1-Renal function and glomerular filtration rate

1- Which of the following changes tends to increase glomerular filtration rate (GFR):

A. Increased afferent arteriolar resistance
B. Decreased efferent arteriolar resistance
C. Increased glomerular capillary filtration coefficient
D. Increased Bowman's capsule hydrostatic pressure
E. Decreased glomerular capillary hydrostatic pressure

2- If the average hydrostatic pressure in the glomerular capillaries is 50 mmHg, the hydrostatic pressure in Bowman's space is 12 mmHg, the average colloid osmotic pressure in the glomerular capillaries is 30 mmHg, and there is no protein in the glomerular ultra-filtrate, what is the net pressure driving glomerular filtration:

A. 8 mmHg
B. 32 mmHg
C. 48 mmHg
D. 60 mmHg
E. 92 mmHg

3- Efferent arteriole is responsible for:

A. Delivering blood from glomeruli to peritubular capillaries
B. Delivering blood into the glomeruli
C. Vasa recta

4- Renin is secreted from:

A. Podocyte
B. Juxtaglomerular kidney cells
C. Microvilli
D. Juxta medullary nephron

5- Glomerular filtration rate (GFR) is normally:

A. 60% of renal plasma flow
B. 2% of renal plasma flow
C. 100% of renal plasma flow
D. 20% of renal plasma flow

6- Proteins are not filtrated due to:

A. *Their large size*
B. *Negative electrical charge*
C. *A+B*

7- Which one of the following structures is helpful in conserving water:

A. *Juxta medullary nephron*
B. *Cortical nephron*
C. *Peritubular capillaries*
D. *B+C*

8- What are the charges of each layer of the glomerular "filtration" membrane:

A. *Endothelium+ podocyte+ basement membrane are positive*
B. *Endothelium+ podocyte are negative, basement membrane is positive*
C. *Endothelium+ podocyte+ basement membrane are negative*
D. *Podocyte is negative, Endothelium+ basement membrane are positive*

9- Glomerular capillary hydrostatic pressure is affected by:

A. *Arterial blood pressure*
B. *Afferent arteriolar resistance*
C. *Efferent arteriolar pressure*
D. *All of the above*

10-   What is the functional unit of the kidney:

A. *Medulla*
B. *Nephron*
C. *Bowman's capsule*
D. *Glomeruli*

Answers:

Q1: C   The glomerular capillary filtration coefficient is the product of the hydraulic conductivity and surface area of the glomerular capillaries. Therefore, increasing the glomerular capillary filtration coefficient tends to increase GFR. Increased afferent arteriolar resistance, decreased efferent arteriolar resistance, increased Bowman's capsule hydrostatic pressure and decreased glomerular hydrostatic pressure tends to decrease GFR

Q2: A   The net filtration pressure at the glomerular capillaries is equal to the sum of the forces favoring filtration (glomerular capillary hydrostatic pressure) minus the forces that oppose filtration(hydrostatic pressure in Bowman's capsule and glomerular colloid osmotic pressure). Therefore, the net pressure driving glomerular filtration is 50-12-30=8 mmHg

Q3: A

Q4: B

Q5: D

Q6: C

Q7: A

Q8: C

Q9: D

Q10: B