1. Neural regulation at rest (low sympathetic stimulation) causes:
• A. Vasoconstriction of both arterioles
• B. Vasodilation of afferent and efferent arterioles
• C. Large decrease in GFR
• D. Increase in renin release

2. Moderate sympathetic stimulation leads to:
• A. Vasodilation of afferent arteriole only
• B. Vasoconstriction equally in afferent and efferent arterioles
• C. Vasoconstriction of afferent more than efferent
• D. Total shutdown of renal blood flow

3. High sympathetic stimulation (exercise/hemorrhage) mainly causes:
• A. Drop in GFR
• B. Increase in GFR
• C. Vasodilation of afferent arteriole
• D. Increased urine output

4. Angiotensin II causes:
• A. Vasodilation of afferent arteriole only
• B. Vasoconstriction of both afferent and efferent arterioles
• C. Increase in capillary surface area
• D. Increase in GFR

5. Atrial natriuretic peptide (ANP) increases GFR by:
• A. Constricting mesangial cells
• B. Relaxing mesangial cells
• C. Reducing capillary surface area
• D. Increasing secretion of hydrogen ions

6. Tubuloglomerular feedback responds to high Na■ and C■ delivery by:
• A. Dilating afferent arteriole
• B. Increasing nitric oxide
• C. Constricting afferent arteriole
• D. Increasing renin

7. Paracellular reabsorption occurs by:
• A. Primary active transport
• B. Diffusion through tight junctions
• C. Sodium-potassium pumps
• D. Secondary active symport only

8. Transcellular reabsorption involves movement across:
• A. Only the apical membrane
• B. Only the basolateral membrane
• C. Both apical and basolateral membranes
• D. Gap junctions only

9. Symporters (secondary active transport) move substances:
• A. In opposite directions
• B. In the same direction
• C. Only out of the tubule
• D. Only into the blood

10. Antiporters move substances:
• A. In the same direction
• B. In opposite directions
• C. Only using ATP
• D. Only by diffusion

11. Obligatory water reabsorption accounts for about:
• A. 10%
• B. 25%
• C. 50%
• D. 90%

12. Facultative water reabsorption occurs mainly in:
• A. Proximal convoluted tubule
• B. Descending loop of Henle
• C. Late distal convoluted tubule and collecting ducts
• D. Ascending loop of Henle

13. Aldosterone increases:
• A. Reabsorption of calcium
• B. Reabsorption of water and sodium
• C. Secretion of sodium
• D. Reabsorption of chloride only

14. Increased aldosterone can lead to:
• A. Hyperkalemia
• B. Hypokalemia
• C. Hypocalcemia
• D. Increased glucose in urine

15. Parathyroid hormone (PTH) increases reabsorption of:
• A. Sodium
• B. Chloride
• C. Calcium ions
• D. Urea

16. Principal cells in the late part of the tubule regulate movement of:
• A. Calcium
• B. Sodium and potassium
• C. Glucose only
• D. Chloride only

17. A person who drinks a lot of water will have:
• A. Increased ADH
• B. Diluted urine
• C. Concentrated urine
• D. High reabsorption in collecting ducts

18. A person who doesn't drink enough water will show:
• A. Decreased ADH
• B. Diluted urine
• C. Increased ADH

• D. Decreased osmolarity

19. Normal urine pH typically ranges between:
• A. 2.0–4.0
• B. 4.6–8.0
• C. 8.5–10.0
• D. 1.0–2.0

20. High specific gravity of urine indicates:
• A. Low solute concentration
• B. High solute concentration
• C. No solutes present
• D. Very diluted filtrate

21. NFP will increase if which pressure rises:
• A. CHP
• B. BCOP
• C. GBHP
• D. Membrane resistance

22. A decrease in GFR would cause:
• A. Reduced BUN
• B. Increased BUN
• C. Lower plasma creatinine
• D. Higher membrane area

23. If afferent constricts and efferent dilates, GFR:
• A. Increases markedly
• B. Decreases markedly
• C. Remains constant
• D. Increases slightly

24. Pressure opposing filtration from plasma proteins:
• A. GBHP
• B. CHP
• C. BCOP
• D. NFP

25. High GFR results in:
• A. Excessive reabsorption
• B. Loss of needed substances
• C. Increased secretion
• D. Increased BCOP

26. Mechanism by macula densa:
• A. Myogenic
• B. Tubuloglomerular feedback
• C. Sympathetic control
• D. Hormonal autoregulation

27. When BP rises, myogenic response:
• A. Dilates afferent
• B. Constricts afferent

• C. Increases RBF
• D. Increases area

28. Creatinine steady because:
• A. Reabsorbed
• B. Secreted faster than produced
• C. Production = excretion
• D. GFR irrelevant

29. Plasma creatinine 1.5 mg/dL indicates:
• A. Increased GFR
• B. Poor renal function
• C. High reabsorption
• D. Low BUN

30. Clearance represents:
• A. Urine volume
• B. GFR only
• C. Volume cleared per time
• D. Filtrate reabsorbed

31. Penicillin high clearance needs:
• A. Low dosing
• B. Large frequent dosing
• C. No secretion
• D. Minimal filtration

32. If BCOP rises, NFP:
• A. Increases
• B. Decreases
• C. No change
• D. Rises only with CHP

33. Kidneys keep GFR constant via:
• A. Hormones only
• B. Osmolarity changes
• C. Autoregulation
• D. Sympathetic only

34. Tubular secretion contributes by:
• A. Increasing plasma level
• B. Moving solutes to filtrate
• C. Increasing reabsorption
• D. Reducing filtration

35. Fall in afferent stretch triggers:
• A. Contraction
• B. Relaxation
• C. ↑BCOP
• D. ↑CHP

36. GFR depends on:
• A. Renal blood flow

• B. Secretion rate only
• C. Hormones only
• D. Plasma proteins only

37. Capsular hydrostatic pressure acts as:
• A. Promotes filtration
• B. Opposes filtration
• C. Regulates secretion
• D. Drives BCOP

38. Clearance increases when:
• A. Urine concentration↓
• B. Plasma concentration ↑
• C. Urine flow↑
• D. Reabsorption↑

39. Minimizing protein intake:
• A. Lowers BUN
• B. Raises GFR
• C. Increases BCOP
• D. Increases CHP

40. Neural regulation uses:
• A. Acetylcholine
• B. Vasopressin
• C. Norepinephrine
• D. Renin

Answer Key:

1. B
2. C
3. A
4. B
5. B
6. C
7. B
8. C
9. B
10. B
11. D
12. C
13. B
14. B
15. C
16. B
17. B
18. C
19. B
20. B

21. C
22. B
23. B
24. C
25. B
26. B
27. B
28. C
29. B
30. C
31. B
32. B
33. C
34. B
35. B
36. A
37. B
38. C
39. A
40. C