



BIOLOGY

BOOKS - SARAS PUBLICATION

EXCRETION

Example

1. What is meant by osmotic regulation?



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2. Define ionic regulation.



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3. Define osmoconformers.



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4. Define stenohaline animals.



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5. Define ammonoteles.



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6. What are uricoteles?



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7. Define ureoteles.



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8. What is 'detrusor' muscle?



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9. What is meant by renal hilum?



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10. What is Bowman's capsule?



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11. Define glomerulus.



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12. What is vasa recta?



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13. What is glomerular filtration?



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14. What is glomerular pressure?



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15. What is renal clearance?



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16. Explain the tubular reabsorption process of urine formation.



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17. What is osmolarity and how is it expressed.



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18. What is juxtaglomerular apparatus?



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19. Define renal calculi.



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20. Define haemodialysis.



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21. Define fenestrae.



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22. Define podocytes.



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23. Define filtration slits.



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24. Differentiate protonephridia from metanephridia.



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25. With regards to toxicity and the need for dilution in water, how different are ureotelic and uricotelic excretions? Give examples of animals that use these types of excretion.

Ureotelism:

1. The process of excreting urea is called ureotelism.

2. Animals which are found in places where water availability is not abundant have this mode of excretion.

3. They convert Ammonia produced in the body into urea in the liver and release it to the

blood. This is filtered and excreted by the kidneys, Eg: Mammals, many terrestrial amphibians and marine fishes.

4. In terms of toxicity urea is more toxic than uric acid but it is soluble in water and is thus excreted as urine.



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26. Differentiate cortical from medullary nephrons.



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27. Write the structural and functional difference between mammalian and reptilian kidney.



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28. Arrange the following structures in the order that a drop of water entering the nephron would encounter them.

(a) Afferent arteriole (b) Bowman's capsule

(c) Collecting duct (d) Distal tubule

(e) Glomerulus (f) Loop of Henle

(g) Proximal tubule (h) Renal pelvis



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29. What forces promote Glomerular filtration?

What forces opposes them? What is meant by net filtration pressure?



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30. What is the nitrogenous waste produced by amphibian larvae and by the adult animal?



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31. How is urea formed in the human body?

(OR) We are not consuming urea. But in our body urea is produced. Why?



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32. What vessels carry blood to the kidneys? Is this blood arterial or venous?



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33. What is tubular secretion? Name the substances secreted through the renal tubules.



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34. Name the three main hormones are involved in the regulation of the renal function?



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35. Name the three filtration barriers that solutes must come across as they move from plasma to the lumen of Bowman's capsule. What components of the blood are usually excluded by these layers?





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36. When a molecule or ion is reabsorbed from the lumen of the nephron, where does it go? If a solute is filtered and not reabsorbed from the tubule, where does it go?



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37. If the afferent arteriole of the nephron constricts, what happens to the GFR in that nephron? If the efferent arteriole constricts

what happens to the GFR in that nephron?

Assume that no auto regulation takes place.



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38. How is the process of micturition altered by toilet training?



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39. Identify the biological term.

Excretion, glomerulus, urinary bladder,

glomerular filtrate, ureters, urine, Bowman's capsule, urinary system, reabsorption, micturition, osmosis, proteins.

(a) A liquid which gathers in the bladder.

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(i) Regulation of water and dissolved substances in blood and tissue fluid.

(j) Consists of the kidneys, ureters and bladder.

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(l) What solute the blood contains that are not present in the glomerular filtrate?



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43. Assertion (A) : Glomerular filtration rate (GFR) is the volume of filtrate formed min^{-1} in all nephrons (glomerulus) of both the kidneys.

Reason (R) : In adults the GFR is approximately 120-125 mL/min.



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56. With regards to toxicity and the need for dilution in water, how different are ureotelic and uricotelic excretions? Give examples of animals that use these types of excretion.

Ureotelism:

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57. Differentiate protonephridia from metanephridia.



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58. Differentiate cortical from medullary nephrons.



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59. What is the effect of aldosterone on kidneys and where is it produced?



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60. Identify the following structures and explain their significance in renal physiology?

a. Juxtaglomerular apparatus

b. Podocytes

c. Sphincters in the bladder

d. Renal cortex



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61. Identify the following structures and explain that significance in renal physiology?

(a) Podocytes



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62. Identify the following structures and explain that significance in renal physiology?

(c) Sphincters in the bladder



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63. Identify the following structures and explain their significance in renal physiology.

Renal cortex.



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64. How are the kidneys involved in controlling blood volume? How is the volume of blood in the body related to arterial pressure?



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65. What is the function of antidiuretic hormone? Where is it produced and what

stimull Increases or decreases its secretion?



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66. What evolutionary hypothesis could explain the heart's role in secreting a hormone that regulates renal function?



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67. Name the major changes that occurred during the evolution of chordates?



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68. How are animals classified based on the ability to tolerate changes in the external environment?



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69. List the major nitrogenous waste products.



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70. Write the components of humans excretory system.



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71. What are the components of each nephron?



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72. Name the processes involved in urine formation.



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73. Name the components of the filtrate that are reabsorbed in the proximal convoluted tubule (PCT)



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74. What are the components of juxtaglomerular apparatus?



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75. How are osmoreceptors in the hypothalamus activated?



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76. List the indications of diabetes mellitus.



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77. List the secretions of liver?



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78. What is meant by osmotic regulation?



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79. Define ionic regulation.



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80. Define osmoconformers.



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81. Which organisms are called osmoregulators?



[Watch Video Solution](#)

82. Define stenohaline animals.



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83. Why are tilapia and salmons called euryhaline animals?



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84. Define ammonoteles.



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85. How is ammonia excreted in bony fishes?



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87. Define ureoteles.



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88. Differentiate protonephridia from metanephridia.



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89. What is 'detrusor' muscle?



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90. Why do reptiles produce very little hypotonic urine?



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91. Why do mammals produce hyperosmotic urine?



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92. What are the renal columns of Bertini?



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93. What is meant by renal hilum?



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94. Define renal pelvis and calyces.



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95. What are the two main parts of a nephron?



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96. What is Bowman's capsule?



[Watch Video Solution](#)

97. Define glomerulus.



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98. What is vasa recta?



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99. What happens in ornithine cycle?



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100. What is glomerular filtration?



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101. What is glomerular pressure?



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102. Give the formula for net filtration pressure.



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105. Where and how does tubular reabsorption take place?



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106. What are aquaporins?



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107. What is osmolarity and how is it expressed.



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108. What are the major functions of Henle's Loop?



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109. Give reasons for osmotic gradient in the medulla.



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110. Give the characteristics of diabetes insipidus.



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111. What is juxtaglomerular apparatus?





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112. What is the function of ACH?



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113. Define renal calculi



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114. What are the symptoms of glomerulonephritis?



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115. Define haemodialysis?



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116. What are the disorders related to the excretory system ?



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117. Write a short note on Renal Failure or Kidney Failure.



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118. What is meant by Uremia?



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119. Write a short note on Glomerulonephritis.



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120. What is the role of collecting duct in producing urine?



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121. Give the excretory structures of different organisms.



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122. Define the following:

Fenestrae



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123. Define the following:

Podocytes



[Watch Video Solution](#)

124. Define the following:

Filtration slits



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125. What is Henl's loop? Where is it located?



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126. How are nephrons classified based on the length of Henle's loop?





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127. Write the structural and functional difference between mammalian and reptilian kidney.



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128. What is selective reabsorption? Give the substance reabsorbed by different segments of the nephron.



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129. Explain the structure of kidney. Ans.

Structure of kidney:



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130. When there is excessive loss of fluid from the body or when there is an increased blood pressure, how does the kidney regulate its functions?



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131. How is kidney-function regulated when you drink excess amount of fruit juice?



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132. What is ADH? How is diabetes insipidus caused?



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133. What is the hormone which functions both as vasodilator and vasoconstrictor?

Describe the functions of this hormone.



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134. Explain the process of micturition.



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135. What happens when you take too much water without any salty diet?



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136. What happens when you take little water with high salty food?



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137. List the excretory organs present in our body. Give the products excreted by these organs.



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138. What does malfunctioning of kidneys lead to? How can this condition be improved?



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139. Give the ultimate method for correction of acute renal failure?



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140. Write short notes on the capillary bed of nephrons.



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141. What is glomerular filtration?



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142. Write a short note on urinary tract infection.



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143. (i)What is the structural and functional units of kidney? (ii)Draw its structure. (iii)Describe it.



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144. Name the processes involved in urine formation.



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145. Write about the forces that promote and oppose glomerular filtration. Define GFR and give the normal GFR value in adults.



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146. How is concentrated urine formed?



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147. What is the drug used to treat high blood pressure? Explain its action with a flow chart.



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148. What is glomerular pressure?



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149. Explain the method of removal of toxic urea from kidney failure patients. Provide a diagram to explain it.



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Exercise

1. In which segment of the nephron most of the re absorption of substances takes place?



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2. Which segment is the site of secretion and regulated reabsorption of ions and pH homeostasis?



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3. What solute is normally present in the body to estimate GFR in humans?



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4. Which part of the autonomic nervous system is involved in Micturition process?



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5. Concentration of urine depends upon which part of the nephron

- A. Bowman's capsule
- B. Length of Henle's loop
- C. P.C.T.

D. Network of capillaries arising from
glomerulus

Answer:



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6. 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

Answer:



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7. 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. Macula densa cells

C. Less urea in his urine

D. More sodium in his urine

Answer:



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8. 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 micturition

D. Urine will not collect in the bladder

Answer:



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9. The end product of Ornithine cycle is

A. Carbon dioxide

B. Uric acid

C. Urea

D. Ammonia

Answer:



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10. Identify the wrong match

- a. Bowman's capsule. - Glomerular filtration
- b. DCT - Absorption of glucose
- c. Henle's loop - Concentration of urine
- d. PCT - Absorption of Na^+ and K^+ ions



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11. Podocytes are the cells present on the

- A. Outer wall of Bowman's capsule
- B. Inner wall of Bowman's capsule

C. Nexk of nephron

D. Wall glomerular capillaries

Answer:



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12. Glomerular filtrate contains

A. Blood without blood cells and proteins

B. Plasma without sugar

C. Blood with protiens but without cells

D. Blood without urea

Answer:



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13. Kidney stones are produced due to deposition of uric acid and

A. Silicates

B. Minerals

C. Calcium carbonate

D. Calcium oxalate

Answer:



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14. Animal requiring minimum amount of water to produce urine are

A. Ureotelic

B. Ammonotelic

C. Uricotelic

D. Chemotelic

Answer:



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15. Aldosterone acts at the distal convoluted tubule and collecting duct resulting in the absorption of water through

A. Aquaporins

B. Spectrins

C. GLUT

D. Chloride Channels

Answer:



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16. The hormone which helps in the reabsorption of water in kidney tubules is

A. Cholecystokinin

B. Angiotensin II

C. Antidiuretic hormone

D. Pancreozymin

Answer:



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17. Malpighian tubules remove excretory products from

A. Mouth

B. Oesophagus

C. Haemolymph

D. Alimentary canal

Answer:



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18. Which vessels drain filtered blood from the kidneys?



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19. Name the organ that assists in the control of ionic and water balance?

A. Heart

B. Kidney

C. Lungs

D. Liver

Answer:



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20. Organisms that are capable of maintaining their internal osmotic concentration irrespective of their external osmotic environment are called

- A. Ammonoteles
- B. Osmoconformers
- C. Osmoregulators
- D. Uricoteles

Answer:



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21. Which one is not an ammonotelic animal.

A. Fishes

B. Aquatic amphibians

C. Aquatic insects

D. Crocodile

Answer:



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22. Which is the excretory structure found in the most of the insects?

A. Nephron

B. Nephridium

C. Cloaca

D. Malpighian tubules

Answer:



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23. Name the excretory organ of crustaceans

A. Adrena gland

B. Sebaceous gland

C. Green gland

D. Sweat gland

Answer:



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24. The structural and functional unit of the kidney is.....

A. Neuron

B. Nephron

C. Cyton

D. Dendron

Answer:



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25. Hypotonic urine is produce in

A. Mammals

B. Reptiles

C. Birds

D. Amphibians

Answer:



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26. The Bowman's capsule and the glomerulus together constitute the

A. Podocytes

B. Renal tubules

C. Renal corpuscle

D. Proximal convoluted tubule

Answer:



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27. The openings between the foot processes are

- A. Gill slits
- B. Filtration slits
- C. Pharyngeal slits
- D. Eye slits

Answer:



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28. Where does the distal convoluted tubule of nephrons open into?

- A. Collecting duct
- B. Bowman's capsule
- C. Proximal convoluted tubule
- D. Calyces

Answer:



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29. The filtration of blood that takes place in the

A. Bowman's capsule

B. Urethra

C. Henle's loop

D. Glomerulus

Answer:



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30. What is the parameter that reflects the amount of solute passing from the plasma to the urine in a given time period?

A. Glomerular filtration rate

B. Renal clearance

C. Net filtration pressure

D. None of the above

Answer:



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31. Name the medical condition in which lower than normal levels of plasma proteins and higher than normal GFR is seen?

- A. Acute kidney failure
- B. Urethritis
- C. Cirrhosis of the liver
- D. Uremia

Answer:



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32. What is the volume of filtrate formed in a day?

A. 120-125 L

B. 170-180 L

C. 200-250 ml

D. 160-180 ml

Answer:



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33. What are the water-permeable channels of collecting duct called as?

A. Aquaporis

B. Calyces

C. Peritubular capillaries

D. Hyaline

Answer:



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34. Name the hormone involved in kidney function and is secreted due to the stimulation of neurohypophysis.

A. Aldosterone

B. Oxytocin

C. Vasopressin

D. Adrenaline

Answer:



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35. Classify drug used to treat high blood pressure

A. ACE inhibitors

B. Atenolol

C. Acetaminophen

D. Atorvastatin

Answer:



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36. The condition that is caused due to defects in ADH receptors is

- A. Diabetes mellitus
- B. Diabetes insipidus
- C. Hypertension
- D. Hypotension

Answer:



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37. Name the enzyme secreted by granular cells of juxtaglomerular apparatus.

A. Lactase

B. Trypsin

C. Helicase

D. Renin

Answer:



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38. What stimulates Na^+ reabsorption in the proximal convoluted tubule by vasoconstriction?

A. Angiotensin II

B. Aldosterone

C. Angiotensin I

D. Vasopressin

Answer:



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39. Average amount of urine excreted by an adult human is

A. 0.5 to 1.0 litre

B. 3 to 5 litres

C. 4.5 to 8 litres

D. 1 to 1.5 litres

Answer:



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40. What is Glycosuria?

- A. Absence of glucose in urine
- B. Presence of glucose in urine
- C. absence of glucose in blood
- D. Presence of glucose of blood

Answer:



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41. What is the inflammation of bladder called as?

A. Cystitis

B. Nephritis

C. Urethritis

D. Colitis

Answer:



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42. What is the normal urea level in human blood?

A. $40 - 50\text{mg} / 100\text{ml}$

B. $17 - 30\text{mg} / 100\text{ml}$

C. $2 - 5\text{mg} / 100\text{ml}$

D. $70 - 80\text{mg} / 100\text{ml}$

Answer:



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43. What is the other term for renal calculi?

A. Nephritis

B. Polycystic kidney disease

C. Nephrolithiasis

D. Glomerulonephritis

Answer:



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44. What is the technique used for the removal of renal calculi?>

A. Haemodialysis

B. Transplantation

C. Pyleothotomy

D. Cytometry

Answer:



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45. What is the other term for Bright's disease?

A. Glomerulonephritis

B. Neuritis

C. Arthritis

D. Colitis

Answer:



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46. Give the ultimate method for correction of acute renal failure?

A. Lithotripsy

B. Pyleothotomy

C. Haemodialysis

D. Kidney transplantation

Answer:



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47. Give the effective glomerular pressure that results in ultrafiltration.

A. 17 mmHg

B. 20 mmHg

C. 10 mmHg

D. 5 mmHg

Answer:



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48. The net filtration pressure of is responsible for renal filtration.

A. 15 mmHg

B. 25 mmHg

C. 10 mmHg

D. 20 mmHg

Answer:



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49. Match the following :

- | | |
|-------------|-------------------------|
| 1. Tapeworm | - a. Green glands |
| 2. Molluscs | - b. Malpighian tubules |
| 3. Prawns | - c. Protonephridia |
| 4. Insects | - d. Metanephridia |

A. 1.c 2.a 3.b 4.d

B. 1.c 2.d 3.a 4.b

C. 1.b 2.a 3.c 4.b

D. 1.d 2.c 3.a 4.b

Answer:



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50. Match the following :

- | | |
|-----------------------------|---|
| 1. Descending limb | - a. Reabsorption of Na^+ , Cl^- and K^+ |
| 2. Ascending limb | - b'. Reabsorption of bicarbonate |
| 3. Distal convoluted tubule | - c. Reabsorption of water alone |
| 4. Collecting duct | - d. Reabsorption of water and Na^+ |

A. 1.c 2.d 3.b 4.a

B. 1. a2.b 3.c 4.d

C. 1.c 2.a 3.b 4.d

D. 1.b 2. c 3.a 4.d

Answer:



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51. Which of the following statement is true?

A. Angiotensin II stimulates adrenal cortex to secrete aldosterone.

B. Angiotensin converting enzyme stimulates JG cells to release aldosterone.

C. Angiotensin I stimulates neurohypophysis to secrete ADH

D. All of the above

Answer:



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52. Which of the following statement is true?

A. Homeostasis of K^+ and Na^+ in the blood is regulated in the collecting duct.\

B. Homeostasis of K^+ and Na^+ in the blood is regulated in the proximal

convoluted tubule

C. Homeostasis of K^+ and Na^+ in the blood is regulated in the loop of Henle.

D. Homeostasis of K^+ and Na^+ in the blood is regulated in the distal convoluted tubule

Answer:



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53. Which of the following statement is false regarding increased renin secretion?

A. Decreased extracellular fluid volume increases renin secretion

B. Decreased fluid delivery to the distal tubule increases renin secretion

C. Increased blood pressure increases renin secretion

D. Decreased blood pressure increases
renin secretion

Answer:



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54. The hormone which helps in the reabsorption of water in kidney tubules is

A. Cholecystokinin

B. Angiotensin II

C. Antidiuretic hormone

D. Pancreozymin

Answer:



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55. 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

Answer:



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56. Aldosterone acts at the distal convoluted tubule and collecting duct resulting in the absorption of water through

A. Aquaporins

B. Spectrins

C. GLUT

D. Chloride Channels

Answer:



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57. In which segment of the nephron most of the re absorption of substances takes place?



58. Name the excretory organ of crustaceans

- A. Adrenal gland
- B. Sebaceous gland
- C. Green gland
- D. Sweat gland

Answer:



59. Which of the following statement is true?

A. Angiotensin II stimulates adrenal cortex to secrete aldosterone.

B. Angiotensin converting enzyme stimulates JG cells to release aldosterone

C. Angiotensin I stimulates neurohypophysis to secrete ADH

D. All of the above

Answer:



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60. What is the inflammation of bladder called as?

- A. Cystitis
- B. Nephritis
- C. Urethritis
- D. Colitis

Answer:



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61. Name the hormone involved in kidney function and is secreted due to the stimulation of neurohypophysis.

A. Aldosterone

B. Oxytocin

C. Vasopressin

D. Adrenaline

Answer:



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62. Arrange the following structures in the order that a drop of water entering the nephron would encounter them.

Afferent arteriole

Bowman's capsule

Collecting duct

Distal tubule

Glomerulus

Loop of Henle

Proximal tubule

Renal pelvis



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63. What is the nitrogenous waste produced by amphibian larvae and by the adult animal?



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64. Name the three main hormones are involved in the regulation of the renal function?



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65. Name the components of the filtrate that are reabsorbed in the proximal convoluted tubule (PCT)



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66. What is 'detrusor' muscle?



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67. Give reasons for osmotic gradient in the medulla.



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68. With regards to toxicity and the need for dilution in water, how different are ureotelic

and uricotelic excretions? Give examples of animals that use these types of excretion.

Ureotelism:

1. The process of excreting urea is called ureotelism.

2. Animals which are found in places where water availability is not abundant have this mode of excretion.

3. They convert Ammonia produced in the body into urea in the liver and release it to the blood. This is filtered and excreted by the kidneys, Eg: Mammals, many terrestrial amphibians and marine fishes.

4. In terms of toxicity urea is more toxic than uric acid but it is soluble in water and is thus excreted as urine.



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69. What is the effect of aldosterone on kidneys and where is it produced?



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70. How is the process of micturition altered by toilet training?



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71. How are nephrons classified based on the length of Henle's loop?



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72. Explain the structure of kidney. Ans.

Structure of kidney:



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73. What is the function of antidiuretic hormone? Where is it produced and what stimull Increases or decreases its secretion?



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74. How are the kidneys involved in controlling blood volume? How is the volume of blood in the body related to arterial pressure?



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75. What is the drug used to treat high blood pressure? Explain its action with a flow chart.



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76. are the structural and functional unit of kidneys.



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