung, lower lobe, posterior segment

11. All of the following regarding the pterygopalatine fossa are correct EXCEPT:
(a) The maxillary artery enters it through the pterygomaxillary fissure
(b) The maxillary nerve enters it through foramen rotundum
(c) The parasympathetic ganglia receive preganglionic parasympathetic nerve fibers from the facial nerve
(d) The parasympathetic ganglia receive postganglionic sympathetic nerve fibers through the lesser petrosal nerve
(e) It communicates with the oral cavity below through the palatine canal

12. All of the following regarding the quadrangular membrane are correct EXCEPT:
(a) Its upper free margin thickens to form the aryepiglottic folds
(b) It's an intrinsic membrane
(c) Is innervated by the recurrent laryngeal nerve
(d) Its lower free margin thickens to form the false vocal cords
(e) Attaches posteriorly to the arytenoid cartilage

13. All of the following regarding the maxillary air sinuses are correct EXCEPT:
(a) They open into the middle meatus of the nasal cavity
(b) Located posteriorly to the pterygopalatine fossa
(c) Innervated by branches of the maxillary nerve
(d) Extraction of an upper molar tooth can result in formation of a fistula
(e) Has a bad drainage especially in chronic sinusitis

14. The muscle that forms part of the true vocal cord is:
(a) Thryoarytenoid (b) Cricothryoid (c) Thyrohyoid
(d) Transverse arytenoid (e) Oblique arytenoid

15. Which is wrong about arytenoid cartilage:

(a)- It articulates with other 3 cartilages

(b)- its mucosa supply by internal laryngeal nerve

(c)- it gives an attachment to true vocal cords

16. Wrong about pterygopalatine ganglion:
(a)- it receives preganglionic sympathetic through deep petrosal nerve
(b)- it located between sphenoid and palatine bones

17. Wrong about bone support lateral nasal wall:
(a)- ethmoid (b)- lacrimal (c)- maxilla (d)- lateral pterygoid plate of sphenoid

18. Wrong about true vocal cords:
A-has smooth muscle B- no blood vessels
C- no lymph drainage D-lined by oral epithelium

19. Wrong about pterygopalatine ganglion:
(a)- Is parasympathetic and receives preganglionic fibers from the trigeminal nerve
(b)- Receives postganglionic sympathetic from carotid plexus
(c)- Send pharyngeal nerve through palatovaginal canal to supply glands in the mucosa of nasopharynx

20. All the following have opposing actions except:
a- cricothyroid and thyroarytenoid muscles.
b- Oblique arytenoid and aryepiglotticus muscles.
c-transverse arytenoid and posterior cricoarytenoid muscles

21. Which of the following passes through the opening in thyrohyoid membrane:
A- Inferior laryngeal artery B- External laryngeal nerve
C- Internal laryngeal nerve D-Superior thyroid artery

22. The diaphragmatic pleura is supplied by which nerve
A- Intercostal nerves
B- Phrenic nerve
C- pulmonary plexus

23. Which of the following isn't found in pterygopalatine fossa
A- Maxillary nerve B- Pterygopalatine ganglia
C- Sphenopalatine nerve D- First part of the maxillary artery

24- The post ganglionic parasympathetic innervation to lacrimal gland is through
a. Greater palatine nerve
b. Zygomaticotemporal nerve

c. Long sphenopalatine nerve

25- Which of the following is incorrect about the right pulmonary artery-
a. It originates from pulmonary trunk at sternal angle level
b. It is longer than the left one
c. It is related anteriorly to the SVC and ascending aorta

26- all of the following related left to trachea except: azygous arch

27-Stab in the neck affects: Suprapleural membrane

28-Wrong about cricothyroid muscle: It is innervated by nerve that accompanies superior laryngeal artery (the cricothyroid muscle is innervated by external laryngeal nerve , and the one that accompanies superior laryngeal artery is the internal laryngeal nerve)

29-what is wrong about costodiaphragmatic recess: longest at midclavicular line

(the true is midaxillary line)

30-nerve to pterygoid canal is made of: greater and deep petrosal nerve

31- Wrong: right recurrent laryngeal behind trachea in superior mediastinum

32-stab wound caused pneumothorax can be due to injury through all except:

ninth intercostal space at midclavicular line (the true is midaxillary line)

33-one of the paranasal sinuses is supplied by the superior alveolar nerve:

maxillary air sinus

34- Innervated by recurrent laryngeal nerve and relaxes vocal cords: Thyroarytenoid

35.wrong about trachea: Posteriorly covered by striated trachealis muscle.

(true is that it is smooth)

36.wrong about nose: The lateral wall is mainly supplied by long sphenopalatine nerve.

(true is :long sphenopalatine nerve supplies the lower post. Part of nasal septum)

37.not from the branches of third part of maxillary artery:

Buccal artery. (buccal artery branches from 2nd part)

38.correct association between artery and nerve:

Inferior laryngeal artery with recurrent laryngeal nerve.

39.wrong about true vocal cords:

They are thickening of the lower free border of quadrangular membrane

(true is cricovocal membrane)

40.wrong statement: When you insert a canula in pneumothorax , it must be inserted at the upper border of intercostal space.(true is lower border)

41-Not associated with the lateral wall of nasal cavity: horizontal part of palatine bone

42-A patient had a problem with his voice, his doctor found that his left true vocal cord in the adducted position, what's true:
his left recurrent laryngeal nerve was ligated with the inferior thyroid artery during thyroidectomy

43- After thyroidectomy, right vocal cord was found to be paralyzed:
surgeon ligated recurrent laryngeal with inferior thyroid artery

44-Nose bleeding (epistaxis in the Kiesselbach's area) happen because of rupture of: Nasopalatine artery

45-What's wrong about lung carcinoma:
the tumor will cause partial injury to left recurrent laryngeal nerve which will affect the adductors.

46-Not liable to injury when removing a tumor in the hilum: recurrent laryngeal nerve.

47-Wrong about suprapleural membrane: moves upward

48-Which of the following is wrong regarding tracheotomy:
inferior thyroid artery might be injured

49-Which of the following isn't a bony support to the lateral wall of the nose:
medial pterygoid plate of ethmoid bone

50- Impression of what structure is at the left lung medial surface:
Esophagus

51-A patient had pleural effusion & a nurse did aspiration to suck the fluid at the midaxillary line at the upper part of his 9th intercostal space, the second day, he complained of tickling skin sensation that reached the skin of his abdomen (pain sensation from the site of injection to the umbilical region), which is correct:
the needle inserted for aspiration caused injury to his 9th intercostal nerve
52- Wrong: cricoid mucosa innervated by internal laryngeal nerve

53-Wrong about pulmonary arteries: bronchial arteries are branches of them

54-Main artery in Kiesselbach's area: superior labial of facial artery

55-Wrong about pterygopalatine ganglion: parasympathetic postganglionic fibers go to the lacrimal glands through orbital nerves

56-Wrong about suprapleural membrane: attaches to transverse process of first thoracic vertebra (true is C7)
57-Not affected in the dissection of the root of the right lung: recurrent laryngeal nerve
58-Wrong about the lungs: don't have lymph nodes
59-Wrong about sphenoid air sinus: drains into superior meatus
60-No symmetry in the superficial anatomy of the lungs in: the anterior border below sternal angle
61-Wrong about conus elasticus: innervated by internal laryngeal nerve
62-Leaves pterygopalatine fossa to the infratemporal fossa: maxillary nerve
63-What nerve supplies cricothyroid muscle: external laryngeal nerve
64-A nerve to the left of the trachea with a recurrent nerve: vagus nerve

65- Greater palatine artery is a branch of
a. Maxillary artery in pterygopalatine fossa
b. Facial artery
c. Maxillary artery in lateral nasal wall
d. Anterior ethmoidal artery
66- After suffering from sinusitis, an oral fistula is formed with
a. Maxillary sinuses
b. Frontal sinuses
c. Ethmoidal sinuses
d. Sphenoidal sinuses
67- All of the following are lined with by pseudostratified columnar epithelium with goblet cells except:
a. Olfactory region
b. Terminal bronchioles
c. Posterior surface of epiglottis

d. False vocal cord

68- needle in the left ninth intercostal space at mid-axillary line wouldn't affect

a. Diaphragm
b. Spleen
c. Lung
d. Pleura
e. Peritoneum

69-Which of these muscles causes closure of rima glottidis in case of recurrent laryngeal nerve injury

a. Lateral crico-arytenoid muscle
b. Transverse arytenoid muscle
c. Posterior cricoarytenoid muscle
d. Vocalis muscle

1- A	2- C	3- B
4- D	5- C	6-A
7-B	8-E	9-C
10-D	11-D	12-C
13-B	14-A	15-A
16-A	17-D	18-A
19-A	20-B	21-C
22-B	23-D	24-B
25-A	26 till 64 is A	65-A
66-A	67-B	68-C
69-C		

الوقت كالسيف إن لم تكن ذئبا بما تشتهي السفن طلع البدر علينا

Histo & Embryo

1- Type II alveolar cells are associated with all of the following EXCEPT:
(a) They form 16% of the interalveolar septum
(b) They form 8% of the alveolar wall
(c) They contain in their cytoplasm lamellar bodies
(d) They have the ability to regenerate their own type as well as type I cells
(e) They are connected to type I alveolar cells by occluding junctions and desmosomes

2- The laryngotracheal groove is formed during:
(a) 2nd week of pregnancy
(b) 4th week of pregnancy
(c) 6th week of pregnancy
(d) 5th week of pregnancy
(e) 7th week of pregnancy

3- All of the following cells are located in the olfactory region of the nose EXCEPT:

(a) Pseudostratified ciliated columnar epithelium
(b) Sustentacular cells
(c) Olfactory cells
(d) Bowman's gland
(e) Goblet cells

4- Which of the following conditions are associated with oligohydramnios:
(a) Laryngeal atresia
(b) Tracheoesophageal fistula
(c) Congenital cyst of the lung
(d) Ectopic lung lobe
(e) Pulmonary hypoplasia

5- An x-ray was done to a child one day after birth. The x-ray showed peripheral opaque areas in the lung. What is the most common cause of such a condition?
(a) Collapsed lung due to traumatic delivery
(b) Congenital absence of surfactant
(c) Congenital absence of the alveoli
(d) Obstruction of the distal airways
(e) This is a normal condition, where the alveoli will inflate several days after delivery

6- All of the following are present in the olfactory region EXCEPT:
a. Bipolar cells

b. Bowman serous gland
c. Von Ebner gland + seromucous secretion.
d. Basal cells

7- psuedostrtified ciliated columnar epithelium lining all of the following except:

a-infraepiglottis b-vestibular fold c-conducting bronchiol
d-superior part of nasal cavity (or olfactory part) e- nasopharynx

8- the development of the tracheoesophageal septum occurs at week:

a-2 b- 3 c- 4 d- 5 e- 6

9- which is not present in the blood-air barrier?

a- cytoplasm of endothelial cells
b- cytoplasm of alveolar cells
c- fused basal lamina
d- surfactant
e-thickness of 0.1 - 1.5 millimeter

10- All of the following is lined by Pseudostratified columnar epithelium with goblet cells except?

A- Olfactory region
B- End of terminal bronchiole
C- posterior surface of epiglottis
D- False vocal cord

11- Which of the following is not found in the respiratory membrane?

A- Surfactant layer B- Type II pneumocyte
C- Type 1 pneumocyte D- Endothelial cell
E- Fused basal lamina

12- Oligohydramnios is associated with?

A-Ectopic lung lobes B-Lung hypoplasia
C- Lung agenesis D- ARDS

13- Wrong about ARDS

A- Thyroxine is the most important stimulator
B- Causes collapsing of the alveoli
C- Accounts for 2% of death in neonates

14- Functionally the important microscopic anatomy of the lung consist of what is called a respiratory membrane, which consist of?

A- The epithelium of the alveolus
B- An alveolar basement membrane
C- A capillary basement membrane
D- The Endothelium of the capillariy
E - All of the above

15- **A peremuture baby usually has difficulty breathing, However the respiratory system devolped enough for survival by:**
a.17 weeks b. 24 weeks c.28 week
d. 36 weeks e. none of the above

16- **Most Inspired particles such as dust fail to reach the Lung because of the:**
a. Ciliated mucous lining in the nose
b. porus structure of the nasal conchae
c. Abundant blood supply to nasal mucosa
d. Action of the epiglottis
e. None of the above

17- **Which of the following is false regarding secondary bronchi?**
a. They have complete muscular layer
b. Cartilage plates gradually disappear
c. Goblet cells are rarely seen

18- **Region that has columner epithelium with muscle but without cartilage:** bronchioles

19- **The appearance of the laryngeotracheal groove is in:** 4th week

20- **The lack of the development of cartilage in the bronchus causes**: bronchial stenosis

21- **Wrong about terminal sac period of lung maturation**: lack of respiratory membrane

22- **Wrong about Type II cells**: have proteolytic enzyme granules

23- **Baby vomits what eats:** tracheoesophageal fistula

24- **Wrong about Lung:** Type I alveolar cells are most abundant

25- **Most numerous cells in the lungs:** dust cells

26- **Wrong about surfactant:** Usually deficient in “term” babies

27- **wrong**: the growth of alveoli after birth is mainly by increase in size

28- **wrong about tracheoesophageal fistula or atresia:** it causes pulmonary hypoplasia

29- **wrong about clara cells:** they exist rarely in the respiratory bronchioles

30- **lung opacity in new born:** Its normal

31- **Wrong about terminal bronchioles:** have few glands in the lamina Propria.

32- **what is wrong about dust cell/macrophages:** present in respiratory membrane

33- **cleft lip results from failure of fusion of:** Maxillary prominences and nasal medial.

34- **baby suffers from vomiting and regurgitation upon feeding:** Esophageal atresia and trachea-esophageal fistula.
35- **wrong about trachea:** Posteriorly covered by striated trachealis muscle.
36- **wrong about clara cells:** Is part of diffuse neuro-endothelial system.
37- **C-shaped trachea cartilage is derived from:** Somatic mesoderm
38- **wrong about clara cells:** They aren't present in terminal bronchioles.
39- **an infant with polyhydraminous that was born with a lot of amniotic fluid in his mouth, which of the following is mostly the cause:** proximal esoghegial atresia with tracheoesophageal fistula.

1	B	**2**	B	**3**	E
4	E	**5**	E	**6**	C
7	D	**8**	C	**9**	E
10	B	**11**	B	**12**	B
13	C	**14**	E	**15**	C
16	A	**17**	C		

Physio:

1. All of the following regarding emphysema are correct EXCEPT:
(a) Centriacinar emphysema is the most common type of emphysema
(b) Obstructive overinflation is due to total obstruction of the lumen
(c) Bullous emphysema is associated with formation of enlarged air spaces larger than 1 cm in diameter
(d) Mediastinal emphysema may be due to fracture of a rib
(e) Compensatory emphysema is not a true type of emphysema
2. All of the following regarding emphysema are correct EXCEPT:
(a) High levels of MMP-9 and MMP-12 are seen
(b) Mesenchymal cell response to TGF-β signaling is increased
(c) Distal acinar emphysema is the most common cause of spontaneous pneumothorax
(d) Loss of mesenchymal cells which impairs healing of damaged tissue
(e) Inflated air spaces without the presence of fibrosis

3. Regarding ARDS, which of the following is CORRECT:
(a) Neutrophils play a minimal role in the pathogenesis of the disease
(b) Hyaline membrane is formed during the organizing stage
(c) The most common direct cause is atypical pneumonia
(d) Mortality has reached 70% now with supportive care
(e) Adult RDS is due to decreased amount of surfactant
4. All of the following regarding chronic bronchitis is correct EXCEPT:
(a) Is associated with small airway disease
(b) There is goblet cell metaplasia in the small bronchioles
(c) Characterized mainly by mucus hypersecretion
(d) Coexistent emphysema causes early and relatively mild airflow obstruction
(e) Patients with such a disease are called 'blue bloaters'
5. If the respiratory minute ventilation and the CO_2 production are constant, what can be increased to cause the PCO_2 to decrease:
(a) FRC (functional residual capacity)
(b) Fraction of inspired air (FiO_2)
(c) Respiration frequency
(d) Tidal volume
(e) Local temperature
6. When will be happen to the partial pressures of O_2 and CO_2 when ascending to high altitude:
(a) PO_2 increases, and PCO_2 increases
(b) PO_2 increases, and PCO_2 decreases
(c) PO_2 decreases, and PCO_2 increases
(d) PO_2 increases, and PCO_2 doesn't change
(e) PO_2 decreases, and PCO_2 decreases
7. All of the following are associated with ARDS EXCEPT:
(a) $\Delta PO_2/FiO_2 < 200$
(b) Bilateral infiltrate on chest x-ray

(c) Pulmonary capillary wedge pressure > 18 mmHg
(d) High mortality
(e) Death from pulmonary edema

8. During CO poisoning, all of the following are false, EXCEPT:
(a) Increase in PaCO2
(b) Decrease in PaO2
(c) Decrease in O2 saturation
(d) Decrease in pH
(e) Should not be considered dangerous unless CO is < 1 mmHg

9. Which of the following is higher at the basal alveoli than in the apical ones at FRC:
(a) Ventilation-perfusion ratio
(b) PaO2
(c) Physiological dead space
(d) PaCO2
(e) Size of alveoli

10. From the following data, calculate the cellular O2 consumption (VO2):
Mean pulmonary capillary oxygen content = 19 ml O2/dl
Arterial oxygen content = 18 ml O2/dl
Venous oxygen content = 14 ml O2/dl
Cardiac output = 6L/min
(a) 200 ml/min
(b) 220 ml/min
(c) 230 ml/min
(d) 240 ml/min
(e) 250 ml/min

11. From the following data, calculate the physiological dead space:
Tidal volume = 600 ml
Alveolar ventilation 4.3L/min
PaCO2= 40 mmHg
PeCO2= 28 mmHg
(a) 100 ml
(b) 150 ml
(c) 180 ml
(d) 200 ml
(e) Cannot be calculated from the given data

12. The following set of data is for a person ventilation at sea level. Which of the following lines contains an error:
(a) Renal venous blood >40 <45
(b) High ventilation/perfusion ratio >100 <40
(c) Mild exercise 95 40
(d) Interstitial fluid of carotid bodies >40 <45
(e) Last portion of expired air >100 <40

13. Which of the following regarding RV is CORRECT:
(a) It is the volume that remains in the lung after tidal volume
(b) It is the resting volume of the lung

(c) It decreases with COPD
(d) It decreases with fibrosis
(e) It remains the same during the entire life of a human being

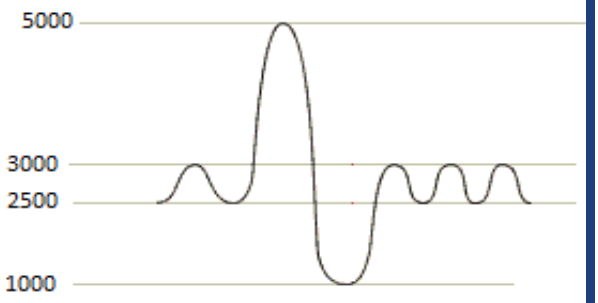
14. A gas-blood technician took an arterial blood sample from a patient. Before he measures the arterial pressures of oxygen and carbon dioxide, he pulls the syringe and draws a little amount of atmospheric air into the syringe. What will the readings of this patient be:

(a) Higher than normal PO2, and higher than normal PCO2
(b) Lower than normal PO2, and lower than normal PCO2
(c) Higher than normal PO2, and lower than normal PCO2
(d) Lower than normal PO2, and higher than normal PCO2
(e) Normal value of PO2, and normal value of PCO2

15. Pulmonary edema due to CHF (congestive heart failure) is due to:

(a) Increased pulmonary capillary hydrostatic pressure
(b) Increased pulmonary colloidal osmotic pressure
(c) Decreased pulmonary interstitial hydrostatic pressure
(d) Decreased pulmonary interstitial osmotic pressure
(e) Increased pulmonary interstitial hydrostatic pressure

16. Which of the following statements is CORRECT:



(a) VC can't be calculated
(b) This person has a very large physiological dead space
(c) This person has fibrosis
(d) This person has COPD
(e) This person could be normal

17. Regarding the O2-dissociation curve, a shift of the curve of the LEFT:

(a) Increases the P50O2
(b) Decreases affinity of Hb for oxygen
(c) Less oxygen passes from the blood to the tissues
(d) Occurs during exercise
(e) Caused by high temperature

18. A person carried out a few tests and found out that the O2 saturation in the blood has decreased while the PaO2 remained normal. This might be due to:

(a) Anemia
(b) CO poisoning
(c) Hypoventilation
(d) Fibrosis
(e) Exercise

19. Which of the following regarding IRDS is FALSE:

(a) Increased RR 'tachypnea'
(b) Cyanosis
(c) Grunting
(d) Left-right shunt
(e) Decreased inflation pressure

20. Increasing the alveolar ventilation voluntarily 3X the normal level will cause:

(a) Increase in plasma pH
(b) Decrease in plasma pH
(c) Activation of chemosensitive area
(d) Collapse of peripheral alveoli
(e) Loss of consciousness

21. hyperventilation can result from:
a- increase alveolar Pco2
b- increase alveolar Po2
c- decrease arterial Pco2 below 30 mmHg
d- direct stimulation of central chemosensitive receptors due to increase PH
e- a decline of arterial Po2 from 100 mmHg to 70 mmHg

22. which of the following is most accurate about airway pressure, referring to upper airways:

a- at the end of expiration it is 4 to 5 mmHg above atmospheric pressure

b- at the end of expiration is equal to atmospheric pressure

c- atmospheric during all the breathing cycle.

23. Which of the following values is above normal in a patient suffering from severe respiratory muscle weakness:
A. Tidal Volume.
B. Oxyhemoglobin Saturation.
C. Vital Capacity
D. Arterial PH.
E. Arterial PCO2.
24. A patient with anemia has which of the following?
A. A normal arterial blood O2 content
B. Arterial PO2 of 99 mmHG
C. A decreased venous blood PO2
D. Hyperventilation
E. Cyanosis
25. A patient suffering from chronic respiratory failure
A. Shows an increased respiratory sensitivity to CO2
B. His ventilation doesn't increase in response to decreased O2
C. Should be given 100% O2 on admission to hospital
D. Must have been given O2 if his pCO2 greatly increased
E. Shows an increased blood pH
26. In areas of the lung with lower V/Q ratios
A. Capillary blood pCO2 is higher than normal
B. Alveolar pO2 is higher than normal

C. Gas exchange ratio is higher than normal

D. Pulmonary vascular resistance is lower than normal

E. Water vapor pressure is higher than normal

27. A patient has the following arterial blood values:
pH=7.52 pCO2=20 mmHg HCO3-=16 mEq/L. He most likely:

A. Hypo-ventilating

B. Has an acid base disorder caused by over-production of fixed acid

C. Has a respiratory alkalosis

D. Has a complete respiratory compensation

E. Has renal compensation that causes his arterial HCO3- to increase

28. Oxygen therapy is of great benefit in which of the following types of hypoxia:

A. Hypoxia caused my anemia

B. Hypoxia caused by circulatory deficiency

C. Shunting of un-oxygenated venous blood past the lungs

D. Tissue metabolic enzyme system is incapable of using O2

E. Hypoxia caused by impaired alveolar membrane diffusion*

29. All of the following parameters are decreased on ascending to high altitude except:

A. Arterial pO2

B. Alveolar air pCO2

C. Hb % saturation

D. Systemic arterial pH

E. Arterial O2 content

30. The following V/Q ratios represent two different lung regions (A&B)
Under resting conditions: region A: V/Q=0.62 and region B: V/Q=0.73.
Which of the following statements is correct:

A. Lung units A and B are both under-perfused

B. Region B has the greatest alveolar pCO2

C. Region A has the greatest end capillary pCO2

D. Region B has the lower end capillary pH

E. Region A has the greatest alveolar pO2

31. Which of the following statements about the transport of O2 & CO2 by the blood is true:

A. Most CO2 is transported in the dissolved form

B. The % saturation of hemoglobin with O2 will increase if the arterial pCO2 is increased

C. A decrease in the % saturation of hemoglobin with O2 increases CO2 transport

D. In anemia both arterial pO2 and O2 content are decreased

E. The reduced arterial pO2 in an individual living at high altitude is due to impairment in O2 diffusion

32.in an individual the ventilation didn't increase when the inspired pCO2 was increased, but decreased during increased inspired pO2.
Which of the following is most likely the cause for this response in ventilation:

A. Dysfunctional central chemoreceptors

B. Hypersensitivity of the peripheral chemoreceptors

C. Bronchial muscle spasm

D. Diaphragmatic fatigue

E. Normal functioning of the central and peripheral chemoreceptors

33. A 12 years-old boy has a severe asthmatic attack with wheezing, his arterial pO2 is 60 mmHg and pcO2 is 30 mmHg. His:

A. FEV1/FVC % is increased

B. V/Q ratio is increased in the affected areas of his lung

C. Arterial pCO2 is higher than normal because of inadequate gas exchange

D. arterial pCO2 is lower than normal because hypoxemia is causing him to hyper-ventilate

E. Residual volume is reduced

34. in a standing person which of the following is higher at the apex of the lung than at the base:

A. Blood flow

B. Ventilation

C. Alveolar pCO2

D. Lung compliance

E. Physiological dead space

35. At the end of normal quite expiration before the start of inspiration the lungs are in:

A. Residual volume (RV)

B. Expiratory reserve volume (ERV)

C. Functional residual capacity (FRC)

D. Inspiratory reserve volume (IRV)

E. Total lung capacity (TLC)

36. Oxygen's percentage in the atmosphere is _____ than CO2's percentage. And its solubility in water is _____ than CO2's solubility.

A. Lower, higher B. Higher, lower * C. Lower, lower

D. Higher, higher E. none of the above

37. The large cross sectionl area:

A.Trachea B.Alveoli

C.Bronchi D.A+c

38. which of the following is the most factor that can increase the volume of the air that enters into the lung:

A.Increase gradiant partial pressure

B.Increase in action potential

C.Both a,b

39. Which of the following is true when PO2 is decreased?

A. pulmonary arteries constrict while systemic arteries dialate

B. pulmonary arteries dialate while systemic arteries constrict

C. Both pulmonary arteries and systemic arteries constrict

D. Both pulmonary arteries and systemic arteries dialate

40. Ficks law depend on multiple factors which one of them will have the most prominent effect:

A.Distance B.Molecular size C.Partial p gradient

D.Temperature E.Humidity

41. Which of the following decrease diffusion:

A.Decrease surface area B.Increase fluid in lung

C.Decrease pressure coefficient D.All of the above

42. The oxygen dissociation curve of normal adult hemoglobin is most effectively shifted to the right by:
a.Mixing with fetal hemoglobin
b. Increased 2,3-bisphosphoglycerate (BPG)
c. Cooperative binding of oxygen d. Increased PH
e. Decreased CO2

43. Methemoglobin is converted to functional hemoglobin by the enzyme:
a. Dismutase
b. Reductase
c. Oxidase d. Catalase
e. Peroxidase

44. The principle buffer in erythrocyte is:
a. Bicarbonate
b. Oxyhemoglobin c. Acetate
d. Phosphate
e. Deoxyhemoglobin

45. Carbon monoxide can lead to hypoxia , by:
a. Changing the Hb conformation
b. Increasing the level of methemoglobin in blood
c. Competitively binding at heme iron site
d. Acting as allosteric inhibitor for Hb e. Oxidizing heme iron in Hb

46. Suppose the O2 binding curve for hemoglobin becomes hyperbolic instead of sigmoidal, which of the following hemoglobin properties will be more seriously affected by this change?
a. Affinity of O2 binding in the lung
b. Affinity of CO2 binding in the tissue c. Affinity of H+ binding in the tissue

d. Oxygen delivery from Hb to myoglobin in muscles
e. Affinity of 2,3-bisphosphoglycerate binding in the tissues

47. In the chloride shift, chloride ions exchange place with :

a .Bicarbonate ion b . Sodium ions c . Potassium ions
d . hydrogen ions e . Hemoglobin

48. The Primary force responsible for air moving into the lungs during inhalation is:

a . Atmospheric pressure b . Muscular spasm
c. reduced surface tension inside the lung
d.pressure difference atmospheric-intrapulmonary e . Muscular relaxation

49. Even after forceful exhalation, a certain volume of air remains in the lung. This volume is called

a . Tidal volume b. Expiratory reserve volume c . Vital capacity
d. Residual volume e . Expiratory reserve volume

50. Stimuli or conditions that would tend to increase ventilation include :

a . Lower than normal blood P CO2 b . Higher than normal blood PH
c. Breathing carbon monoxide d. Iron- deficiency anemia
e . Breathing air with reduced P O2

51. Breathing :

a. Is not dependent on nervous impulses b. Is a chemical process by definition
c. Depends on the ability of cells to oxidize materials .
d.Is best described as mechanical process e. Cannot be voluntary controlled .

52. Intraplural pressure :

a . Is less than atmospheric pressure ONLY during inspiration
b . Becomes equal to the external environmental air pressure by the action of respiratory muscle
c. Is the difference between the pressure in the plural cavity and that within the lung alveoli
d . Is always less than atmospheric pressure
e . Increase when the diaphragm and external intercostal muscle contract

53. Physiology define the term " Pulmonary ventilation" as :

a . Breathing due to movement of ribs
b . The expansion of the alveoli due to pressure difference c. The movement of the atmospheric air to the lung
d. Breathing using the diaphragm only
e . Gas exchange between the atmosphere and lung alveoli

54. In the adult human, total lung capacity (TLC) is approximately :

a . Equals to 15 litters b. Equals to 9 litters c . Equals to 11 litters
d . Equals to 2 litters e.Equals to 6 litters

55. Vital capacity is :

a . The sum of all lung volumes ?
b. Sum of tidal volume plus residual volume
c. The inspiratory reserve plus expiratory reserve volume
d . The sum of inspiratory reserve volume, tidal volume, and expiratory reserve volume
e . The sum Inspiratory capacity to expiratory capacity

56. Which of the following contains the highest percentage of carbon dioxide ?

a . Alveolar air
b.Pulmonary arteries
c. Pulmonary veins
d. Intercellular (interstitial) fluid
e . Systemic arteries

57. Rapid forced breathing:

a. Is called hyperventilation
b. Induced a state of alkalosis
c. Induces a state of acidosis
d. A and B are correct
e. A and C are correct

58. End of quit respiration , muscle relaxed and lungs contents are at

a. Residual volume (RV)
b. Expiratory reserve volume (ERV)
c.Functional residual capacity (FRC)
d. Inspiratory reserve volume (IRV)
e. Total lung capacity (TLC)

59. Which of these structures is not a part of the lower respiratory tract ?

a. Bronchii
b. Larynx
c. Alveoli
d. pharynx
c. trachea

60. Surfactant :

a. Increase pleural pressure
b.Reduces surface tension of the fluid linng the alveoli
c. Decrease alveolar pressure
d. Makes inspiration more difficult e. Can cause a pneumothorax

61. Hypoxic hypoxia mainly attributed to :

a. Respiratory membrane thickness
b. Increased distance between alveolar and capillary distance
c. Decrease partial pressure of O2 in atmosphere
d. Increase red blood cells in pulmonary arterioles
e. Increase PO2 in inspired air

62. Assuming a normal anatomic dead space of 150 ml and a fixed respiratory minute ventilation of 6 L /min. Which combination of respiratory rate and tidal volume will give the largest alveolar ventilation?

A. 200 ml at 30 breaths/min.
B. 300 ml at 20 breaths/min.
C. 400 ml at 15 breaths/min.
D. 600 ml at 10 breaths/min.
E. alveolar ventilation is not affected by the tidal volume and the respiratory rate.

63. The following table of normal values (at sea level) contains one error. This error appears in which line.

A. pulmonary venous blood 100 40
B. alveolar air with high V/Q ratio >100 <40
C. arterial blood during exercise < 90 >40
D. pulmonary arterial blood 40 45
E. mixed expired air >100 < 40

64. Which of these statements is False regarding pulmonary vascular resistance during exercise?

A. pulmonary arterial pressure increase slightly during exercise

B. pulmonary vascular resistance decreases during exercise.
C. Pulmonary vascular resistance is only one seventh of systemic vascular resistance
D. Increase of lung volume results in increase of resistance in extra alveolar vessels
E. total vascular resistance is increased in emphysema and in pulmonary fibrosis

65. Regarding maximum oxygen consumption "VO2max" in normal individual, all the following are true; EXCEPT:

A. is mainly limited by the lungs.
B. can be doubled by training (more muscle exercise).
C. is more important in weight lifters than in long-distance runners
D. is genetically determined.
E. cannot be measured in human being.

66. In a healthy subject, sitting upright; at rest, one of the following statements is TRUE:

A. his lung apex receives more blood than the lung base
B. if he breathes right out to residual volume (RV), the first air subsequently inhaled will enter the basal regions of the lungs.
C. the base of the lung is less ventilated when compared to the apex of the lung
D. the lungs inflate and deflate around a mean volume which is 40% of their full capacity.
E. if he breathes right out, small airways start to close in the upper parts of the lungs sooner than in the lower parts of the lung

67. In standing normal individual at rest, compared to skeletal muscle capillaries, pulmonary capillaries have:

A. continuous blood flow in the entire capillary bed (base and apex)
B. more capillary blood oncotic pressure
C. less capillary blood oncotic pressure
D. less capillary hydrostatic pressure
E. more blood volume

68. A child with normal lung volumes for his age (TLC = 2.5 liters, VC = 2.0 liters, ERV = 0.5 liters) would be expected to have an FEV1 (forced expired volume in the first second) in the range of:

A. 0.5-1.0 liters
B. 1.0-1.6 liters
C. 1.6-2.0 liters
D. 2.0-2.5 liters
E. 2.5-3.0 liters

69. An individual who breaths through a hose or tube while keeping his tidal volume normal would be expected to have a decrease in (compared to normal):

A. dead space volume
B. airway resistance
C. mixed expired PCO2
D. mixed expired PH2O
E. work of breathing

70. Blood gas measurements in a hypoxic patient indicate that the patient's systemic arterial oxygen concentration is normal and his systemic venous oxygen content is higher than normal. This is characteristic of:

A. diffusion limitation

B. right-to-left shunt (mixing venous blood with arterial blood)
C. pulmonary ventilation/perfusion mismatch
D. anemic hypoxia (low Hb concentration)
E. histotoxic hypoxia (septicemia)

71. Which person would be expected to have the largest PAO2-PaCO gradient? (A-stands for alveolar and a-stands for arterial)

A. normal person during exercise
B. person with pulmonary fibrosis
C. person with anemia but with normal lungs
D. person with normal lungs breathing 100% O2
E. person at 5,000 meter above sea level.

72. A patient with restrictive lung disease will have a relatively normal

A. FEV1
B. FVC
C. FEV1/FVC
D. V/Q ratio
E. pulmonary vascular resistance

73. Regarding the physiological dead space, choose the WRONG statement:

$$VD = VT\left[\frac{PaCO2 - PECO2}{PaCO2}\right] \ldots\ldots \text{Bohr's equation}$$

A. generally is equal or greater than the anatomic dead space volume
B. often increased in lung disease
C. is increased whenever V/Q ratio is increased.
D. is equal to alveolar wasted volume

74. The greatest increase in physiological dead space would be expected with:

A. Pulmonary embolism
B. Atelectasis (or: collapse of one lung)
C. Pneumothorax
D. Bronchoconstriction
E. Decreased V/Q ratio

75. Comparing the top of the erect lung to the bottom: all are true EXCEPT

A. Water vapour pressure remains constant.
B. Compliance is more at base than at the apex.
C. Alveolar PCO2 at apex is lower than at the base
D. Venous return derived from apical regions contain higher PO2 than from basal regions
E. More V/Q ratio at the base than at the apex

76. Regarding alveolar dead space (alveolar wasted volume), all the following are true EXCEPT:

a) Is less than physiological dead space.
b) Is decreased with mechanical ventilation
c) Is increased with hypotension (bleeding)
d) Is increased with erect posture
e) Is increased whenever V/Q ratio is increased

77. If dead space is one third of the tidal volume and arterial PCO2 is 45 mmHg, what is the mixed expired pCO2?
a) 20 mmHg
b) 25 mmHg
c) 30 mmHg
d) 45 mmHg
e) 60 mmHg
78. Peripheral chemoreceptors:
a) Respond only to increased/decreased H+
b) Respond only to low O2.
c) Stimulated by carbon monoxide
d) Having the lowest arterio-venous O2 difference in our body
e) Aortic bodies innervated by glossopharyngeal nerve
79. Which of the following statements about surfactant is INCORRECT?
a) Is responsible for hysteresis
b) Increases pulmonary compliance
c) Is commonly deficient in term neonates
d) Prevent the occurrence of pulmonary edema
e) Its production needs GCs (glucocorticoids)
80. Regarding lung compliance, all the following are true EXCEPT:
A. Expressed as unit change in volume per unit change in pressure
B. Maximal during quit breathing
C. The more the surface tension forces the more the compliance
D. Decreases in pulmonary fibrosis.
E. Increases in emphysema
81. In the adult, one of the following is NOT different between the systemic and pulmonary circulation?
a) Volume of blood flowing through it
b) Vascular resistance
c) Capillary hydrostatic pressure
d) Ps (systolic arterial pressure)
e) Pulse pressure
82. For a normal Hb-O2 dissociation curve, the most correct relationship is:
a) PaO2 40 mmHg, SaO2 40%
b) PaO2 26 mmHg, SaO2 26%
c) PaO2 60 mmHg SaO2 90%
d) PaO2 120 mmHg, SaO2 120% -
e) PaO2 70 mmHg, SaO2 40%
83. Which of the following is true at FRC?
a) It is the resting volume of the lung
b) It is the resting volume of the thorax
c) at FRC, intra-alveolar pressure=atmospheric pressure
d) at FRC, intrapleural pressure>atmospheric pressure
e) at FRC, lung compliance is the lowest
84. In bronchial asthma all the following are decreased EXCEPT

a) Airway resistance
b) FEV1.0
c) FEV1.0/FVC
d) Diameter of airways
e) Peak expiratory flow rate

85. A person breathes into and from a spirometer (volume 12 liters) containing 10% helium gas mixture. After equilibration, helium concentration of expired gas was found to be 6.67%. His vital capacity is 4.2 liters. What is his residual volume?

A. 1000 ml
B. 1200 ml
C. 1500 ml
D. 1800
E. Cannot be calculated from the above data

86. If blood Hb is 10 g/dL, PaO2 is 100 mm Hg, and hemoglobin is 50% saturated with oxygen, the volume of oxygen contained in 100 ml of blood is approximately:

a) 5.6 ml
b) 6.7 ml
c) 9.5 ml
d) 19.5 ml
e) Cannot be calculated from the above data

87. Which of the following would shift HB-O2 to the left?

a) Exercise
b) HbF
c) Increase alveolar PCO2
d) Whenever P50 increases.
e) Hypoventilation

88. Arterial PO2 is reduced in

a) Pulmonary edema
b) Histotoxic hypoxia
c) Anemia
d) CO poisoning
e) Descending to Dead Sea area

89. Alveolar oxygen tension (PAO2) is influenced by all the following EXCEPT:

a) Atmospheric pressure
b) Fraction of oxygen in inspired air (FiO2)
c) Hemoglobin concentration in the blood
d) Oxygen consumption
e) V/Q ratio

90. At high altitude the following changes take place EXCEPT:

a) Increase alveolar PCO2
b) Increase ventilation
c) Increase respiratory rate
d) Increase in O2 carrying capacity of blood
e) Decrease alveolar PO2

91. The work of breathing is:

a) Inversely proportional to lung compliance
b) Remain constant during exercise
c) Not affected by airway resistance
d) Is less in pulmonary fibrosis
e) Is less in emphysema

92. During mild exercise:

a) PaO2 declines
b) PaCO2 increases
c) O2 consumption reaches its maximum (VO2max)
d) Whole body arteriovenous oxygen concentration difference increases.
e) The time an RBC stays in the pulmonary capillary remains the same.

93. What is NOT TRUE about pneumothorax

a) Diameter of the thorax increases
b) Venous return decreases
c) VC (vital capacity) decreases
d) Lung compliance increases
e) Lung collapses

94. Which one of the followings is NOT correct regarding Exhalation (expiration)?

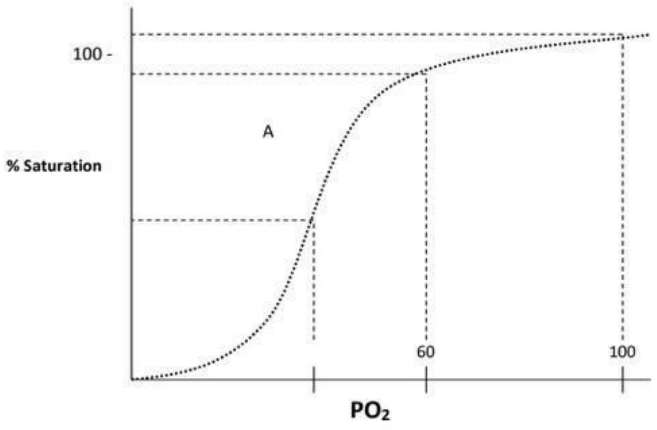
a) Expiration is typically a passive process
b) Exhalation starts when the expiratory muscles relax
c) The elastic properties of the lung help to expel deoxygenated air during exhalation
d) In COPD, patient faces problem mainly during expiration
e) Expiration can be active too.

95. Regarding pulmonary vascular resistance, all the following are true EXCEPT:

a) Is minimal at FRC
b) Increases when lung volume is above FRC
c) Increases when lung volume is below FRC
d) Is less than TPR (total peripheral resistance)
e) Increases during exercise

96. All the following laboratory values are consistent with pulmonary fibrosis EXCEPT?

a. Increased residual volume
b. Increased vascular resistance
c. Normal or above normal FEV1/FVC
d. Decreased lung compliance
e. Normal or above normal peak expiratory flow (corrected for lung volume)



97. Which of the following is INCORRECT regarding the above oxyhemoglobin curve?

a. higher P50 than normal means that the O2 binds less tightly to Hb.
b. HbF is normally shifted to the left
c. An increase in PCO2 causes a right shift.
d. An increase in blood pH increases P50.
e. An increase in temperature shifts the O2 uptake curve to the right.

98. Regarding gas exchange across pulmonary capillaries, which of the following statements is FALSE?
a. The length of capillary required for gas equilibrium is longer during exercise.
b. In anemic person, DLCO is less than normal.
c. At rest, equilibrium is usually reached at 50% of the capillary length
d. CO_2 crosses the membrane easier than O_2.
e. considering the diffusing capacity of the lung for different gases, the least important factor to play role is the molecular weight of the gas.
99. In a normal person breathing room air at sea level at rest (in standing position). All the following statements are true EXCEPT?
a. Dead space accounts for almost one third of the tidal volume
b. Volume of anatomic dead space ÷ volume of physiologic dead space is equal or greater than 1.0
c. Mixed venous [O_2] is 15 ml/dl blood
d. Physiologic dead space is greatest at the lung apex
e. Compliance is greatest at the lung base.
100. In diving, divers first hyperventilate before they go into water. This hyperventilation allows one to hold one's breath for a longer period of time, because hyperventilation:
a. increases the oxygen reserve of systemic arterial blood
b. decreases the PCO_2 of systemic arterial blood
c. decreases the pH of systemic arterial blood
d. increases brain blood flow
e. make alveolar air full of O_2 which divers can use while diving
101. Which of the following is NOT true at FRC?
a. It is about 75% TLC.
b. The elastic recoil of the chest wall is outward.
c. The elastic recoil of the lung is inward.
d. The lung-thorax system is at rest.
e. pulmonary vascular resistance is the lowest
102. While obtaining the arterial blood sample, the blood-gas technician draws room air into the syringe before measuring the blood-gas values. As a result, which of the following is true?
a. The measured values of both PaO_2 and $PaCO_2$ will be higher than the patient's actual values
b. The measured values of both PaO_2 and $PaCO_2$ will be lower than the patient's actual values
c. The measured PaO_2 will be higher and the measured $PaCO_2$ will be lower than the patient's actual blood gas values
d. The measured PaO_2 will be lower and the measured $PaCO_2$ will be higher than the patient's actual blood gas values
e. The measured values of PaO_2 and $PaCO_2$ will accurately reflect the actual values
103. Regarding pulmonary vascular resistance
a. is low at high lung volumes
b. is low at low lung volumes
c. if increased, can cause right heart failure

d. is measured through routine pulmonary function tests
e. is more than systemic vascular resistance.

104. Regarding dead space, choose the FALSE statement

a. is defined as the volume of gas which does not take part in gas exchange
b. physiological dead space is the same as alveolar dead space
c. physiological dead space is measured by measuring mixed expiratory PCO2
d. mechanical ventilation (respirator) increases dead space volume.
e. increases whenever V/Q ratio is increased

105. Which of the following sets of differences best describe the hemodynamics of the pulmonary circulation when compared with systemic circulation?

	Flow	**Resistance**	**Arterial P**
a.	Same	Lower	Lower
b.	Same	Higher	Lower
c.	Higher	Same	Higher
d.	Lower	Lower	Lower
e.	Higher	Higher	Higher

106. Regarding carbon monoxide poisoning, one of the following is TRUE:

a. Increases firing rate from the peripheral chemoreceptors to the respiratory center
b. decreases arterial O2 concentration
c. Decreases arterial PO2
d. can be self-limited disease
e. as long as PCO arterial is below 1 mmHg, we should not worry.

107. If 1 g of hemoglobin has an oxygen capacity of 1.34 mL of oxygen, what is the oxygen content of blood containing 10 g of hemoglobin when the blood PO2=40 mmHg?

a. ≈ 6 mL/dL
b. ≈ 8 mL/dL
c. ≈ 10 mL/dL**
d. ≈ 12 mL/dL
e. Cannot be calculated from the information provided

108. Which of the following decreases oxygen content but does not alter PaO2 or percentage saturation of hemoglobin?

a. Ascent to an altitude of 3500 m
b. Polycythemia (high RBC count)
c. Breathing 50% oxygen
d. Anemia
e. Development of a large right-to-left shunt

109. In normal healthy person, if oxygen is added to inspired air to increase arterial PO2 from 100 mmHg to 300 mmHg, choose the correct statement

a. dissolved oxygen will increase three-fold.
b. the oxygen content of the blood will increase approximately three-fold
c. the PaN2 will remain the same
d. the PaCO2 will decrease to one third-normal
e. Increasing arterial PO2 from 100 mmHg to 300 Hg can correct any form of hypoxia.

110. Which of the following conditions would result in the highest oxygen content per milimeter of blood?

a. Hemoglobin concentration= 5 PaO2=90 mmHg
b. Hemoglobin concentration= 5 PaO2=500 mmHg
c. Hemoglobin concentration=3 PaO2=90 mmHg
d. Hemoglobin concentration=10 PaO2=60 mmHg
e. Hemoglobin concentration=16 PaO2=28 mmHg

111. According to the Law of Laplace, small alveoli don't coexist with large alveoli at the same region. In the lungs, several factors counter that tendency, and stabilize the alveolar structures. Which of the following is NOT one of them?

a. Surfactant lowers surface tension to a greater degree when it is on a smaller surface area, allowing the smaller alveoli to stay open.
b. Mechanical stability is given by surrounding alveoli (alveoli support each other's =alveolar interdependency)
c. Intrapleural pressure is lower (more negative) for smaller alveoli, allowing them to stabilize in comparison to the bigger ones.
d. Surface tension increases as alveolar surface area increases.
e. surfactant makes surface tension volume-dependent

112. Which of the following is NOT true concerning respiratory distress syndrome in premature infants?

a. Their ability to synthesize surfactant is limited.
b. Higher pressures are required to ventilate the lungs.
c. Lung compliance is low.
d. Positive pressure respirators are often used to assist them in breathing.
e. Alveoli tend to overexpand and sometimes burst at the end of inspiration.

113. Alveolar ventilation normally increases above normal when breathing:

a. 21 % oxygen and 79 % nitrogen.
b. 17 % oxygen and 83 % nitrogen.
c. 2 % carbon dioxide and 98 % oxygen.
d. 100 % oxygen and 0 % carbon dioxide.
e. air available in Jordan Valley

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

a. Measured using 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. It increases in smokers and in chronic bronchitis

115. In normal resting individual breathing room air at sea level, voluntary trebling (3x normal) of alveolar ventilation:

a. raises plasma pH.
b. raises alveolar PCO2.
c. trebles the partial pressure of oxygen in the alveoli.
d. raises arterial blood oxygen saturation by 3 %.
e. raises arterial blood oxygen content by 3 %.

116. Which of the following will return toward normal few weeks following ascending

to high altitude (and stay at the top of the mountain)?
a. Arterial hydrogen ion concentration
b. Arterial carbon dioxide tension
c. Arterial bicarbonate ion concentration
d. Arterial hemoglobin concentration
e. Alveolar ventilation

117. Which of the following is most likely cause of a high arterial PCO2?
a. Increased metabolic activity during exercise
b. Increased alveolar dead space volume
c. Depressed medullary respiratory centers
d. Alveolar capillary block
e. Increased alveolar ventilation

118. Which of the following shifts the oxyhemoglobin curve to the left?
a. Increased temperature
b. Exercise
c. Hyperventilation
d. Metabolic acidosis

119. Which of the following has to be less in the fetus than in the mother?
a. PaCO2
b. Pulmonary vascular resistance
c. Affinity to hemoglobin
d. PaO2
e. Arterial hydrogen ion concentration

120. Lack of oxygen equilibration due to diffusion limitation (in alveolar capillary block) can be evaluated by measuring
a. Diffusion capacity of CO
b. Diffusion capacity of CO2
c. Diffusion capacity of N2

121. Which of the following will return toward normal few weeks following ascending to high altitude (and stay at the top of the mountain)?:
a. Arterial hydrogen ion concentration
b. Arterial carbon dioxide tension
c. Arterial bicarbonate ion concentration
d. Arterial hemoglobin concentration
e. Alveolar ventilation

122. Which of the following is most likely cause of a high arterial PCO2?
a. Increased metabolic activity during exercise
b. Increased alveolar dead space volume
c. Depressed medullary respiratory centers
d. Alveolar capillary block
e. Increased alveolar ventilation

123. Hyperventilation can result from:
a- increase alveolar Pco2
b- increase alveolar Po2
c- decrease arterial Pco2 below 30 mmHg

d- direct stimulation of central chemosensitive receptors due to increase PH
e- a decline of arterial Po2 from 100 mmHg to 70 mmHg

124. **Patient with no respiratory problems is given blood transfusion, which of the following will occur?**

A. arterial PO2 will increase
B. arterial PCO2 will decrease
C. arterial saturation will increase
D. arterial O2 content will increase

125. **Lack of O2 equilibration is due to:** Diffusion limitation
126. **Alveolar capillary block can be evaluated by:** Diffusion capacity of the lung (Diffusion capacity of CO)
127. **Patient with inadequate surfactant (RDS) will have relatively normal:** FEV1/FVC.
128. **All of the following true concerning surfactant except:** 80% of its contents (its 90%)
129. **During moderate exercise pulmonary vascular resistance:** decrease
130. **Match:** PO2-116, PCO2 = 28 -> mixed expired air
131. **What would be the expected effect of pulmonary edema on pulmonary diffusion capacity for O2?** Reduce diffusion capacity for O2 & CO2
132. **Regarding residual volume represents except:** the resting volume of the lung (it's the minimal volume which represents the resting volume)
133. **Hyperventilation allows one to held his breath for a longer period of time because:** hyperventilation removes CO2 (does not add more O2)
134. **What limits PO2 of the lungs:** CVS
135. **Largest alveolar arterial gradient in:** fibrosis
136. **The O2 consumption of the respiratory muscle is decreased by:** A decrease in airway resistance.
137. **The following question refers to measurement taken in male, 25 Y.O, at rest, indicating that the value given for in particular measurement is above the value that would be expected in normal subject:** RV = 2.5 L (too much)
138. **A person ascended to a top of a mountain where the atm p. is below 9** -> Hypoxia and hypocapnia <40 (ventilating too much washing out CO2)
139. **Person suffers from stab injury and air entered, when pneumothorax?** collapse of the lung -> venous return will decrease significantly -> the person will die from decreased VR before dying from the collapse.
140. **Which parameter decrease with emphysema?** Diffusion area.
141. **Which of the following conditions would be expected to stimulate the arterial chemoreceptors?** Hypoxia due to ascending to high altitudes.
142. **9YO patient decided to find out how long he could breath into and out of a bag, after 2 mins his friends noticed that he was breathing very rapidly and forced him to stop, what is the cause of hyperventilation?** Increased PaCO2
143. **Acute hemorrhage causes reduction in Hb to 60% in otherwise healthy individual the alveolar ventilation and the O2 consumption rates remain the same as before the hemorrhage, which of the following will occur after the hemorrhage?** Normal arterial PO2, low venous PO2.

144. **Intrapleural pressure:** Always less than alveolar pressure
145. **Which of the follwing does not play a role in inspiration:** Relaxation of diaphrgmatic muscle
146. **Tidal volume = 550 ml Pulmonary capacity = 6000 ml Dead space = 150 ml Ventilation rate 14ml/min Resting alveolar ventilation is?** Ans: 6.0 L/min
147. **Surfactants prevent lung collapse by:** Decreasing the pressure within alveoli.
148. **With tidal volume of 450ml and arterial PCO2 of 40mmHg and mean expired**
149. **PCO2 of 32 and respiratory rate of 20/min, alveolar ventilation would be:** 7.2l/min
150. **Wrong about COPD**: decreased compliance
151. **Wrong about physiological dead space:** decreased in pulmonary embolism
152. **True about high V/Q:** increased expiratory PO2
153. **Wrong about restrictive diseases:** FEV1.0 is unchanged
154. **Wrong about VO2 max**: is limited with lung function
155. **Doesn't happen during exercise:** increased alveolar ventilation but not anatomic dead space ventilation
156. **In lung some lung disease, not related to the fact that pO2 usually is decreased while CO2 is not retained**: CO2 has a greater molecular weight
157. **After slow left heart failure, what prevents pulmonary edema is: increased** lymphatic pump
158. **A male with 7.5g/dl Hb, the point most representative of his oxygen content is:** at pO2, O2 content is 10ml/dl
159. **An athlete who has received blood transfusion, correct about his O2 and Hb –**
160. [HB] increases, pO2 unchanged, O2sat unchanged, O2 content increased
161. **Wrong about CO2 transport –** plasma HCO3- enters RBC in exchange with Cl-
162. **Something would decrease Hb O2 saturation without changing blood pO2** – CO poisoning
163. **In pneumothorax –** lung collapsed inwards and chest springs outwards
164. **True about apical alveoli compared to basal**: more pO2, less pCO2 and less compliance
165. **question about bicarbonate and CO2 values:** plasma pH remain same
166. **People living in Andes (high altitude) decreases:** CSF bicarbonate level
167. **main stimulus for magnitude of ventilation under normal condition:** H+ in central chemoreceptors
168. **At end of forced expiration:** lung tending to collapse, chest expand, lung-chest expand
169. **Normal PO2 = 100 indicates:** No ARDS
170. **Lowest PCO2:** first portion of expired air
171. **in case of fibrosis:** decreased RV, VC & TLC
172. **in case of COPD, which doesn't change:** ph of the CSF
173. **In normal individuals, all have a ratio more than 1 except:** VC / TLC (there's another option which is FRC / VC)
174. **Changes in hyperventilation, which is correct:** high PO2, low PCO2, constant PH2O
175. **o2 consumption increase by respiratory muscle in what case:** increase air way resistance
176. **when the concentration of Hb becomes 60% the result:** normal po2 lower co2

177. **Po2 of 116 and Pco2 of 28 mmHg correlates with** mixed alveolar air
178. **which of the following test can be used to detect diffusion capacity abnormalities of the lung:** diffusion capacity of CO
179. **a boy suffered hyperventilation after breathing in a bag for 2-3 min... which of the following drive this...** increased systemic Pco2
180. **in high altitude which of the following drives hyperventilation:** hypoxia in the peripheral blood peripheral chemo-receptors are stimulated when the patient suffers from hypoxia
181. **if at rest alveolar pressure was 0 and IPP was -4 mmHg, which of the following represent pressures at the end of inspiration with an open epiglottis: alveolar pressure is 0 and IPP is:** 6 mmHg
182. **which of the following result in decrease oxygen consumption of respiratory muscles:** decreased airway resistance
183. **which of the following decrease during emphysema:** surface area of perfusion.
184. **a graph about lung volumes and TV was .5L , no. of breathes/min were and asked to calculate the alveolar venitlation:** -can't be calculated from the information above
185. **you are at 800 m above the sea level, which of the following points represent the condition regarding mixed venous blood:** 40mmHg (75% O2 sat.)
186. **wrong about pulmonary vascular resistance**: Decreased when ascending to high altitude.
187. **Hb=10g/dL and Oxygen content=6.7g/dL, then oxygen saturation is:** 50%.
188. **wrong about fetal hemoglobin:** It binds more to 2,3-BPG than Hb-A.
189. **patient with pulmonary fibrosis:** Decreased peak expiratory flow, decreased FEV1 and increase collapsing forces.
190. **wrong about closing volume:** Represents the volume when the bronchioles in the apex get obstructed.
191. **not from the forces that stabilize the alveoli:** Transmural pressure around the alveoli is higher.
192. **wrong about diffusion capacity:** Decrease in diffusion coefficient increase the flow rate.
193. **wrong about physio. dead space:** The volume that does take a part in gas exchange.
194. **IRDS, what is the wrong:** The alveoli are hyperinflated.
195. **DL for oxygen:** Is indirectly measured through CO.
196. **wrong statement:** Oxygen saturation in venous blood is 40%.
197. **In COPD:** FRC is higher than normal.
198. **wrong statement:** CO2 dissolved is less than O2 dissolved.
199. **highest Po2:** Mixed expired air.
200. **anemia:** Normal PO2, normal O2 saturation and low oxygen content.
201. **does not decrease P50:** 40% oxygen.
202. **at high altitude:** Low HCO3-
203. **room air, PCO2=48, then PO2=** 90mmHg.
204. **asthmatic patient with PO2=60mmHg and PCO2=30mmHg:**
205. low PCO2 because of hypoxia induced hyperventilation.
206. **low HCO3- and low PCO2:** Ascending to high altitude.

207. **curve of FEV1 represents** obstructive disease.
208. **curve of peak expiratory flow rate represents** restrictive lung disease.
209. **VC=5L, IC=3.5 , then ERV=** 1.5L
210. **RR=10 breaths/minute , tidal volume=600mL, Vd=150mL, then RMV and AV respectively=** 6L/minute, 4.5L/minute.
211. **what happens to arterial blood gases after a period of hyperventilation:** increase Po2, decrease Pco2, no change PH2o
212. **which of the following is most likely to occur following carbon monoxide poisoning?** decrease arterial oxygen content.
213. **Causes decreased defusing capacity of the lung –** pulmonary artery embolism
214. **Causes increased arterial PCO2** – suppressed medullary centers
215. **Causes decreased arterial PO2 and increased alveolar-arterial O2 gradient** – right-to-left cardiac shunt
216. **Few days after acclimatization to a high altitude –** arterial hydrogen tends to return to normal
217. **A person with normal ventilation and lung perfusion had a right pulmonary artery embolism, most likely alveolar gases –** PO2 = 125 PCO2 = 20
218. **Inspiring room air with alveolar PCO2 of 48, alveolar PO2 is** – 90mmHG
219. **Why divers hyperventilate before holding breath under water –** because arterial PCO2 is decreased
220. **Why the base of the lungs receives more inspired air –** base is more compliant
221. **True about asthmatic patient with rapid breathing and ABGs of 60 PO2 and 20 PCO2** – his PCO2 is low because hypoxemia induced hyperventilation
222. **In the O2-Hb dissociation curve, what would decrease P50 –** hyperventilation
223. **Flow-volume graph of spirometry with decreased TLC and low PEF in:** restrictive lung disease
224. **A normal person with VC = 3.5L IC = 2L Vt = 0.5L FRC = 2.5L, find his ERV** = 1.5L
225. **People living in Andes (high altitude) decreases:** CSF bicarbonate level
226. **At end of forced expiration:**lung tending to collapse, chest expand, lung-chest expand
227. **Lowest PCO2:** first portion of expired air
228. **About pulmonary edema, which is wrong:** oxygen transport becomes "perfusion" limited
229. **True about work of breathing:** It is Inversely proportional to compliance
230. **All the following are decreased in case of bronchial asthma except:** Airway resistance
231. **In high altitudes all decrease except**: o2 carrying capacity
232. **The highest increase in the physiological dead space in case of:** Pulmonary embolism
233. **Arterial PO2 decreases in case of:** Pulmonary edema
234. **Wrong regarding compliance:** The more the surface tension the more the compliance
235. **Alveolar O2 tension is affected by all of the following factors except?** Hb conc.
236. **Wrong about pulmonary vascular resistance:** Increased during exercise
237. **Wrong about alveolar wasted volume:** Alveolar wasted volume decreases by mechanical ventilation

238. **Wrong about expiration:** It starts by the relaxation of the “expiratory” muscles
239. **what do systemic and pulmonary circulation have in common:** Same blood volume (not pressure or resistance)
240. **one wrong about remodeling:** muscle contraction
241. **Which of the following will decrease Hb saturation?** low PH + increase CO2 + 2.3dbg
242. **"As temperature goes up in a volume of gas, the volume rises proportionately". This law is... :** Charles's Law
243. **What happens to arterial blood gases after a period of hyperventilation:** increase Po2, decrease Pco2, no change in PH2o
244. **Which of the following should be avoided with emphysema patient:** pure o2

1	b	2	b	3	c	4	d
5	d	6	e	7	c	8	c
9	d	10	d	11	c	12	e
13	d	14	c	15	a	16	e
17	c	18	b	19	e	20	a
21	a	22	b	23	e	24	c
25	d	26	a	27	c	28	e
29	d	30	c	31	c	32	a
33	d	34	e	35	c	36	b
37	b	38	a	39	a	40	c
41	d	42	b	43	b	44	e
45	c	46	d	47	a	48	d
49	d	50	e	51	d	52	d
53	e	54	e	55	d	56	b
57	d	58	c	59	d	60	b
61	c	62	d	63	c	64	d
65	d	66	d	67	d	68	c
69	c	70	e	71	b	72	c
73	d	74	a	75	e	76	b
77	c	78	d	79	c	80	c
81	a	82	c	83	c	84	a
85	d	86	b	87	b	88	a
89	c	90	a	91	a	92	d
93	d	94	b	95	e	96	a
97	d	98	c	99	b	100	b
101	a	102	c	103	c	104	b
105	a	106	b	107	c	108	d
109	a	110	d	111	c	112	e
113	c	114	b	115	a	116	a
117	c	118	c	119	d	120	a
121	a	122	c	123	a	124	d

Microbiology

1- Which of the following toxins can cause scarlet fever?

a. DNAse b. Streptolysin S c. Hyalinase

d. C5a protease e. Erythrogenic toxin

2- Which of the following statements concerning antigenic drift in influenza viruses is correct ?

a. It results in major antigenic changes

b. It is exhibited only by influenza A viruses

c. It is caused by frameshift mutations in viral genes

d. It results in new subtypes over time

e. It affects predominantly the matrix protein

3- Highly pathogenic H5N1 avian influenza HPAI can infect humans with a high mortality rate, but it has not yet resulted in pandemic. The following are characteristics of HPAI, except for one. Which one is not?

a. Efficient human-to-human transmission b. Presence of avian influenza genes

c. Efficient infection of domestic poultry d. Contains segmented RNA genome

e. Both high pathogenicity and low pathogenicity avian influenza viruses can cause disease in human beings

4- All of the following are true about S. pyogenes except：

a. Can’t be diagnosed by smear b. Available vaccine against its capsule

c. Treated by penicillin with no resistance d. The capsule is an important virulence factor

5- Which of the following sentences is wrong :

a. Antibiotics prevent glomerulonephritis and rheumatic fever .

b. Strep. pyogenes is Bacitracin sensitive .

c. Untreated pharyngitis may results in otitis media .

d. People who are infected by GAS and develop later on AGN , will not develop this again if they're reinfect again by GAS .

6- Wrong about genetic reassortment :

a. It is happened in Influenza A virus .

b. Leads to Antigenic drift .

7- All of the following are associated with Group A streptococci EXCEPT :

a. Necrotizing fasciitis . b. Impetigo c. Neonatal sepsis .

d. Erysipelas . e. Cellulitis .

8- A patient with egg allergy and should not be given influenza vaccine, to protect them from Influenza A and B you can use :

Answer : Oseltamivir or zanamivir .

9- A boy present to the ER with strawberry tongue, rash on the chest and fever, his mother noticed whitish exudate on his tonsils 3 days ago, the causative microorganism ??

a. Strep. agalactiae

b. Strep. pyogenes

c. Strep. bovis

10- Which of the following statements about the neuraminidase of Influenza virus is not correct ?

a. Is embedded in the outer surface of the viral envelope

b. Forms a spike structure composed of four identical monomers, each with enzyme activity

c. Facilitates release of virus particles from infected cells

d. Lowers the viscosity of the mucous film in the respiratory tract

e. Is antigenically similar among all mammalian influenza viruses

1	E	**4**	B	**7**	C
2	D	**5**	A	**8**	Answer
3	A	**6**	B	**9**	B
10			E		

Good Luck