

# GENESIS

(Post Graduation Medical Orientation Centre)

Friday Mega Batch

Total Number- 100

Pass Mark- 70

Topics: Renal system, Body Fluid

Question 36-50 is based on Single answers

Time: 40 Min

Date: 10/01/20

## 1. Metabolic acidosis with normal anion gap

- a) Renal failure
- b) Diarrhoea
- c) Ureterosigmoidostomy
- d) Acetazolamide
- e)  $\text{NH}_4\text{Cl}$  ingestion

**F(Increased anion gap) TTTT( Ref: vision 9th , Page-335)**

## 2. Following statements are true Regarding apical transporter

- a)  $\text{Na}^+$ -glucose cotransporter- proximal tubule
- b)  $\text{Na}^+$ -amino acid – Distal tubule cotransporter
- c)  $\text{Na}^+$ - $\text{H}^+$  exchanges – collecting duct
- d)  $\text{Na}^+$ - channel collecting duct
- e)  $\text{Na}$ - $\text{K}$ - $2\text{Cl}$  cotransporter-Thin ascending limb of LOH

**TF (PCT)F(PCT) TF (Thick Ascending limb)**

**(Ref: Ganong 25th Page-680)**

## 3. Following statements are true regarding M/A of various diuretics

- a) Acetazolamide Decrease  $\text{K}^+$  secretion
- b) Thiazide inhibits  $\text{Na}$ - $\text{Cl}$  cotransport in the early portion of DCT
- c) Loop diuretics inhibit  $\text{Na}^+$ - $\text{K}^+$ -  $2\text{Cl}$  Cotransporter in the TALH
- d) Spironolactone inhibit  $\text{Na}^+$ - $\text{K}^+$  exchange in the collecting tubule by inhibiting the action of Aldosterone

**e) Caffeine Decreases tubular reabsorption of  $\text{K}^+$**   
**F(H+) TTF (Collecting duct)F (only  $\text{Na}^+$ ) (Ref: Ganong 25th Page-690)**

## 4. Factors are responsible for increase vasopressin secretion

- a) Standing
- b) Increased ECF volume
- c) Decrease effective osmotic pressure
- d) Pain emotion
- e) Nausea & vomiting

**TFF (Increase) TT (Ref Ganong 25th P-696)**

## 5. Factor increases renin secretion

- a) Increased sympathetic activity
- b) Increased circulatory catecholamines
- c) Angiotensin-II
- d) Vasopressin
- e) Prostaglandins

**TTFFT (Ref: Ganong- 26th P-703)**

## 6. Regarding erythropoietin, true statements are

- a) In adult, more than 90% comes from kidney
- b) Also extracted from spleen & salivary glands
- c) When renal mass is reduced, the liver compensates the situation
- d) Produced by interstitial cells in the peritubular capillary bed of the kidney & veins of the liver
- e) It is a circulating glycoprotein that contains 165 AA

**F (85%) TFF (Perivenous hepatocytes) T**

## 7. Following statements are true, regarding kidney

- a) Have an abundant lymphatic supply that drains directly in left subclavian vein
- b) Renal capsule is thick and tough that limit the swelling of kidney during AKI
- c) The nerve travel along the renal blood vessels
- d) Kidney receives 15% of cardiac output per minutes
- e) The GER in women are 10% lower than men

**F(Thoracic duct) F (Thin ) TF (20%)T (Ref: Ganong-25th P-676)**

## 8. Glucose reabsorption

- a) With  $\text{Na}^+$  in the late portion of PCT
- b) Filtered at a rate of 100mg/min
- c) Few milligrams appear in the urine per 24 hours
- d) The amount of reabsorbed is not proportional to the amount of filtered
- e) TmG is about 375 mg/min in men & 300mg/min in women

**F(early) TTFT (Ref: Ganong 25th Page-680)**

## 9. Effects of adrenocortical hormone

- a) Aldosterone leads to  $\text{Na}^+$  reabsorption with  $\text{Cl}^-$
- b) In adrenalectomized patient, when aldosterone is injected a latent period of 2-3 days occur before functioning
- c) Mineralocorticoid acts primarily in the collecting duct
- d) These are protein hormone
- e) Liddle syndrome leads to  $\text{Na}^+$  retention & hypertension

**TF (10-30 mins) TFT (Ref: Ganong 25th page-688)**

**10. Factor's affecting RBF**

- a) High protein diet increases RBF
- b) Cold environment decreases RBF
- c) Supine position increases RBF
- d) Mean arterial pressure > 180 mmHg increases RBF
- e) Stressful condition decreases RBF

TTTTT (Ref: Vision 9th physio, P-272)

**11. Substances completely reabsorbed by renal tubule**

- a) Amino acid
- b) Urea
- c) Glucose
- d) Vitamins
- e) Acetoacetate ions

TFTTT (Ref: Vision Physiology 9th P-278)

**12. ECF differs from ICF**

- a) Main ions  $-K^+, Mg^{++}$
- b) More protein content
- c) Average  $pH=7.1$
- d) Provide nutrients to cell for maintaining cellular life
- e) Provides essential fluid media inside the cell for chemical reaction

F (Na<sup>+</sup>, Cl<sup>-</sup>, HCO<sup>-3</sup>) F (less) F (7.4) TF

(Function of ICF) (Ref: Vision 9th page-309)

**13. Agents causing relaxation of mesangial cells**

- a) PDGF
- b) ANP
- c) Dopamine
- d)  $PGE_2$
- e) cAMP

FTTTT (Ref: Ganong-25th Page-678)

**14. ECG finding of hypokalemia**

- a) Decrease P-R interval
- b) ST-segment elevation
- c) Depressed U wave
- d) Progressive fluttering of T wave
- e) Increase amplitude of P wave

F (prolongation) F (Depression) F (Prominent) TT

Ref: Vision 9th Page-324

**15. Following statements are true regarding calcium**

- a) Remain in 3 forms in body
- b) Respiratory alkalosis is responsible for increase serum  $Ca^{2+}$  level
- c) Acidosis leads to decrease  $Ca^{2+}$  level
- d) Hyperthyroidism leads to hypercalcemia
- e) Normal 98% calcium reabsorption occurs in PCT which is PTH dependent

TFFTF (Ref: vision 9th Page-326)

**16. Hydrostatic pressure in renal glomerular capillaries**

- a) Is lower than pressure in efferent arterioles
- b) Rises when afferent arterioles constrict
- c) Is higher than in most capillaries at heart level
- d) Falls by 10 per cent when arterial pressure falls by 10 per cent
- e) Falls along the length of the capillary

FFTFT

**17. The cells of the distal convoluted tubule**

- a) Reabsorb about 50 per cent of the water filtered by the glomeruli
- b) Secrete hydrogen ions into the tubular lumen.
- c) Form  $NH_4^+$  ions
- d) Reabsorb sodium in exchange for hydrogen or potassium ions
- e) Determine the final composition of urine

FTTTF

**18. In chronic renal failure**

- a) Glomerular filtration rate may fall by 70 per cent before the condition gives rise to symptoms
- b) The specific gravity of the urine tends to be elevated, e.g. about 1.030
- c) Blood  $PCO_2$  tends to be low
- d) Ionized calcium levels in the blood tend to be high.
- e) Anaemia is common

TFTFT

**19.  $K^+$  secretion by renal tubules is stimulated by**

- a) Hyponatremia
- b) Aldosterone
- c) Hypokalemia
- d) Acidosis
- e) Increased distal tubular flow rate

FTFFT (ABC- P-357, Ganon- P: 689 (25th))

**20. Substances that are freely filtered but not reabsorbed by the kidney are**

- a) Creatinine
- b) Urea
- c) Glucose
- d) Bicarbonate
- e) Inulin

TFFFT

**21. Wilms tumour (Nephroblastoma)**

- a) Involves both the kidneys in about 5% of cases
- b) Usually present as an abdominal mass
- c) Rarely metastasizes to the lung
- d) Has a 2 year survival rate of 90%
- e) Usually affects adult

TTFTF [Ref: MR Khan 4th/p-314]

Explanation: a) 5-10% cases

e) Predominantly occurs in the first 5 years of life

**22. Na<sup>+</sup> can be transported across the luminal membrane of renal tubular cells by**

- a) Co-transport with organic solutes
- b) Sodium potassium ATPase system
- c) Sodium channels
- d) Counter transport with H<sup>+</sup>
- e) Counter transport with Ca<sup>+</sup>

**TFFT**

**23. Compared with intracellular fluid, the extracellular fluid has lower**

- a) Osmolality
- b) Sodium ion concentration
- c) Chloride ion concentration
- d) Potassium ion concentration
- e) Hydrogen ion concentration

**FFFT (Rodde-1)**

**24. A fall in plasma Na<sup>+</sup> concentration**

- a) Results from excessive production of ADH
- b) Decreases intracellular fluid volume
- c) Occurs in people engaged in hard physical work in hot humid climates
- d) Reduces plasma osmolality
- e) Is likely to cause thirst

**TFTF (Because decrease plasma osmotarity)**

**25. Factors increasing glomerular filtration rate (GFR) are**

- a) Increased plasma colloidal osmotic pressure
- b) Increased filtration coefficient
- c) Sympathetic stimulation
- d) Dehydration
- e) Increased arterial blood pressure

**TFFF**

**26. Inhibition of Na<sup>+</sup>-K<sup>+</sup>-ATPase would result in increased**

- a) Intracellular Na<sup>+</sup> concentration
- b) Intracellular K<sup>+</sup> concentration
- c) Intracellular glucose concentration
- d) Na<sup>+</sup>-glucose co-transport
- e) Na<sup>+</sup>-Ca<sup>2+</sup> counter-transport

**TFFF**

**27. Metabolic function of kidney**

- a) Transamination
- b) Deamination
- c) Glycogenesis
- d) Gluconeogenesis
- e) Glycogenolysis

**TTFT F (liver)**

**28. ADH acts on the following parts of kidney**

- a) DCT
- b) Thin ALLH
- c) DLLOH
- d) DCT
- e) Collecting duct

**F F T T (ADH acts on later DCT and cortical collecting duct)**

**29. Angiotensin II exerts physiological effect on the**

- a) Blood vessels
- b) Bone marrow
- c) Spleen
- d) Afferent and efferent arteriole of glomerulus
- e) Adre

**TFFT (Ganong's /25th/ 310,359,370,702)nal gland**

**30. The proximal convoluted tubules**

- a) Reabsorb most of the sodium ions in glomerular filtrate
- b) Reabsorb most of the chloride ions in glomerular filtrate
- c) Reabsorb most of the potassium ions in glomerular filtrate
- d) Contain juxtaglomerular cells which secrete rennin
- e) Contain the main target cells for antidiuretic hormone

**TTTF (Rodde/Q-410/P-175)**

**Each question below contains five suggested answers- choose the one best response to each question (31-50)**

**31. Which of the following renal functions will be assessed if you are measuring the urine specific gravity?**

- a) Blood flow
- b) Concentration
- c) Filtration
- d) Reabsorption
- e) Secretion

**B (SBAs Pathology/Q-9.5/P-130)**

**32. Which one of the followings has the lowest clearance value?**

- a) Urea
- b) Inulin
- c) Creatinine
- d) PAH
- e) Glucose

**E [Ref: Ganong 25<sup>th</sup>/P-677]**

**33. Which one of the apical transporter is present in the collecting duct**

- a) Na/glucose CT
- b) Na/Lactate CT
- c) K<sup>+</sup> channels
- d) Na<sup>+</sup> channels
- e) Na/H exchange

**D [Ref: Ganong 25<sup>th</sup>/P-680]**

**34. Erythropoietin is secreted by**

- a) Cells in the macula dense
- b) Cells in the proximal tubules
- c) Cells in the distal tubule
- d) Granular cells in the juxtaglomerular apparatus
- e) Cells in the peritubular capillary bed

**E [Ref: Ganong 25<sup>th</sup>/P-707]**

**35. In the presence of vasopressin, the greatest fraction of filtered water is absorbed in the**

- a) Proximal tubule
- b) Loop of Henle
- c) Distal tubule
- d) Cortical collecting duct
- e) Medullary collecting duct

**A [Ref: Ganong 25<sup>th</sup>/P-693]**

**36. Which of the following does not decrease GFR?**

- a) Endothelins
- b) Vasopressin
- c) TXA<sub>2</sub>
- d) Histamine
- e) PGE<sub>2</sub>

**E (ref Ganong 25<sup>th</sup> p-678)**

**37. Ethacrynic acid acts by inhibiting-**

- a) Na-Cl cotransporter
- b) Na-K-2Cl co transporter
- c) Na-K counter transport
- d) Na-H counter transport
- e) Na channel

**B (ref Ganong 25<sup>th</sup>,p-690)**

**38. Where Amino acid is reabsorbed?**

- a) PCT
- b) DCT
- c) LOH
- d) Cortical collecting duct
- e) Cortical collecting tubule

**A (ref Ganong 25<sup>th</sup>690)**

**39. Aldosterone exert its greatest effect-**

- a) Bowman's capsule
- b) PCT
- c) DCT
- d) LOH
- e) Cortical collecting duct

**E (Ref Ganong 25<sup>th</sup> page-692)**

**40. Which one of the following causes decreased Vasopressin secretion?**

- a) Pain
- b) Decreased ECF volume
- c) Standing
- d) Stress
- e) Alcohol

**E (regganong 25<sup>th</sup> p-696)**

**41. Angiotensinogen level is increased by which of the followings?**

- a) Insulin
- b) Glucagon
- c) GH
- d) Thyroid hormone
- e) ADH

**D (regGanong 25<sup>th</sup> /P-700)**

**42. Renin secretion is increased by**

- a) Vasopressin
- b) Angiotensin | |
- c) Increased afferent arteriolar pressure
- d) Increased Na/Cl reabsorption
- e) Increased circulatory catecholamines

**E (Ref Ganong 25<sup>th</sup> /P-703)**

**43. After vomiting which of the followings will not be increased?**

- a) Vasopressin
- b) Aldosterone
- c) Norepinephrine
- d) angiotensin | |
- e) ANP

**E (RegGanong 25<sup>th</sup> /P-706)**

**44. C-type natriuretic peptide(CNP) is not present in-**

- a) Brain
- b) Kidney
- c) Pituitary
- d) Vascular endothelial cells
- e) Spleenictissue

**E (Ref Ganong25<sup>th</sup> ,P-705)**

**45. Which of the following cell type acts as a Chemoreceptor?**

- a) Juxtaglomerular cells
- b) Mesangial cells
- c) Bowman's capsule
- d) Macula Densa
- e) Peritubular capillary

**D (Ref Ganong25<sup>th</sup> ,P-702)**

**46. Unchanged Anion gap with hyperchloremic metabolic acidosis occurs in-**

- a) Lactic acidosis
- b) Starvation ketosis
- c) Hypercalcaemia
- d) Kidney disease
- e) Diarrhoea

**E (Ref Davidson 23<sup>rd</sup>, P-365)**

**47. What is the percentage of Cardiac Output that kidney receives-**

- a) 10%
- b) 15%
- c) 25%
- d) 30%
- e) 35%

**C (Ref Ganong 25<sup>th</sup>, P-673)**

**48. Transmembrane potassium Efflux occurs by**

- a) Acidosis
- b) Insulin
- c) Aldosterone
- d) Alkalosis
- e) Acute potassium excess

**A**

**49. Causes of Hypercalcaemia with elevated PTH levels-**

- a) Thyrotoxicosis
- b) Thiazide diuretics
- c) Glucocorticoid deficiency
- d) Breast malignancy
- e) Tertiary hyperparathyroidism

**E (Ref Davidson 23<sup>th</sup>, p-662)**

**50. The commonest cause of SIADH is-**

- a) Idiopathic
- b) Tumours
- c) Anticonvulsant
- d) TB
- e) Psychosis

**B (Ref Davidson 23<sup>rd</sup>, P-357)**