Physiology questions review

1- The consumption of O_2 by the kidney:
a- decrease as blood flow increases
b- regulated by erythropoiten
c- remains constant as blood flow increase
d- direct reflects the level of Na transport
e- greatest in the medulla
(most of the oxygen consumed for the Na/K ATPase pump and that what is responsible for Na transport)

2- In the presence of ADH filtrate will be isotonic to plasma in
a- Descending loop of Henley
b- Ascending loop of Henley
c- Cortical collecting tubules
d- Medullary collecting tubules
e- Renal pelvic
(as that cortical interstetium is 300)

3- pt. takes excessive amount of HCO3 to treat his heart burn, which of the following blood gases value will be observed in the pt.

	P(CO2)	PH
A	25	7.7
B	35	7.6
C	**45**	**7.5**
D	55	7.4
E	65	7.3

(More HCO3 intake will cause metabolic alkalosis so the plasma PH will be slightly elevated and to compensate for that CO2 will be increased in the same way)

4- Na is reabsorbed from the baso-lateral surface of EPT surface by:
a- Na-H+ transporter
b- Na-Glu transporter
c- Na-K+
d- Fascilitated diffusion
e- Solvent drag

5- repiratory acidosis that result in increase [H+] in arterial that change the PH from 7.4 to 7.3 will cause :
a- inhibite perephral receptors
b- decrease amount of ammonia excreated in urin
c- inhibite central receptors
d- increase PH of urine
e- increase [HCO3] in arterial blood
(respiratory acidosis means increase in the CO2 and that by default will cause increase in HCO3)

6- which of the following will be more concentrated at the end of the proximal tubule than the beginning of the proximal tubule?
   a- HCO3
   b- GLU
   c- Na
   d- A.A
   e- Creatinine
   (all are reabsorbed except for cereatenin)
7- metabolic acidosis caused by diabetic ketoacidosis, which of these will be less than normal ?
   a- plasma HCO3
   b- anion gap
   c- alveolar ventilation
   d- plasma [H+]
   e- urine flow
   (in metabolic acidosis, high H+ concentration in the blood will be attacked by HCO3 , so it's concentration will be decreased)

8- which of the following is most likely to increase GFR :
   a- constriction of efferent arteriole to half of its diameter
   b- increase Boman capsule hydrostatic pressure
   c- administration of NSAIDs
   d- dilatation of afferent arteriole
9- destruction of supraoptic nuclii in the brain will produce wich of the following changes in the urinary volume (V) and concentration (C)
   a- increase V , low C
   b- increase V, high C
   c- normal
   d- decrease V low C
   e- decrease V high C
   (damage to supraoptic → no ADH → loss of it's function which is production of concentrated urine)
10- effective renal plasma flow which equale the clearance of PAH is less than the true renal plasma flow because:
   a- fraction of PAH filtered is less than filteration fraction
   b- plasma entering the renal vein contains small amount of PAH
   c- cortical and medullary tubules able to reabsorbed PAH
   d- calculated clearance of PAH depends on urine flow rate
   e- measured value of plasma [PAH] is less than PAH

(as that 10% of the blood flow to kidney skip the renal system of filtration)

11- use data below to calculate amount of substance C **secreted** by the kidney :
   C of inulin = 130 ml/min
   Plasma[X] = 0.1mg/ml
   Urin[X] = 10mg/ml
   Urin flow rate= 1.5 ml/min
   a- 1mg/min

b- 2 mg/min
c- 3 mg/min
d- 4 mg/min
e- 5 mg/min
(Clearance = U*V/P = 10*1.5/0.1 = 150 ml/min excreted by the kidney
To calculate secreted amount 150-130 = 20 ml/min secreted
20 ml of plasma concentration will carry 2 mg/min as that plasma concentration = 0.1 mg)

12- Assuming that
plasma[cereatenin] = 0.8 mg/dl
plasma[Glu] = 120 mg/dl
urinary [cereatenin] = 96 mg/min
urinary flow rate = 1 ml/min
approximately how much Glu is reabsorbed by this normal pt.
a- 96mg/min
b- 120mg/min
c- 144 mg/min
(to assume GFR which will approximately = the clearance of cereatenin
C of cereatenin = 96*1/0.8 = 120 ml/min , and because GLU is completely reabsorbed assuming that the pt. is normal so 120 * 120 = 14400 and that equals 144mg/min ma3 ta7weal elwe7dat :p)

13- assuming that
urinary flow rate =1.5L/day
urine [NH4]= 20 Meq/L
urine[HCO3-]= 4 Meq/L
titratable acid = 10 Meq/L
Calculate Bicarbonate gain?
a- 51 Meq/d
b- 39 Meq/d
c- 34 Meq/d
HCO3- gain = [urine NH4] + [titratable acid] – [urine HCO3]
= 20 * 1.5 + 10 * 1.5 - 4 * 1.5
= 39 Meq/d

14- Which of the following regarding acid-base balance is FALSE:

a- During respiratory acidosis, CO2 increases and pH decreases.
b- During compensation of respiratory alkalosis, CO2 increases, HCO3 increases and pH is increased.
c- Metabolic acidosis can be due to vomiting.
d- Chronic renal failure is associated with metabolic acidosis.
e- **During metabolic acidosis, HCO3 decreases as a compensatory mechanism. (as it is the cause of the case not compensation)**

15- Where does renal vascular resistance reside the most:
a- Afferent arterioles
b- Efferent arterioles

c- Glomerular capillaries
d- Peritubular capillaries
e- Renal vein
(most about 50 % in efferent then the afferent follows it)

16- regarding GFR all the following are true except :
a- constriction of efferent always increases GFR
(not always „ it increases the GFR to a certain level of constriction then the GFR decreases)

17- minimal urinary output for anyone
a- it is always 300ml/m2 for body surface area / day

18 - Under very high levels of ADH, where is water most absorbed?
a- Proximal Tubules
b- Late distal tubules
c- Early distal tubules
d- Collecting ducts
e- Collecting tubules
(Always two thirds of water is reabsorbed from proximal tubules even under the MAXIMUM effect of ADH)

19- increasing plasma concentration of PAH will:
a- can lead to increase PAH clearance
b- **increase excretion rate** (because of increasing filtered load)
c- increasing filtration fraction
d- increase reabsorption rate
e- increase production rate

20- hemodialysis can control all the following except :
a- Hb concentration (because no erythropoietin production by dialysis)
b- Acid-base balance
c- Plasma urea concentration
d- Plasma [K^+]
e- Blood volume
Hemodialysis: A mechanism that is used to clear the body from waste products, by using Semi-permeable membrane that allows solutes to move down their Gradient (from blood compartment to the applied fluid compartment. Nevertheless, this mechanism can never control the {Hb}, as it washes out Erythropoietin out from the blood

21- Under normal physiological conditions and no exercise, compared to plasma, urine has:
a. Lower pH, lower osmolarity, higher K+
b. Higher pH, lower osmolarity, higher K+
c. Higher pH, higher osmolarity, higher K+
d. Lower pH, higher osmolarity and higher K
e. Equal pH, higher osmolarity, equal K+

Our urine is acidic(PH:4.5), concentrated, and as we excrete K in it we assume it contains

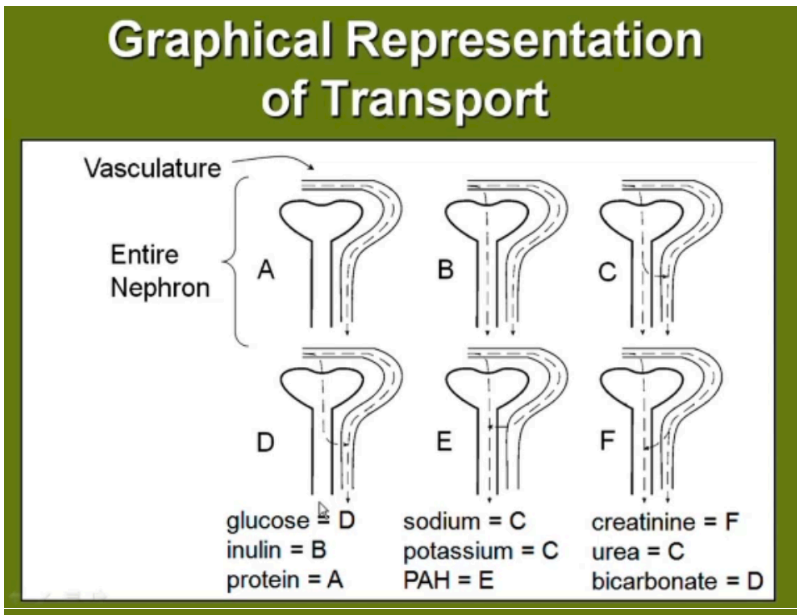
22- All of the following regarding clearance is correct EXCEPT:
(a) It can rise, fall or stay the same if the relative solute concentration increases.
(b) Glucose clearance is normally zero.
(c) Inuline clearance is always constant regardless of plasma concentration.
(d) If greater than GFR, always indicative of secretion.

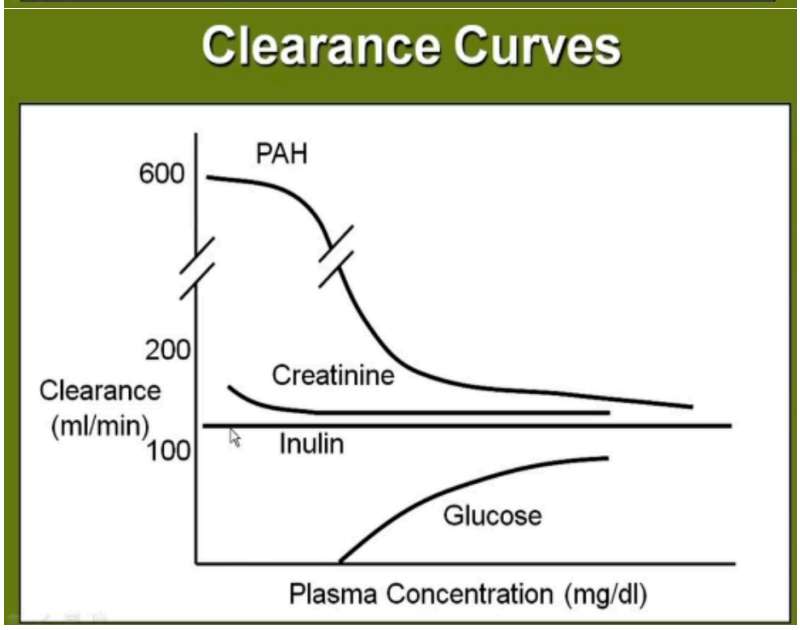
(e) If less than GFR always indicative of reabsorption.[might indicate NO or REDUCED FILTRATION]

23-) Regarding ECF which is not true:

a. {cations} = {anions} (true due to electro-neutrality)
b. Osmolarity predicted by {Na+} (true {Na+}*2.1)
c. Sodium is the major ECF cation
d. Proteins are the major EC buffers. FALSE (INTRACELLULAR)
e. Both ICF and ECF have the same osmolarity

THESE TOW PICTURES ARE VERY IMPORTANT TO UNDERSTAND AND MEMORIZE
SRY FOR BAD EDITTING BUT THERE WAS NO TIME





Done by : Fa3el 5air :p :P good luck in your exam ^_^ ☺