

1. How does calcium (Ca^{++}) enter ventricular cells during phase 2 of their action potential?

- A) Secondary active transport
- B) Primary active transport
- C) Simple diffusion
- D) Co-transport with Na^+ ions
- E) Potassium-Calcium channel

Answer: C) Simple diffusion

2. Gonadotropin Releasing Hormone (GnRH) stimulates the secretion of LH and FSH through which second messenger system?

- A) cAMP
- B) cGMP
- C) IP_3 , DAG, Ca^{++}
- D) All of the above

Answer: C) IP_3 , DAG, Ca^{++}

3. During exercise, the blood flow in the capillaries supplying skeletal muscles is:

- A) Pulsatile
- B) Intermittent
- C) Continuous
- D) Diastole is greater than systole
- E) No flow

Answer: B) Intermittent



4. Which of the following properties is NOT true about the ventricles?

- Answer: Autorhythmicity

5. At the end of phase 0 of the FRAP cell action potential, which statement is correct?

- A) Influx of K^+ by electrical gradient
- B) Influx of K^+ by chemical gradient
- C) Highest conductance for Na^+
- D) Influx of Ca^{++} by electrical gradient
- E) Influx of Ca^{++} by chemical gradient

Answer: C) Highest conductance for Na^+

6. Which of the following statements about phase 2 of the action potential is incorrect?

- Answer: The positive charges entering are more than the positive charges exiting from the membrane.

7. Which feature is common to RBCs, smooth muscle cells, and cardiac cells?

- A) They are excitable cells
- B) All of them have a resting membrane potential
- C) All of them have a variable resting membrane potential

Answer: B) All of them have a resting membrane potential

8. In a patient with liver cirrhosis who complains of edema in the lower extremities, which of the following might be decreased and contribute to the edema?

- Answer: Decrease in plasma colloid osmotic pressure / decrease in protein concentration in plasma

9. Pain is to _____, as cold is to _____.

- A) Nociceptors, thermoreceptors

Answer: A) Nociceptors, thermoreceptors

10. At the peak of phase 0 of the action potential, which statement is true?

- A) Na⁺ permeability increases
- B) Chemical force pushes K⁺ inside
- C) Electrical force pushes K⁺ inside
- D) Chemical force pushes Ca⁺⁺ inside
- E) Electrical force pushes Ca⁺⁺ inside

Answer: A) Na⁺ permeability increases

11. A small receptive field typically indicates:

- A) High receptor density
- B) Small area in the cortex
- C) Poor two-point discrimination

Answer: A) High receptor density

12. Muscarine receptors are activated by:

- Answer: Acetylcholine

13. **One possible cause of cell dehydration is:**

- A) Deficiency of aldosterone secretion
- B) Excess intake of salts
- C) Hypotonic solution added to ECF

Answer: B) Excess intake of salts

14. **Intake of an isotonic solution will cause:**

- **Answer: Increase of ECF volume only**

15. **In skeletal muscle, why is the osmotic pressure at the arteriolar end similar to the osmotic pressure at the venous end?**

- A) The velocity in these capillaries is the slowest
- B) The pressure is the lowest in all capillaries
- C) The filtrated plasma is negligible

Answer: C) The filtrated plasma is negligible

16. **If a drug increases Ca^{++} in endothelial cells and cGMP in smooth muscle cells, what could be the mechanism of action?**

- **Answer: Endothelial cells produce NO, which then activates guanylate cyclase in smooth muscle cells**

17. Which of the following has the shortest half-life and highest metabolic clearance?

- A) Insulin
- B) Thyroid stimulating hormone (TSH)
- C) Aldosterone
- D) Estrogen
- E) T3

Answer: A) Insulin

18. Which of the following is NOT an effect of sympathetic activation?

- **Answer: Decreased conduction in the AV node**

19. 2 mg of albumin has a greater effect than 2 mg of globulin because:

- **Answer: There are more albumin molecules in that same weight**

20. Which of the following can decrease or stop a signal?

- **Answer: Inhibitory circuit**

21. Regarding capillaries, which statement is incorrect?

- A) All capillaries exhibit filtration at the arteriolar end and reabsorption at the venous end
- B) In glomerular capillaries, the hydrostatic pressure is the highest
- C) In lung capillaries, the hydrostatic pressure is low

Answer: A) All capillaries exhibit filtration at the arteriolar end and reabsorption at the venous end

22. **Prostaglandins are:**

- A) Arachidonic acid derivatives that bind to nuclear receptors
- B) Arachidonic acid derivatives that bind to cell membrane receptors

Answer: B) Arachidonic acid derivatives that bind to cell membrane receptors

23. **Which of the following is correct about cAMP?**

- A) It can modulate cellular enzyme activity only
- B) It can modulate cellular enzyme activity and mediate gene expression
- C) It can bind to and stimulate DNA effector regions

Answer: B) It can modulate cellular enzyme activity and mediate gene expression

24. **Which of the following statements about thyroid hormones is incorrect?**

- A) T4 can enter the cytoplasm and then convert to T3
- B) T3 receptors link to another identical one and bind to DNA
- C) The DNA domain of the T3 receptor binds to DNA

Answer: B) T3 receptors link to another identical one and bind to DNA

25. **Epinephrine in the liver binds to:**

- **Answer: Beta receptors and alpha 1 receptors, thus increasing cAMP and IP3, Ca⁺⁺, DAG**

26- In the case of constriction of pelvic veins, which of the following changes would occur to the microcirculatory bed (starling forces) would occur?

	Interstitial hydrostatic pressure	Mean capillary hydrostatic pressure	Lymph flow
A	↑	↑	↑
B	↑	↑	↓
C	↑	↓	↑
D	↓	↓	↓
E	↓	↓	↑

Ans: A or B