CHAPTER 19

Excretory Products and Their Elimination

19.0 Introduction

1. Select the option which shows correct matching of animal with its excretory organ and excretory product.

	Animal	Excretory organ	Excretory product
(a)	*Labeo* (Rohu)	Nephridial tubes	Ammonia
(b)	Salamander	Kidneys	Urea
(c)	Peacock	Kidneys	Urea
(d)	Housefly	Renal tubules	Uric acid

(Karnataka NEET 2013)

2. Which one of the following options gives the correct categorization of six animals according to the type of nitrogenous waste they give out?

	Ammonotelic	Ureotelic	Uricotelic
(a)	Pigeon, humans	Aquatic amphibia, lizards	Cockroach, frog
(b)	Frog, lizards	Aquatic amphibia, humans	Cockroach, pigeon
(c)	Aquatic amphibia	Frog, humans	Pigeon, lizards, cockroach
(d)	Aquatic amphibia	Cockroach, humans	Frog, pigeon, lizards

(Mains 2012)

3. Which one of the following characteristics is common both in humans and adult frogs?
(a) Four chambered heart
(b) Internal fertilisation
(c) Nucleated RBCs
(d) Ureotelic mode of excretion *(Mains 2012)*

4. Uricotelic mode of excreting nitrogenous wastes is found in
(a) reptiles and birds
(b) birds and annelids
(c) amphibians and reptiles
(d) insects and amphibians. *(Mains 2011)*

5. 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)*

6. Uric acid is the chief nitrogenous component of the excretory products of
(a) earthworm (b) cockroach
(c) frog (d) man. *(2009)*

7. In ornithine cycle, which of the following wastes are removed from the blood?
(a) CO_2 and urea (b) Ammonia and urea
(c) CO_2 and ammonia (d) Urea and urine *(2005)*

8. Uricotelism is found in
(a) mammals and birds
(b) fish and fresh water protozoans
(c) birds, land reptiles and insects
(d) frogs and toads. *(2004)*

9. Conversion of ammonia to urea is done by
(a) ornithine cycle (b) arginine cycle
(c) fumaric cycle (d) citrulline cycle. *(2000)*

10. In ureotelic animals, urea is formed by
(a) Krebs' cycle (b) EM pathway
(c) Ornithine cycle (d) Cori cycle. *(1997)*

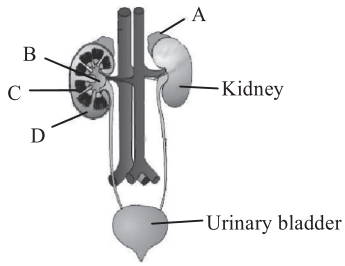
11. The ornithine cycle removes two waste products from the blood in liver. These products are
(a) CO_2 and ammonia
(b) ammonia and uric acid
(c) CO_2 and urea
(d) ammonia and urea. *(1996)*

12. Two examples in which the nitrogenous wastes are excreted from body in the form of uric acid are
(a) birds and lizards
(b) frogs and cartilaginous fish
(c) insects and bony fish
(d) mammals and molluscs. *(1994)*

13. Nitrogenous waste products are eliminated mainly as
(a) urea in tadpole and ammonia in adult frog
(b) ammonia in tadpole and urea in adult frog
(c) urea in both tadpole and adult frog
(d) urea in tadpole and uric acid in adult frog.
(1991)

19.1 Human Excretory System

14. Figure shows human urinary system with structures labelled A to D. Select option which correctly identifies them and gives their characteristic and/ or functions.



(a) C - Medulla - inner zone of kidney and contains complete nephrons.
(b) D - Cortex - outer part of kidney and do not contain any part of nephrons.
(c) A - Adrenal gland - located at the anterior part of kidney. Secrete catecholamines which stimulate glycogen breakdown.
(d) B - Pelvis - broad funnel shaped space inner to hilum, directly connected to loops of Henle.
(NEET 2013)

15. Which one of the following is not a part of a renal pyramid?
(a) Peritubular capillaries
(b) Convoluted tubules
(c) Collecting ducts
(d) Loop of Henle *(Mains 2011)*

16. The basic functional unit of human kidney is
(a) nephridia (b) Henle's loop
(c) nephron (d) pyramid. *(1997)*

17. 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)*

18. Proximal and distal convoluted tubules are parts of
(a) seminiferous tubules
(b) nephron
(c) oviduct
(d) vas deferens. *(1990)*

19.2 Urine Formation

19. The net pressure gradient that causes the fluid to filter out of the glomeruli into the capsule is
(a) 50 mm Hg (b) 75 mm Hg
(c) 20 mm Hg (d) 30 mm Hg. *(2005)*

19.3 Function of the Tubules

20. Which of the following statements is correct?
(a) The descending limb of loop of Henle is impermeable to water.
(b) The ascending limb of loop of Henle is permeable to water.
(c) The descending limb of loop of Henle is permeable to electrolytes.
(d) The ascending limb of loop of Henle is impermeable to water. *(NEET 2017)*

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

22. Removal of proximal convoluted tubule from the nephron will result in
(a) no change in quality and quantity of urine
(b) no urine formation
(c) more diluted urine
(d) more concentrated urine. *(2015 Cancelled)*

23. The maximum amount of electrolytes and water (70 – 80 percent) from the glomerular filtrate is reabsorbed in which part of the nephron?
(a) Ascending limb of loop of Henle
(b) Distal convoluted tubule
(c) Proximal convoluted tubule
(d) Descending limb of loop of Henle *(2012)*

24. Which one of the following correctly explains the function of a specific part of the human nephron?
(a) Podocytes : create minute spaces (slit pores) for the filtration of blood into the Bowman's capsule
(b) Henle's loop : most reabsorption of the major substances from the glomerular filtrate
(c) Distal convoluted tubule : reabsorption of K^+ ions into the surrounding blood capillaries
(d) Afferent arteriole : carries the blood away from the glomerulus towards renal vein.
(Mains 2011)

25. Which one of the following statements in regard to the excretion by the human kidneys is correct?
(a) Descending limb of loop of Henle is impermeable to water.

(b) Distal convoluted tubule is incapable of reabsorbing HCO_3^-.
(c) Nearly 99 per cent of the glomerular filtrate is reabsorbed by the renal tubules.
(d) Ascending limb of loop of Henle is impermeable to electrolytes. *(2010)*

26. Glucose is taken back from glomerular filtrate through
(a) active transport (b) passive transport
(c) osmosis (d) diffusion. *(1993)*

27. Under normal conditions which one is completely reabsorbed in the renal tubule?
(a) Urea (b) Uric acid
(c) Salts (d) Glucose *(1991)*

28. Brush border is characteristic of
(a) neck of nephron
(b) collecting tube
(c) proximal convoluted tubule
(d) all of these. *(1990)*

29. Reabsorption of useful substances from glomerular filtrate occurs in
(a) collecting tube
(b) loop of Henle
(c) proximal convoluted tubule
(d) distal convoluted tubule. *(1989)*

19.4 Mechanism of Concentration of the Filtrate

30. Which of the following factors is responsible for the formation of concentrated urine?
(a) Hydrostatic pressure during glomerular filtration.
(b) Low levels of antidiuretic hormone.
(c) Maintaining hyperosmolarity towards the medullary interstitium in the kidneys.
(d) Secretion of erythropoietin by Juxtaglomerular complex. *(NEET 2019)*

31. If Henle's loop were absent from mammalian nephron, which one of the following is to be expected?
(a) There will be no urine formation.
(b) There will be hardly any change in the quality and quantity of urine formed .
(c) The urine will be more concentrated.
(d) The urine will be more dilute. *(2003)*

32. Concentration of urine depends upon which organ?
(a) Bowman's capsule
(b) Length of Henle's loop
(c) PCT
(d) Network of capillaries arising from glomerulus *(2000)*

19.5 Regulation of Kidney Function

33. Which of the following would help in prevention of diuresis?
(a) More water reabsorption due to undersecretion of ADH.
(b) Reabsorption of Na^+ and water from renal tubules due to aldosterone.
(c) Atrial natriuretic factor causes vasoconstriction.
(d) Decrease in secretion of renin by JG cells. *(NEET 2020)*

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

35. 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)*

36. A fall in glomerular filtration rate (GFR) activates
(a) juxtaglomerular cells to release renin
(b) adrenal cortex to release aldosterone
(c) adrenal medulla to release adrenaline
(d) posterior pituitary to release vasopressin. *(Mains 2012)*

37. 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)*

38. Angiotensinogen is a protein produced and secreted by
(a) juxtaglomerular (JG) cells
(b) macula densa cells
(c) endothelial cells (cells lining the blood vessels)
(d) liver cells. *(2006)*

39. If excess water passes out from the tissue without being restored by the kidneys, the cells would
(a) burst open and die
(b) take water from the plasma
(c) not be affected at all
(d) shrivel and die. *(1994)*

19.6 Micturition

40. Match the items given in column I with those in column II and select the correct option given below.

	Column I (Function)	Column II (Part of excretory system)
A.	Ultrafiltration	(i) Henle's loop
B.	Concentration of urine	(ii) Ureter
C.	Transport of urine	(iii) Urinary bladder
D.	Storage of urine	(iv) Malpighian corpuscle
		(v) Proximal convoluted tubule

	A	B	C	D
(a)	(iv)	(v)	(ii)	(iii)
(b)	(iv)	(i)	(ii)	(iii)
(c)	(v)	(iv)	(i)	(ii)
(d)	(v)	(iv)	(i)	(iii)

(NEET 2018)

41. 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)*

42. Which of the following does not favour the formation of large quantities of dilute urine?
(a) Renin
(b) Atrial-natriuretic factor
(c) Alcohol
(d) Caffeine *(2015 Cancelled)*

43. What will happen if the stretch receptors of the urinary bladder wall are totally removed?
(a) Micturition will continue.
(b) Urine will continue to collect normally in the bladder.
(c) There will be no micturition.
(d) Urine will not collect in the bladder. *(2009)*

44. 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)*

45. A person is undergoing prolonged fasting. His urine will be found to contain abnormal quantities of
(a) fats (b) amino acids
(c) glucose (d) ketones. *(2005)*

19.8 Disorders of the Excretory System

46. 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)*

47. Match the items given in column I with those in column II and select the correct option given below.

	Column I	Column II
A.	Glycosuria	(i) Accumulation of uric acid in joints
B.	Gout	(ii) Mass of crystallised salts within the kidney
C.	Renal calculi	(iii) Inflammation in glomeruli
D.	Glomerular nephritis	(iv) Presence of glucose in urine

	A	B	C	D
(a)	(iii)	(ii)	(iv)	(i)
(b)	(i)	(ii)	(iii)	(iv)
(c)	(ii)	(iii)	(i)	(iv)
(d)	(iv)	(i)	(ii)	(iii)

(NEET 2018)

48. A condition of failure of kidney to form urine is called
(a) anuria (b) deamination
(c) uremia (d) none of these. *(1998)*

49. Presence of RBC in urine is
(a) alkaptonuria (b) urothiasis
(c) hematuria (d) proteinuria. *(1988)*

ANSWER KEY

1.	(b)	**2.**	(c)	**3.**	(d)	**4.**	(a)	**5.**	(d)	**6.**	(b)	**7.**	(c)	**8.**	(c)	**9.**	(a)	**10.**	(c)
11.	(a)	**12.**	(a)	**13.**	(b)	**14.**	(c)	**15.**	(b)	**16.**	(c)	**17.**	(b)	**18.**	(b)	**19.**	(c)	**20.**	(d)
21.	(b)	**22.**	(c)	**23.**	(c)	**24.**	(a)	**25.**	(c)	**26.**	(a)	**27.**	(d)	**28.**	(c)	**29.**	(c)	**30.**	(c)
31.	(d)	**32.**	(b)	**33.**	(b)	**34.**	(a)	**35.**	(a)	**36.**	(a)	**37.**	(a)	**38.**	(d)	**39.**	(d)	**40.**	(b)
41.	(b)	**42.**	(a)	**43.**	(a)	**44.**	(c)	**45.**	(d)	**46.**	(d)	**47.**	(d)	**48.**	(a)	**49.**	(c)		