THE UNIVERSITY OF JORDAN
FACULTY OF MEDICINE
INTRODUCTION TO PHYSIOLOGY
1st YEAR MEDICAL STUDENTS
June 14th 2025 (Time:)

Name:..... Roll No.....

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CHOOSE THE ONE BEST ANSWER:

Med 1:

My average=55%
Q33 deleted

21. All the following are common feature between SA nodal cells and AV nodal cells EXCEPT:

21 38 41 27 61 454 454 0.7276

38 A. negative resting membrane potential (AP).
41 B. Ca^{++} is involved in AP generation.
27 C. both are excitable cells.
61 D. both are autorhythmic cells
454 E. both have the same slope of phase (4) of action potential
5

22. Regarding syncytium, all the following are true except:

22 50 486 32 29 25 486 0.7788

50 A. cells are excited togother.
486 B. cells are excited separately (individualistics).
32 C. in th heart, we have two syncytia.
29 D. ubon stimulation of one ventricular cell, leads to stimulation of both ventricles.
25 E. gap juctions between the cells are responsible for this phenomenon.
2

23.Tetanic contraction of the cariac cell is duo to all the following EXCEPT

23 62 342 73 100 45 342 0.5481

A. Because of presence of phase (2) in cardiac cell's AP.
B. Because there is no mitochodria in the cardiac cells.
C. Because of the prolonged action potential duration.
D. Because muscle twitch duration is less than action poteial duration.
E. because of calcium influx during the plateau phase.
2

24. At the peak of an action potential in the SA nodal cells (end of phase "0") one of the following is true:

24 119 82 106 136 178 178 0.2853

119 A. the membrane potential equals Na+ equilibrium potential
82 B. the chemical gradient for K^+ tends to move this ion inside.
106 C. Na^+ permeability greatly increases.
136 D. the membrane potential equals Ca++ equilibrium potential
178 E. the chemical gradient for Na^+ still tends to move this ion inside.
5

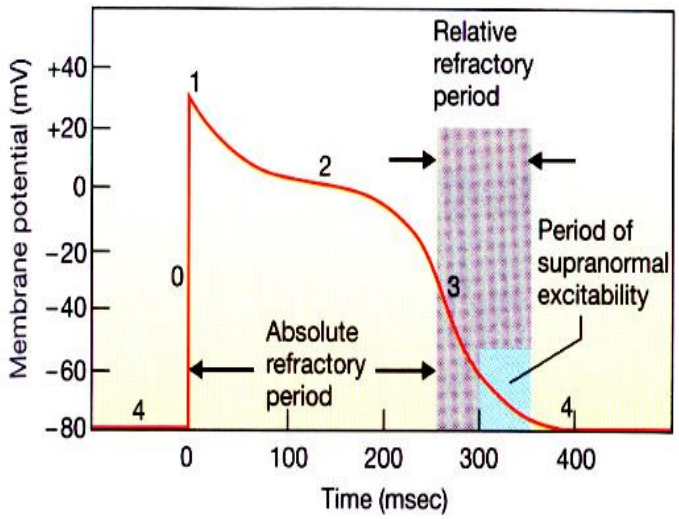
25. Norepinephrine acts on the SA nodal cells causing all the following EXCEPT:

25 48 58 52 431 32 431 0.6907

A. positive chronotropic effect
B. tachycardia
C. shorter phase (4).

D. Deceased slope of dV/dt of phase (4).
E. Becomes easy for the cells to reach threshold.
4

26. All the following are true regarding the AV nodal delay EXCEPT:
26 71 144 108 60 238 238 0.3814
A. The AV nodal delay assures (يؤكد) that the atria contract prior (before) to ventricular systole.
B. the delay is duo to less gap junctions between the neighbering cells
C. last of about 0.12 sec.
D. is responsible for the slow conduction velocity in this part of the heart.
E. their cells show low resistance to electrical current when compared to Purkinje cells.
5



27. During **phase** (4) of ventricular action potential, choose the right statement:
27 19 404 63 58 77 404 0.6474
A. Ca^{++} ions enter ventricular cells during this phase.
B. the voltage of this phase is stable with respect to time.
C. K^{+} enters the cells through simple diffusion.
D.during this phase, positive charges entering the cell are more than positive charges leaving the cells
E. at the end of this phase, the transmembrane potential is closer to Ca^{++} equilibrium potential rather than to Na^{+} equilibrium potential.
2

28.The SA node is the pacemaker of heart because all of the following EXCEPT:
28 79 300 39 50 154 300 0.4808

A. it has the highest dV/dt (slope) of phase (4) among other cardiac cells
B. its innervated by sympathetic and parasympathetic nerve fibers.
C. it reaches threshold by itself faster.
D. it is more leaky to Na+ at rest than any other cells in the heart.
E. its membrane property.
2

29. Which of the following best explains how sympathetic stimulation cause tachycardia?
29 25 35 89 426 46 426 0.6827
A. decrease I_f during phase (4)
B. increase I_{K^+} during phase (4)
C. The rate of upward drift of the resting membrane potential of the S-A node decreases
D. reach threshold faster
E. the permeability of the cardiac muscle to calcium decreases

4

30. If the Purkinje fibers become the pacemaker of the heart, what is the expected heart rate?

30 547 17 27 21 10 547 0.8766

A. 30 beats/min
B. 50 beats/min
C. 60 beats/min
D. 70 beats/min
E. 80 beats/min
1

31.Reduction of plasma proteins to half its normal concentration is expected to cause:

31 87 277 88 108 61 277 0.4439

A. increase colloid osmotic pressure of the blood.
B. increase body weight.
C. decrease in interstitial fluid volume.
D. decrease filtration across capillary membranes.
E. has no effect on filtration across capillary epithelium.

2

32. Albumin is more important than globulin in generating blood colloid osmotic pressure because:

32 45 59 359 52 106 359 0.5753

A. it has less negative charges.
B. it is less concentrated in blood.
C. it has less molecular weight.
D. its produced by the liver.
E. it cannot cross the capillary membrane..
3

33. In systemic circulation, as blood travels from capillaries to right atrium:

33 99 263 92 56 111 56 0.0897

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99 A. its pressure increases
263 B. its cross sectional area increases
92 C. its plasma albumin concentration increases by 20%.
56 D. its velocity increases
111 E. its flow (ml/min) increases
4

34. **<u>An increase</u>** in all the following would tend to increase the filtration rate across a capillary wall EXCEPT?

34 25 45 380 90 81 380 0.609

A. capillary hydrostatic pressure.
B. capillary permeability.
C. diameter of the draining veins
D. Interstitial colloid osmotic pressure.
E. dilatation of the feeding artery.
3

35. Na^+ has no osmotic effect across capillary wall because:

35 73 306 74 127 42 306 0.4904

A. Na+ atomic mass is so small.
B. Na^+ crosses the capillary wall freely.
C. Na^+ is cation, only anions show osmotic pressure.

D. plasma concentration of sodium [Na+] ranges from 135-145 mEq/l.
E. Na^+ is atracted to Cl^-.
2

36. Regarding Starling forces across capillaries, one of the following is true

36 227 83 39 246 27 246 0.3942

A. all capillaries in our body show filtration at their arterial end and reabsorption at their venous end.
B. pulmonary capillary hydrostatic pressure is more than that observed in glomerular capillaries.
C. capillary hydrostatic pressure is the same among different capillaries in our body.
D. glomerular capillaries show only filtration across theit entire length.
E. filtration and reabsor[tion are equal across any capillary.
4

37. Regarding **hypoalbuminemia (نقص البيومين الدم),** all the following are expected EXCEPT:

37 77 130 120 61 234 234 0.375

A. generalized edema
B. pitting edema
C. weight gain
D. liver cirrhosis can be the cause
E. lymphatic flow decreases.
5

38. Regarding lymphatic system, all the following are true EXCEPT

38 51 138 50 166 215 215 0.3446

A. Lymph is not blood (does not contain RBCs).
B. Lymphatic edema is nonpitting edema.
C. the lymphatic system empty their content into systemic veins.
D. lymphtic edema is localized edema
E. the rate of lymph flow from a tissue is equal to the rate of movement of fluid out of its capillaries
5

39. Blood flow in the systemic capillaries:

39 101 276 89 104 52 276 0.4423

A. is mainly controlled by the capillary wall constriction and dilatation.
B. is intermittent
C. is pulsatile (more during systole, less during diastole)
D. is contineous
E. sytemic capillaries are always open, even during rest.
2

40.In a skeletal muscle capillary, the capillary hydrostatic pressure is 32 mm Hg, the capillary oncotic pressure is 27 mm Hg, and the interstitial hydrostatic pressure is 2 mm Hg. Interstitial oncotic pressure is zero mmHg. What is the driving force across the capillary wall and will it favor filtration or absorption?

40 34 439 45 95 7 439 0.7035

A. 3 mm Hg, favoring absorption
B. 3 mm Hg, favoring filtration
C. 7 mm Hg, favoring absorption
D. 7 mm Hg, favoring filtration
E. 9 mm Hg, favoring filtration
2