

Physiology 2 Midterm 019 - Term 2

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1- Severe uncontrolled diabetes mellitus leads to : Choose the incorrect answer

- a. decrease in PH.
- b. increase plasma K^+ concentration.
- c. increase Blood volume.
- d. increase osmotic diuresis of urine
- e. increase amino acids.

2- Place the following steps for normal inhalation in order. (1) decrease in intrapleural pressure to 754 mmHg (from -4 mmHg to -6 mmHg). (2) flow of air from higher to lower pressure (inhalation). (3) lung size increases.(4) decrease in intra-alveolar pressure to 759 mmHg (-1 mmHg).(5). contraction of the diaphragm + external intercostals muscles.

- a. 5, 2, 3, 4, 1
- b. 1, 3, 4, 5, 2
- c. 5, 4, 3, 2, 1
- d. 5, 1, 3, 4, 2
- e. 1, 2, 3, 4, 5

3- The activity of the adrenal zona glomerulosa is stimulated mainly by:

- a. Cortisol.
- b. Hypernatremia.
- c. Hypokalemia.
- d. Angiotensin II.
- e. Atrial natriuretic peptide.

4- Insulin: Choose the correct answer:

- a. Requirements are increased in obesity
- b. Requirements are increased by exercise
- c. Requirements of night are similar to those during the day
- d. It produces tyrosine kinase a second messenger only.
- e. Half-life is usually reduced in patients with diabetes mellitus

5- Which of the following sets of differences best describe the hemodynamics of the pulmonary circulation when compared with systemic circulation (in skeletal muscles)?

- a. A
- b. B
- c. C
- d. D
- e. E

	Blood π c	interstitial π c	Vascular Resistance	Pc
A.	Same	Higher	Higher	Lower
B.	Same	Higher	Lower	Lower
C.	Higher	Same	Same	Higher
D.	Lower	Lower	Lower	Lower
E.	Higher	Higher	Higher	Higher

6- Triiodothyronine (T3): choose the correct answer

- a. Binds to plasma membrane receptors
- b. Is all protein bound in the circulation
- c. Promotes Growth.
- d. Is the only biologically active form of thyroid hormone
- e. 90% is formed from thyroxine (T4)

7- When the inspiratory muscles are relaxed, the lungs are at:

- a. vital capacity
- b. residual volume
- c. minimal volume.
- d. functional residual capacity
- e. inspiratory capacity

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

9- Which of the following hormones plays an important role in keeping the plasma concentration of potassium within normal limits?

- a. Calcitriol
- b. Vasopressin
- c. Glucagon
- d. Insulin
- e. Parathyroid hormone

10- In normal individual, regarding gas exchange across pulmonary capillaries during mild exercise, which of the following statements is TRUE? d

- a. CO₂ crosses the membrane easier than O₂.
- b. Diffusing capacity of the lung for O₂ is more than for CO₂, the most important factor to play role is the molecular weight of both gases.
- c. The length of capillary required for gas equilibrium is shorter during exercise.
- d. ABGs become grossly abnormal.
- e. Equilibrium across the respiratory membrane is never achieved.

11- Which one of the following about the mechanism of action of hormones is true?

- a. Some hormones of steroid types bind with receptors in the cell membrane in certain conditions.
- b. Most of the protein hormones have Diacylglycerol and IP₃ as a second messengers.
- c. All amino acids derivatives hormones bind with receptors inside the cells or nucleus.
- d. Once the hormone binds with the receptors for sure it continuous to proceed functioning.
- e. All steroid hormones bind always with receptors in the cells or nucleus.

12- If Hb concentration is 7.5 g/dl, and the arterial blood O₂ sat is 98%, what would be the concentration of arterial O₂?

- a. Arterial [O₂] cannot be calculated.
- b. The dissolved O₂ becomes more than the Hb-bound O₂.
- c. There is about 15 ml of oxygen per 100 ml of arterial blood.
- d. Arterial [O₂] equals 10 ml/dl.
- e. When [Hb] equal 7.5 g/dl, the automatically, O₂ Sat never exceeds 50%.

13- PTH has which of the following primary actions ?

- a. It decreases renal tubular calcium reabsorption.
- b. It increases bone resorption.
- c. It increases gastrointestinal calcium absorption.
- d. It increases 24,25-(OH)₂-vitamin D synthesis.
- e. It decreases urinary phosphate excretion.

14- Which one of the following about the function of the reproductive systems is NOT true:

- a. Hormones secreted by gonads cause the appearance of features typical of the adult male or female and the onset of the sexual cycle in the female b
- b. In both sexes gonadotropins secretion is cyclic.
- c. Evidence indicates that male sexual behavior and the male pattern of gonadotropin secretion are due to the action of male hormones on the brain
- d. In male gonadal function declines slowly with advancing age, but the fertility persists.
- e. Androgens and estrogens are normally secreted in both sexes.

15- Hypoventilation causes one of the following changes in arterial blood gases:

- a. Increase in arterial PO₂, increase in arterial PCO₂, and decrease pH
- b. Increase in arterial PO₂, decrease in arterial PCO₂, and increase pH
- c. Decrease in arterial PO₂, decrease in arterial PCO₂, and increase pH
- d. Increase arterial PO₂, no change in arterial PCO₂, and increase pH
- e. Decrease in arterial PO₂, increase in arterial PCO₂, and decrease pH

16- Which one of the followings about cortisol functions is not true?

- a. Gluconeogenesis.
- b. Glycogenolysis
- c. inhibition of glucose uptake.
- d. ketogenesis
- e. lipolysis

17- One of the followings about the menstrual cycle is not true:

- a. The development of the primary follicles occurs only at puberty till menopause.
- b. Before the beginning of the ovarian cycle few follicles are activated.
- c. Sometimes ovulation fails to occur even if the ovarian cycle begins normally.
- d. almost all the non-growing follicles are primordial follicles
- e. This activation occurs genetically even if the gonadotropin hormones are very low or absent

18- 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. Make alveolar air full of O₂ which divers can use while diving
- b. Decreases the pH of systemic arterial blood
- c. Increases brain blood flow
- d. Increases the oxygen reserve of systemic arterial blood
- e. Decreases the PCO₂ of systemic arterial blood

19- Antidiuretic hormone: Choose the correct answer:

- a. Is produced by posterior pituitary gland cells
- b. Increases the permeability of the cells in the 100p of Henle to water
- c. Secretion is little affected by changes in plasma osmolality of less than 10%
- d. Secretion increases when plasma volume falls but osmolality is unchanged
- e. Causes the osmolality of the plasma to rise

20- The increased levels of one choice of the following hormones accompany the maternal morning sickness:

- a. Progesterone and estrogen
- b. Human placental lactogens (HPLS) and prolactin
- c. TRH and TSH
- d. GnRh and LH
- e. hCG and Thyroxine

21- The secretion and release of growth hormone: Choose the incorrect answer:

- a. Is promoted by hypothalamic GH releasing hormone and is pulsatile in nature
- b. Is prompted by IGFS
- c. Is increased by exercise and stress
- d. Is promoted by acetylcholine indirectly
- e. Is strongly inhibited by hypothalamic somatostatin

22- Normal standing individual, when compared to apical alveolar, the alveoli at the base of the lungs?

- a. At RV, their alveoli reach their resting volume.
- b. Less compliant.
- c. They have a less volume change during inspiration starting from FRC.
- d. higher PAO₂.
- e. At FRC they are less inflated.

23- In a normal person breathing 42% oxygen at rest for 10 minutes.

- a. Pulmonary vascular resistance is more at rest compared to exercise.
- b. This person's mixed expired P_{CO2} decreases.
- c. The entire lung becomes zone (1)
- d. Mixed venous [O₂] increases significantly.
- e. O₂ extraction ratio is about 42%

24- If an adult non-pregnant woman injected with estrogen 48 hrs before the time of ovulation one of the followings choices is not true?

- a. LH secretion drastically increases. (surge)
- b. GnRh secretion increases.
- c. FSH increases.
- d. Ovulation occurs.
- e. Ovulation does not occur

25- The work of breathing is:

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

26- One of the followings is expected in idiopathic pulmonary fibrosis:

- a. lower than normal FRC.
- b. higher than normal tidal volume.
- c. lower than normal pulmonary vascular resistance.
- d. higher than normal TLC.
- e. higher than normal lung compliance

27- Regarding bronchial asthma, all the following statements are true EXCEPT

- a. Cough suppressants are highly indicated
- b. Airway resistance is increased.
- c. During the attack, FEV1.0/FVC is $< 80\%$
- d. Bronchodilators can be given to asthmatic patients
- e. Patients might be allergic to (غبار الطلع) pollens

28- One of the followings about testosterone and related hormones is not true?

- a. testosterone produce DHT which functions almost in all stages of life
- b. several tissue besides the testes produce the testosterone hormone
- c. DHT can be converted to steroidal.
- d. testosterone functions as a prohormone
- e. the biological activity of DHT is too much higher than that of testosterone

29- Regarding lung diseases, one of the following is true

- a. Increase in the diameter of the airways by 10% results in a increase in airway resistance by more than 10%
- b. COPDS are least common seen in clinical Practice
- c. Pulmonary fibrosis is an example of increase airway resistance.
- d. In pulmonary fibrosis, FEV1.0/FVC is \geq normal
- e. In obstructive lung diseases, difficulty is during inhaling rather than during exhaling

30- During sleep there is a fall in the circulating level of: Choose the incorrect answer :

- a. cortisol
- b. T4.
- c. Growth hormone
- d. Adrenaline.
- e. insulin

31- Which of the following is FALSE concerning airway resistance (R)?

- a. In the later generations, the radii are smaller, increasing the total resistance at each successive generation.
- b. Under normal conditions, R resides mainly in the large airways
- c. Whenever R is increased FEV1.0/FVC is below normal.
- d. Airway resistance can be increased by loss of tissue elasticity and contraction of bronchial smooth muscles.

e. Under normal conditions, R is small and negligible

32- In normal person at rest, which of the following decreases arterial PO₂

- a. Polycythemia (high RBC count)
- b. CO poisoning
- c. Breathing 50% oxygen
- d. Anemia
- e. Ascent to an altitude of 3500 m

33- Aldosterone secretion is stimulated by increases in each of the following EXCEPT:

- a. Renin
- b. Sodium.
- c. ACTH.
- d. Potassium.
- e. Angiotensin-converting enzyme.

34- One of the following PFT values are consistent with both obstructive and restrictive lung disease

- a. Decreased residual volume
- b. Normal or above normal TLC
- c. Decreased vascular resistance
- d. Decreased FEV_{1.0}
- e. Decreased FEV_{1.0}/FVC

35- Which of the following structures contains blood with the highest PCO₂?

- a. Carotid bodies.
- b. Pulmonary veins
- c. Superior vena cava
- d. The midportion of pulmonary capillaries.
- e. Systemic arterioles

36- TB Bacilli bacteria (Oxygen-loving Bacteria) would prefer to live and build their nests in the apex of the lung. The reason for that is:

- a. the apical alveoli are more ventilated when compared to basal alveoli.
- b. apical alveoli are surrounded with less negative intrapleural pressure.
- c. V/Q ratio is more than 1.
- d. apical alveoli are more compliant when compared to basal alveoli
- e. apical alveoli are more perfused when compared to basal alveoli

37- The free functional percentage of Aldosterone is:

- a. relatively high
- b. very low
- c. very high
- d. high
- e. low

38- 1,25-(OH)₂ -Vitamin D synthesis is increased by each of the following EXCEPT:

- a. Vitamin D deficiency
- b. Calcitonin.
- c. Parathyroid hormone (PTH).
- d. Phosphate deficiency.
- e. Calcium deficiency.

39- Which of the following effects of insulin requires the least amount of the hormone?

- a. Inhibition of lipolysis.
- b. Stimulation of muscle glucose transport.
- c. Stimulation of muscle glucose uptake.
- d. Inhibition of hepatic glucose production.
- e. Stimulation of amino acid uptake

40- ACTH secretion is inhibited by

- a. Cortisol.
- b. Norepinephrine.
- c. Androstenedione.
- d. ADH.
- e. Testosterone.

Good luck 😊!

♥ Answers:

1	2	3	4	5	6	7	8	9	10
C	D	D	A	B	C	D	B	D	A
11	12	13	14	15	16	17	18	19	20
A	D	B	B	E	B	E	E	D	B
21	22	23	24	25	26	27	28	29	30
B	E	B	E	A	A	C	D	D	A
31	32	33	34	35	36	37	38	39	40
A	E	B	D	C	C	A	B	E	A

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أعذرونا إن وجدتم أي خطأ فقد جل من لا يسهو..

بالتوفيق 🙏❤❤

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