1. PCT helps in the maintenance of pH in the body fluid by
(a) selective secretion of H+ ions
(b) selective secretion of ammonia
(c) selective secretion of K+ ions and absorption of HCO3ions
(d) All of the above

2. The part of nephron involved in active reabsorption of sodium is ***NEET 2016***
(a) distal convoluted tubule
(b) proximal convoluted tubule
(c) Bowman's capsule
(d) descending limb of Henle's loop

3. An organism which does not have loop of Henle will excrete
(a) no urine (b) dilute urine
(c) concentrated urine (d) no change in urine

4. Vasa recta are minute vessel of peritubular capillaries network, which is
(a) also known as juxtaglomerular apparatus
(b) running parallel to loop of Henle
(c) running parallel to PCT
(d) running parallel to DCT

5. The functioning of the kidneys is efficiently monitored and regulated by the hormonal feedback mechanism involving
(a) hypothalamus (b) JGA
(c) heart (d) All of these

6. Reabsorption of water in DCT and PCT part of nephron is the function of
(a) ANF (b) angiotensin
(c) vasopressin (d) renin

7. In response to low GFR, renin is released by
(a) hypothalamus (b) posterior lobe of pituitary
(c) anterior lobe of pituitary (d) JG cells

8. Angiotensin-II increases the glomerular blood pressure and GFR as it is a/an
(a) osmoregulator (b) vasoconstrictor
(c) vasodilator (d) None of these

9. A decrease in blood pressure/volume will not cause the release of ***NEET 2017***
(a) renin
(b) atrial-natriuretic factor
(c) aldosterone
(d) ADH

10. An adult human excretes on an average
(a) 2-3 litres of urine per day
(b) 1-1.5 litres of urine per day
(c) 2-5 litres of urine per day
(d) 4-5 litres of urine per day

11. Indication of diabetes mellitus is/are
(a) the presence of glucose in urine
(b) the presence of ketone bodies in urine
(c) the presence of amino acid in urine
(d) Both (a) and (b)

12. Uremia is the accumulation of …*A*… in the blood which can be removed through …*B*… .

	A	B
(a)	urea	Haemolysis
(b)	uric acid	Haemodialysis
(c)	urea	Haemodialysis
(d)	uric acid	Haemolysis

13. Fill in the blanks. Ascending limb of Henle's loop is …*A*… to water, whereas the descending limb is …*B*… to it. Reabsorption of water from distal parts of the tubules is facilitated by peptide hormone …*C*… . Dialysis fluid contains all the constituents as in plasma except …*D*….
(a) A–impermeable, B–permeable, C–Antidiuretic Hormone (ADH), D–nitrogenous wastes
(b) A–Antidiuretic Hormone (ADH), B–impermeable, C–permeable, D–nitrogenous wastes
(c) A–impermeable, B–permeable, C–nitrogenous wastes, D–Antidiuretic Hormone (ADH)
(d) A–nitrogenous wastes, B–Antidiuretic Hormone (ADH), C–permeable, D–impermeable

14. Which one of the following statements is incorrect?

(a) Birds and land snails are uricotelic animals
(b) Mammals and frogs are ureotelic animals
(c) Aquatic amphibians and aquatic insects are ammonotelic animals
(d) Birds and reptiles are ureotelic

15. Match the following columns.

	Column I		Column II
A.	Proximal convoluted tubule	1.	Formation of concentrated urine
B.	Distal convoluted tubule	2.	Filtration of blood
C.	Henle's loop	3.	Reabsorption of 70-80% of electrolytes
D.	Counter-current mechanism	4.	Ionic balance
E.	Renal corpuscle	5.	Maintenance of concentration gradient in medulla

Codes

	A	B	C	D	E
(a)	3	5	4	2	1
(b)	3	4	1	5	2
(c)	1	3	2	5	4
(d)	3	1	4	5	2

16. The proximal convoluted tubule has a brush border which is due to
(a) Microvilli (b) Minute hairs
(c) Endothelium (d) Folded tubes

17. The appearance of albumin in the urine is most likely due to
(a) Increase in the blood pressure
(b) Decrease in the blood osmotic pressure
(c) Damage to the Malpighian corpuscles
(d) Damage to the proximal convoluted tubules

18. The yellow colour of urine of the vertebrates is due to
(a) Cholesterol (b) Urochrome
(c) Uric acid (d) Melanin

19. Dialysis is used when the patient suffers from
(a) Heart failure (b) Liver failure
(c) Lung failure (d) Kidney failure

20. The glomerular filtrate contains
(a) Blood minus cells and proteins
(b) Blood minus cells
(c) Blood minus proteins
(d) Plasma minus cells and proteins

21. The principal nitrogenous excretory compound in humans is synthesised
(a) in kidneys but eliminated mostly through liver
(b) in kidneys as well as eliminated by kidneys
(c) in liver and also eliminated by the same through bile
(d) in the liver, but eliminated mostly through kidneys. (2010)

22. Which one of the four parts mentioned below does not constitute a part of single uriniferous tubule?

(a) Distal convoluted tubule
(b) Collecting duct
(c) Bowman's capsule
(d) Loop of Henle (1994)

23. Glucose is taken back from glomerular filtrate through

(a) active transport
(b) passive transport
(c) osmosis
(d) diffusion. (1993)

24. Which of the following causes an increase in sodium reabsorption in the distal convoluted tubule?

(a) Increase in aldosterone levels
(b) Increase in antidiuretic hormone levels
(c) Decrease in aldosterone levels
(d) Decrease in antidiuretic hormone levels (2014)

25. Which one of the following statements is correct with respect to kidney function regulation?

(a) When someone drinks lot of water, ADH release is suppressed.
(b) Exposure to cold temperature stimulates ADH release.
(c) An increase in glomerular blood flow stimulates formation of angiotensin II.
(d) During summer when body loses lot of water by evaporation, the release of ADH is suppressed. (Mains 2011)

26. Human urine is usually acidic because

(a) potassium and sodium exchange generates acidity
(b) hydrogen ions are actively secreted into the filtrate
(c) the sodium transporter exchanges one hydrogen ion for each sodium ion, in peritubular capillaries
(d) excreted plasma proteins are acidic. (2015)

27. A person who is on a long hunger strike and is surviving only on water, will have

(a) less amino acids in his urine
(b) more glucose in his blood
(c) less urea in his urine
(d) more sodium in his urine. (2007)

28. Use of an artificial kidney during hemodialysis may result in

(a) Nitrogenous waste build-up in the body
(b) Non-elimination of excess potassium ions
(c) Reduced absorption of calcium ions from gastro-intestinal tract
(d) Reduced RBC production. Which of the following options is the most appropriate ?
(a)(a) and (d) are correct.
(b)(a) and (b) are correct.

(c)(b) and (c) are correct.
(d)(c) and (d) are correct. (NEET 2019)

29. A condition of failure of kidney to form urine is called

(a) anuria
(b) deamination
(c) uremia
(d) none of these. (1998)

30. Presence of RBC in urine is

(a) alkaptonuria
(b)urothiasis
(c) hematuria
(d) proteinuria. (1988)

1. (d)
(b)
(*b*) Organism which does not have loop of Henle will excrete dilute urine, e.g. fishes. Since, loop of Henle is major part of nephron involved in reabsorption of water to concentrate the urine. Thus, if loop of Henle is absent, dilute urine will be excreted.

(b)
(*d*) The functioning of kidney is regulated by the following

l Hypothalamus by ADH or vasopressin hormone.
l JGA by renin-angiotensin mechanism.
l Heart by ANF (Atrial Natriuretic Factor).

(c)
(d)
(*b*) Angiotension-II, being a powerful vasoconstrictor, increases the glomerular blood pressure and thereby GFR. Angiotensin-II also activates the adrenal cortex to release aldosterone.

(b)
(b)
(*d*) The presence of glucose (glycosuria) and ketone bodies (ketonuria) in the urine are indicative of diabeties mellitus. Analysis of urine helps in clinical diagnosis of many metabolic disorders as well as malfunctioning of the kidney.

(c)
(a)
(*d*) Option (d) contains incorrect statement that can be corrected Birds and reptiles are uricotelic (not ureotelic) as they excrete uric acid as nitrogenous waste in the form of pellet or paste with a minimum loss of water. Rest of the statements are correct.

(b)
(a)

(c)

(b)

(d)

(a)

(d) : The principle nitrogenous excretory compound in humans is urea. Urea is produced in a series of reactions (urea cycle) which take place in the mitochondrial matrix and cytosol of liver cells. Urea cycle (ornithine cycle) is the series of biochemical reactions that converts ammonia, which is highly toxic and carbon dioxide to the much less toxic urea during the excretion of metabolic nitrogen derived from the deamination of excess amino acids. The urea is ultimately excreted in solution in urine.

(b)

(a) : Glucose is taken back from the glomerular filtrate by the proximal convoluted tubule by active transport.

(a) : Aldosterone is a hormone secreted by the outer layer of the adrenal gland (cortex part). Decreased blood volume and interstitial fluid level, results in decreased blood pressure, trigger aldosterone secretion. When aldosterone is present in the blood, reabsorption of Na+ in the

filtrate is increased by the epithelial cells of the collecting duct. Retaining Na+, raises the osmotic pressure of the blood and reduces water loss from the body. When aldosterone is absent, some Na+ remains in the filtrate and is excreted with the urine.

(a) : Antidiuretic hormone (ADH) or vasopressin increases the reabsorption of water in the distal convoluted tubule, collecting tubules and collecting ducts of the nephrons of the kidneys. As a result, the reabsorption of water from the glomerular filtrate is increased. When someone drinks lot of water, requirement of absorption of water decreases, so ADH release is suppressed..

(b)

(c) : A person who is on a long hunger strike and is surviving only on water, will have less urea in his urine. Urea, also called carbamide, is an organic chemical compound which essentially is the waste produced when the body metabolizes protein. Manufactured in the liver by breaking down protein or amino acids and ammonia, the kidneys transfer urea from the blood to the urine. The average person excretes about 30 grams of urea a day. During total starvation with no food being eaten, the body must rely on its own tissues to provide the essential mixture of fuels to sustain life. Under conditions of starvation, enzyme levels rise as proteins are degraded and amino acid carbon skeletons are used to provide energy, thus increasing the quantity of nitrogen that must be excreted in the form of urea.

(d) : When kidneys are completely damaged and do not function, patient often receive hemodialysis (treatment with artificial kidney). The patient is connected to the machine by a tube attached to an artery often the radial artery. Blood from the artery is pumped into a tube that runs through the dialyser. The dialyser is filled with dialysing fluid which contains the same quantities of electolytes and nutrients as normal plasma but contains no waste products. The cellophane tube (a tube bounded by thin membrane) is kept in the dialysing fluid. The membrane of the cellophane tube is impermeable to blood cells and proteins but permeable to urea, uric acid, creatinine and mineral ions. So, these wastes diffuse from the blood to the dialysing fluid across the cellophane membrane. However, since both kidneys are non-functional thus absorption of Ca^{2+} from small intestine will be affected as coversion of vitamin D to calcitriol will not take place which is needed for calcium absorption from small intestine(GI tract). Erythropoietin production will also be affected, thus RBC production will be reduced.

(a) : Anuria is the complete suppression of urine formation by the kidney. In this case most of the nephrons are destroyed. Uremia is the presence of an excessive amount of urea in the blood. Deamination is the removal of ammonia from amino acids.

(c) : Presence of RBCs in the blood is known as hematuria. Alkaptonuria is the excretion of large amount of alkapton in urine which when comes in contact with air turns black. Proteinuria is the presence of proteins in the blood.