

## MCQs

1. The protection of internal environment from the harms of the fluctuations in external environment are termed as:  
 (A) Osmoregulation    (B) Thermoregulation    (C) Excretion    (D) **Homeostasis**
2. Extracellular environment may be of diluted solution compared to the cell concentration thus designated as:  
 (A) Isotonic    (B) Hypertonic    (C) **Hypotonic**    (D) Cotonic
3. The more concentrated external environment is termed as:  
 (A) Hypotonic    (B) **Hypertonic**    (C) Isotonic    (D) Peritonic
4. In urea cycle, the detoxified form of ammonia is:  
 (A) **Urea**    (B) Ammonium ions    (C) Uric acid    (D) Nitrates
5. Those plants which have moderate water availability are called?  
 (A) Hydrophytes    (B) **Mesophytes**    (C) Xerophytes    (D) Saprophytes
6. The mesophyte plant is:  
 (A) Cacti    (B) Hydrilla    (C) **Brassica**    (D) Kikar
7. Hydrophytes possess:  
 (A) Small leaves    (B) **Large leaves**  
 (C) Less water    (D) stomata on lower surface of leaves
8. The stomata are located on the upper surface only in .....  
 (A) Xerophytes    (B) **Hydrophytes**    (C) Mesophytes    (D) Epiphytes
9. The plants that have adaptation of small and thick leaves to reduce water loss are called?  
 (A) Hydrophytes    (B) Mesophytes    (C) **Xerophytes**    (D) Hygrophytes
10. Which one is not a mesophyte?  
 (A) Brassica    (B) Rose    (C) Mango    (D) **Cacti**
11. The category of plants that has adaptation of small and thick leaves to limit water loss is called?  
 (A) Hydrophytes    (B) **Xerophytes**    (C) Mesophytes    (D) Halophytes
12. Fresh water protozoans pump out excess water by .....  
 (A) Food vacuole    (B) Pinocytosis    (C) **Contractile vacuole**    (D) Exocytosis
13. Anhydrobiosis refers to tolerate .....  
 (A) **Dehydration**    (B) Hydration    (C) Anhydration    (D) Rehydration
14. Animals that do not require adjusting their internal osmotic state actively are known as:  
 (A) Osmoregulators    (B) **Osmoconformers**    (C) Terrestrial    (D) Hypertonic
15. Trimethylamine Oxide is produced in .....  
 (A) Hag fish    (B) Bony fish    (C) **Marine fish**    (D) Cartilaginous fish
16. The tolerance of dehydration is:  
 (A) Osmoconformers    (B) Osmoregulators    (C) **Anhydrobiosis**    (D) Dehydration
17. Contractile vacuoles are found in .....  
 (A) Plants    (B) **Fresh water protozoa**    (C) Terrestrial animals    (D) Marine plants



18. A dilute solution compared to cell concentration is termed as:  
 (A) Hypertonic  (B) Hypotonic  (C) Isotonic  (D) Paratonic
19. Which one of the following is excretophore ?  
 (A) Stem  (B) Root  (C) Bark  (D) Leaves
20. Mechanism which eliminates nitrogenous waste is referred as:  
 (A) Osmoregulation  (B) Excretion  (C) Thermoregulation  (D) Egestion
21. Animals excreting urea are called?  
 (A) Ureotelic  (B) Ammonotelic  (C) Uricotelic  (D) Excretotelic
22. A diluted solution compared to cell concentration is termed as:  
 (A) Hypertonic  (B) Hypotonic  (C) Isotonic  (D) Paratonic
23. One gram of ammonia requires how much amount of water for its removal ....  
 (A) 50 ml  (B) 100 ml  (C) 250 ml  (D) 500 ml
24. Ammonia is produced as excretory product by the animals inhabiting the medium.  
 (A) Isotonic  (B) Hypotonic  (C) Hypertonic  (D) Xeric
25. Animals excreting ammonia are.....  
 (A) Ureotelic  (B) Uricotelic  (C) Ammonotelic  (D) Excretotelic
26. The excretory product that requires minimum water for its removal is:  
 (A) Urea  (B) Uric acid  (C) Ammonia  (D) Creatinine
27. Uric acid is produced from the metabolism of .....  
 (A) Amino acid  (B) Nucleic acid  (C) Fatty acid  (D) Protein
28. Sharks excrete nitrogenous wastes in the form of .....  
 (A) Ammonia  (B) Uric acid  (C) Urea  (D) Allantoin
29. Removal of nitrogenous wastes that requires less amount of water is:  
 (A) Urea  (B) Ammonia  (C) Uric acid  (D) Lactic acid
30. The most toxic nitrogenous waste is:  
 (A) Urea  (B) Uric acid  (C) Creatinine  (D) Ammonia
31. The excretory product that requires maximum water for its removal is  
 (A) Ammonia  (B) Creatinine  (C) Urea  (D) Uric acid
32. Nitrogenous waste is very toxic and dissolve quickly in the body fluids is:  
 (A) CO<sub>2</sub>  (B) Urea  (C) Ammonia  (D) Uric acid
33. The most toxic nitrogenous waste in animals is:  
 (A) Uric acid  (B) Ammonia  (C) Urea  (D) Creatine
34. Number of NH<sub>3</sub> molecules required to produce one molecule of urea is:  
 (A) 1  (B) 2  (C) 3  (D) 4
35. How much water is needed to excrete 1 g of Ammonia?  
 (A) 400 ml  (B) 500 ml  (C) 600 ml  (D) 700 ml
36. The major homeostatic function of liver is storage of .....  
 (A) Bile  (B) Glycogen  (C) Urea  (D) Albumin
37. Major homeostatic function of liver is storage of .....  
 (A) Bile  (B) Cholesterol  (C) Urea  (D) Iron
38. The arginine is split by arginase to form urea and the precursor.  
 (A) Ornithine  (B) Citrulline  (C) Alanine  (D) Glycine
39. Urea is produced in  
 (A) Lungs  (B) Liver  (C) Kidneys  (D) Pancreas



40. Arginase splits the arginine to form urea and .....  
 (A) Citrulline (B) **Ornithine** (C) Creatinine (D) Histidine
41. Urine leaves kidney through a duct called?  
 (A) Urethra (B) **Ureter** (C) Urinary bladder (D) Pelvis
42. Blood supplied to kidney from each cardiac beat is:  
 (A) 10 % (B) **20 %** (C) 30 % (D) 50 %
43. Mammalian kidney including human is adapted to conserve water up to .....  
 (A) 69.5 % (B) 79.5 % (C) 89.5 % (D) **99.5 %**
44. All the collecting tubules of human kidney finally discharge into the .....  
 (A) Bowman's capsule (B) Glomerulus (C) **Pelvis** (D) Urethra
45. High degree of renal failure is also called?  
 (A) **Uremia** (B) Leucaemia (C) Anemia (D) Lithotripsy
46. The incidence of calcium oxalate type stones are:  
 (A) 75 % (B) 15 % (C) 10 % (D) **70 %**
47. Increased plasma level of urea is an indication of .....  
 (A) **Renal failure** (B) Kidney stone (C) Hypocalcemia (D) Hyperoxaluria
48. Abdomen has peritoneal cavity, lined by a thin epithelium called  
 (A) **Peritonium** (B) Pericardium (C) Sacrotal sac (D) Pleura
49. The human abdominal cavity is lined by a thin epithelium called?  
 (A) Ectoderm (B) Endoderm (C) **Peritonium** (D) Epidermis
50. Non-surgical removal of kidney stones is called?  
 (A) Dialysis (B) **Lithotripsy** (C) Uremia (D) Kidney transplant
51. High level circulating calcium in the blood is called?  
 (A) **Hypercalcemia** (B) Hypoglycemia (C) Osteomalcia (D) Hyperoxaluria
52. Super cool cytosol, without ice formation, is caused by.....  
 (A) Heat shock protein (B) Unsaturated fatty acids  
 (C) **Solutes** (D) Enzymes
53. Which animal is not poikilotherm ?  
 (A) Star-fish (B) Frog (C) Tortoise (D) **Parrot**
54. Lizards bask in sun to gain .....  
 (A) **Heat** (B) Cold (C) Air (D) Moisture
55. The animals that generate their own body heat through heat production as by product during metabolism are called?  
 (A) **Endotherm** (B) Ectotherm (C) Heterotherm (D) All of these
56. Most land mammals respond to cold by raising their .....  
 (A) Tail (B) Head (C) Legs (D) **Furs**
57. Bats and humming Birds are called?  
 (A) Ectoderm (B) Endotherm (C) Poikilotherm (D) **Heterotherm**
58. Which is an endotherm?  
 (A) **Bird** (B) Bat (C) Humming bird (D) Reptiles
59. Which of the following is not endotherm?  
 (A) Bird (B) **Amphibian** (C) Flying insects (D) Mammals
60. The homeostatic thermostat in man is:  
 (A) Thalamus (B) Cerebrum (C) Medulla (D) **Hypothalamus**



61. During infection, pyrogens are produced in the human body by...  
(A) RBCs (B) **WBCs** (C) Platelets (D) Blood plasma
62. The chemical substance, responsible for raising human body temperature are .....  
(A) Leukocytes (B) **Pyrogens** (C) Pyrexia (D) Pollutants
63. In bacterial and viral infection, pathogens and leukocytes cells produce a chemical called?  
(A) Pyrexia (B) Toxins (C) Alfatoxins (D) **Pyrogen**
64. The fever causing chemical substances in human are:  
(A) Pathogens (B) Poisons (C) Alfatoxins (D) **Pyrogen**
65. Detecting of change and signalling for effector's response to control system is:  
(A) Positive feed back (B) **Feed back mechanism**  
(C) Negative feed back (D) Feed forward mechanism
66. Aldosterone is involved in .....  
(A) Transport of potassium ions into kidneys (B) Transport of water  
(C) **Uptake of Sodium in Loop of Henle** (D) Reabsorption of water
67. The incidence of uric acid kidney stones is:  
(A) **10 %** (B) 15 % (C) 20 % (D) 70 %
68. The protection of an internal environment from the harms of fluctuations is the definition of which of the following?  
(A) Osmoregulation (B) Excretion (C) Thermoregulation (D) **Homeostasis**
69. The category of the plants that has adaptations of small and thick leaves to limit water loss is called?  
(A) Hydrophytes (B) **Xerophytes** (C) Mesophytes (D) Hygrophytes
70. The environment where the animals produce large volumes of diluted urine.  
(A) **Hypotonic aquatic** (B) Isotonic aquatic  
(C) Hypertonic aquatic (D) Terrestrial
71. Which of the following is called as excretophore i.e. contributing mainly in the elimination of wastes in plants?  
(A) Stem (B) Roots (C) **Leaves** (D) Flowers
72. The excretory product that requires minimum water for its elimination compare to others.  
(A) Urea (B) Uric Acid (C) Creatinine (D) **Ammonia**
73. The group of animals whose excretory system is structurally associated with nutritive tract.  
(A) Vertebrates (B) Earthworm (C) Planaria (D) **Insects**
74. The excretory structures that deliver urine from kidney to urinary ladder.  
(A) Urethra (B) Pelvis (C) **Ureter** (D) Collecting tubule
75. The metabolic wastes that are ingested into the body and must be removed.  
(A) Pesticides (B) Drugs (C) Food additives (D) **All of these**
76. Which of the following is not endotherm?  
(A) Birds (B) **Amphibian** (C) Flying insects (D) Mammals
77. Name the type of adaptation from the following that is responsible for shivering thermogenesis.  
(A) Structural (B) **Physiological** (C) Behavioral (D) None of these



### Fill in the blanks.

1. ....is the ability of an organism to regulate its fluid contents.
2. The detoxification of ammonia to ..... requires the precursor of ornithine.
3. In kidney nephron is closely associated with network of .....
4. In insects salt and water reabsorption takes places in the .....
5. The antidiuretic hormone act on ..... to promote reabsorption of water in vertebrate nephron.
6. The nephrons arranged along the border of cortex and medulla, with tubular system looping deep in the inner medulla, are Called ..... nephrons.
7. The non surgical procedure of removing kidney stone is termed as .....
8. .... is the homeostatic thermostat in human.

### Answers

1. Osmoregulation	2. Urea	3. Blood capillaries	
4. Rectum	5. Collecting duct	6. Juxta medullary	
7. Lithotripsy	8. Hypothalamus		

#### Chapter : 15

#### Homeostasis Short Questions Answers

##### 1. What do you know about homeostasis?

Ans: The protection of internal environment from the harms of fluctuations in external environment is termed as homeostasis.

##### 2. Define osmoregulation?

Ans: The mechanism of regulation, generally between organism and its environment, of solute and the gain and the loss of water is osmoregulation. OR It is the regulation of water and solutes between organisms and their environment.

##### 3. How plants are distributed on the basis of osmoregulation?

Ans: Plants are distributed in different habitats of aquatic, moderate and severely dry terrestrial nature, thus termed as hydrophytes, mesophytes and xerophytes, respectively.

##### 4. What are osmoregulators?

Ans: In animals whose body fluid concentration differs noticeably with outside environment actively regulate to discharge excess water hypotonic and excrete salts in hypertonic conditions therefore, are called as osmoregulators.

##### 5. What is ebony?

Ans: It is a tree that deposits strange chemicals in branches and trunk, especially in old xylem, which is no longer used for water transport. Ebony produces very black wood in the center.

##### 6. What is protonephridium?

Ans: A protonephridium is a network of closed tubules without internal openings in Planaria.

##### 7. What is the difference between the excretory system of insects and other animals?

Ans: Insects are the only group of animals, who eliminate excretory wastes with feces, otherwise in all others there is no structural and functional relationship between nutritive and excretory systems.

##### 8. Which technique is used for the removal of kidney stones?

Ans: The kidney stones have been removed by kidney surgery. Presently lithotripsy is used



for non-surgical removal of kidney stone. It is technique used to break up stones that form in the kidney, ureter or gall bladder.

9. **What is haemodialysis?**

Ans: In haemodialysis blood is circulated through a dialyzer called an artificial kidney. Dialyzer has two spaces separated by thin membrane. Blood passes from one side of the membrane and dialysis fluid in the other. The wastes and excess water pass from the blood through the membrane into the dialysis fluid.

10. **What are heterotherms?**

Ans: Hetero-therms is of those animals that are capable of varying degrees of endothermic heat production but generally do not regulate their body temperature within the narrow range e.g. bats, humming bird etc.

11. **What are pyrogens?**

Ans: In bacteria and viral infections mainly, leukocytes increase in number. These pathogens and the blood cells produce chemicals called as pyrogens. Pyrogens displace the set point of hypothalamus above normal point of 37 degree Celsius.

12. **Name the excretory structures in animal kingdom that are associated with digestive tract.**

Ans: Malpighian tubules.

13. **Define excretion.**

Ans: The mechanism which eliminates nitrogenous waste is referred to as excretion.

14. **Define thermoregulation.**

Ans: The maintenance of internal temperature within a tolerable range is designated as thermoregulation.

15. **What is hypotonic environment?**

Ans: When external environment has more water or diluted solution compared to cell concentration, it is designated as hypotonic environment.

16. **What is Hypertonic environment?**

Ans: When there is more concentrated external environment than cell concentration then it is termed as hypertonic environment.

17. **What is isotonic environment?**

Ans: When external environment resembles to internal solution, it is known as isotonic solution.

18. **What are Hydrophytes?**

Ans: Hydrophytes have the adaptations to remove the flooding of its cells in fresh water. In this type the surface area of leaves is very large to transpire water excessively. Extensive stomata are present on the upper surface facing the atmosphere to promote loss of water.

19. **What are mesophytes?**

Ans: Mesophytes have moderate water availability. In sufficient supply of water stomata are kept open to promote loss of excess water, however, in restricted supply stomata close to prevent the loss.

20. **What are xerophytes?**

Ans: Xerophytes have the adaptations for reduced rate of transpiration. Many possess small, thick leaves. Their cuticle is thick, waxy and leathery. Stomata are on lower surface of leaves and located in depression.



**21. What are osmoconformers?**

Ans: Animal body fluids are kept isotonic to the external environment even for marine saltwater environment. These animals thus do not require actively to adjust their osmotic state, so are known as osmoconformers.

**22. Define anhydrobiosis.**

Ans: Terrestrial animals can tolerate dehydration and it differs in various animals. This characteristic is known as anhydrobiosis.

**23. What is excretion?**

Ans: The removal of nitrogenous wastes from the body is called excretion or the elimination of wasteful metabolites, mainly of the nitrogenous nature is called as excretion.

**24. What are excretophore?**

Ans: The falling of yellow leaves in autumn is the seasonal time for the plants to get rid of accumulated wastes and because of this reason leaves are said to be excretophore.

**25. In what form nitrogen is excreted by animals?**

Ans: Mostly excess nitrogen is excreted by animals as ammonia, urea or uric acid. Lower quantities of nitrogen are excreted in the form of creatinine, creatine or trimethylamine oxide and in very small quantities as amino acids, purine and pyrimidine.

**26. What are ammonotelic, ureotelic and uricotelic?**

Ans: Animals excreting ammonia, urea and uric acid are called as ammonotelic, ureotelic and uricotelic respectively.

**27. What are flame cells?**

Ans: Tubular system is spread throughout the body and branches are capped by a cellular setup termed as flame cell. Each flame cell has tuft of cilia, whose beating propel interstitial fluid into the tubular system.

**28. What are nephridiopores?**

Ans: The tubular system is drained into excretory ducts, which open to the exterior through several nephridiopores.

**29. What are metanephridium?**

Ans: Earthworm is the ideal example of tubular excretory system called as metanephridium. This system has an internal ciliated opening nephrostome which is immersed in coelomic fluid and enveloped by a network of capillaries. Nephrostome collects coelomic fluid.

**30. What are malpighian tubules?**

Ans: Terrestrial arthropods particularly in the insects, the excretory structures are adapted to collect excretory products from haemolymph in sinuses through suspended tubular structures called malpighian tubules.

**31. What is nephron?**

Ans: The basic functional structure in the kidneys is nephron.

**32. What are metabolic wastes?**

Ans: The generation of wastes is primarily done at metabolic level and these are called metabolic wastes. These include urea, creatinine, uric acid, bilirubin and toxins.

**33. What is bilirubin?**

Ans: The end products of haemoglobin breakdown and metabolites of various hormones is called bilirubin.

**34. What is urea cycle?**

Ans: The metabolic pathways involved in the production of urea are termed as urea cycle. Two ammonia and one carbon dioxide molecules are shunted into the cycle to generate



one molecule of urea.

35. **What is ureter?**

Ans: Urine leaves the kidney through a duct ureter. The ureters of both the kidneys drain into urinary bladder through ureteral orifice.

36. **What is urethra?**

Ans: Urine leaves the body, during urination, from the bladder through a tube called the urethra, which empties near vagina in females or through the penis in males.

37. **What are cortical nephrons?**

Ans: The nephrons arranged along the cortex are called cortical nephrons.

38. **What are juxtamedullary nephrons?**

Ans: The nephrons arranged along the border of cortex and medulla with their tubular system looping deep in inner medulla are juxtamedullary nephrons. These are specifically important in the production of concentrated urine.

39. **What is Bowman's capsule?**

Ans: In each nephron inner end forms a cup-shaped swelling, called Bowman's capsule which surrounds glomerulus.

40. **What is glomerulus?**

Ans: Bowman's capsule is around a ball of capillaries called glomerulus. Glomerulus circulates blood through capsule as it arrives through afferent arteriole and leaves the capsule by efferent arteriole.

41. **What are peritubular capillaries?**

Ans: The blood vessel arising from glomerulus subdivides again into another network of capillaries called peritubular capillaries.

42. **What is vasa recta?**

Ans: In juxtamedullary nephrons additional capillaries extend down to form a loop of vessels, vasa recta.

43. **What is glomerular filtrate?**

Ans: The filtrate appearing in glomerulus is called as glomerular filtrate, which contains numerous useful substances such as glucose, amino acids, salts etc in aqueous solution.

44. **What is counter current multiplier?**

Ans: This mechanism causes gradual osmotic outflow of water from the filtrate back to kidney as it passes downward in the descending loop of Henle. The ascending loop of Henle does not allow outflow of water from its filtrate, instead actively transport  $\text{Na}^+$  into kidney interstitium to sustain its high concentration.

45. **What is role of aldosterone and antidiuretic hormones in kidney?**

Ans: The active uptake of sodium in the ascending limb or thick loop of Henle is promoted by the action of aldosterone. Antidiuretic hormone (ADH) released from posterior pituitary act to actively transport water from filtrate to kidney's interstitium.

46. **What are hypercalcemia and hyperoxaluria?**

Ans: Hypercalcemia is high level of circulating calcium in blood while Hyperoxaluria is higher blood level of oxalates. Both are contributing factor in the formation of kidney stones.

47. **What is percentage of incidence of different types of stones?**

Ans: The incidence of calcium oxalate types is 70% of all the kidney stones. The incidence of other types of stones of calcium phosphate and of uric acid is 15% and 10% respectively. These salts are precipitated out during urine formation and accumulate later to form stone.



48. **What is the most common way of lithotripsy?**

Ans: The most common way of lithotripsy is extra-corporeal shock wave lithotripsy. High concentrations of X-ray or ultrasound are directed from a machine outside the body to the stone inside. The shock waves break the stone in tiny pieces or into sand, which are passed out of the body in urine.

49. **What is dialysis?**

Ans: In chronic renal failure, dialysis is used to clean the blood either by passing it through an artificial kidney or by filtering it within abdomen. The wastes and excess water are removed during the treatment as being done by the healthy kidneys.

50. **Name different types of dialysis.**

Ans: There are two types of dialysis:

- ❖ Hemodialysis.
- ❖ Peritoneal Dialysis.

51. **How peritoneal dialysis is done?**

Ans: Peritoneal cavity of abdomen is filled with dialysis fluid that enters the body through a catheter (a thin flexible tube is inserted into a part of the body to inject or drain away fluid or to keep a passage open). Excess water and wastes pass through the peritoneum into the dialysis fluid. This process is repeated several times a day.

52. **What is dialyzer?**

Ans: Dialyzer is a kidney machine that works on the same principles as in the kidney for the removal of nitrogenous wastes and excess water from the blood. It is used after kidney failure and dialysis is done again and again until a matching donor's kidney is transplanted.

53. **What is uremia?**

Ans: The high degree renal failure is also called as uremia or end stage renal disease. In this case dialysis is done endlessly until a matching donor kidney is surgically transplanted.

54. **What are heat-shock proteins?**

Ans: Most plants have adapted to survive in heat stress as the cells of these plants synthesize large quantities of special proteins called heat shock proteins which embrace enzymes and other proteins thus help prevent denaturation.

55. **How plants respond to cold stress?**

Ans: Plants respond to cold stress by increasing proportion of unsaturated fatty acids, which helps membrane to maintain structure at low temperature by preventing crystal formation.

56. **What are poikilotherms (cold-blooded)?**

Ans: These are animals in which body temperature tends to fluctuate more or less as the air or water temperature change. All invertebrates, amphibians and reptiles are considered in this category.

57. **What are homeotherms (warm blooded)?**

Ans: These animals, when exposed to changing air or water temperature, maintain their temperature. These include birds and mammals.

58. **What are endotherms?**

Ans: The animals that generate their own body heat through heat production as by-product during metabolism are called endotherms, such as mammals, birds some fishes and flying insects.

59. **What are ectotherms?**

Ans: These are animals which produce metabolic heat at low level and that is also exchanged quickly with the environment, however, absorb heat from their surroundings. Most



invertebrates, fish, amphibians and reptiles are in this category.

60. **What are structural adaptations for temperature regulation in animals?**

Ans: These may be long term changes in sub dermal fatty layer insulation or pelage. The presence of sweat glands and lungs modified for painting.

61. **What is shivering thermogenesis?**

Ans: The rate of heat production is increased by increased muscle contraction by movements or shivering so called as shivering thermogenesis.

62. **What is non-shivering thermogenesis?**

Ans: Hormones trigger the heat production as do thyroid hormones and are termed as non-shivering thermogenesis.

63. **What is brown fat?**

Ans: Some mammals possess adipose tissue called brown fat, which is specialized for rapid heat production. Bat has brown fat between the shoulder blades. Blood flowing through the brown fat is warmed..

64. **What is evaporative cooling?**

Ans: Cooling of the body by evaporation of sweat or water from any exposed surface of the body is called evaporative cooling.

65. **What is vasodilation and vasoconstriction?**

Ans: Vasodilation is the expansion of blood vessels in hot season while vasoconstriction is the shrinkage of blood vessels in cold season.

66. **How land mammals respond to cold weathers?**

Ans: Most land mammals respond to cold by raising their furs thereby trapping the thicker layer of still air and it acts as good insulator between animal skin and the surroundings.

67. **What is blubber?**

Ans: Marine mammals such as whales and seals inhabit much colder water than their body temperature they have a very thick layer of insulating fat called as blubber just under the skin.

68. **How marine mammals regulate temperature in warm season?**

Ans: Marine mammals dispose off their excess heat into warm seas by large number of blood vessels in the outer layer of the skin. This dissipates the heat from the skin surface.

69. **What regulatory mechanism is used by terrestrial mammals for warm temperature?**

Ans: In terrestrial mammals, the sweat gland actively and the evaporative cooling is the one of the major temperature reducing strategy. Panting, the evaporative cooling in the respiratory tract is the other mechanism as represented in the dogs. Bats etc., use saliva and urine for evaporative cooling.

70. **How thermoreceptors are involved in high temperature regulation?**

Ans: In case of increase in temperature above the set point, certain warm temperature thermoreceptors in skin, hypothalamus and other parts of nervous system send the signals to the system that increase the blood flow to the skin and also cause sweat gland activation and the sweat is evaporated for the cooling.

71. **What is the role of cold receptors in cold temperature?**

Ans: In cold temperature, the cold receptors send the impulses to hypothalamus to inhibit heat loss mechanisms and activate the heat conservation mechanisms. This includes constriction of superficial blood vessels and stimulating shivering and non-shivering mechanisms.

72. **Why does filtration take place only at glomerular part of nephron and nowhere**



else?

Ans: Filtration at glomerular level occurs due to two reasons:

- ❖ Walls of glomerular are porous, so substances can easily pass through it.
- ❖ High blood pressure develops at glomerulus that is known as filtration pressure.

**73. Mention two metabolic altered states that generally cause kidney stone formation.**

Ans: Two metabolic altered states:

- ❖ High blood oxalate level due to increased intake of oxalate leading to hyperoxaluria.
- ❖ Higher blood oxalate level due to increased production of oxalate.

**74. What is renal failure?**

Ans: Failure of kidneys to filter urea from blood is called renal failure. Its common cause is destruction of glomeruli due to multiple agents.

**75. Account one main adaptation in plants to high and low temperature.**

Ans: In order to avoid effects of high temperature, they have evaporative cooling. In order to avoid effects of low temperature, they change solute concentration of cells. So that cytosol becomes super cool without ice crystal formation.

**76. How do ascending and descending loop of Henle differ in their physiology yet contribute in sustaining high concentration of kidney interstitium?**

Ans: Descending of loop of Henle causes gradual outflow of water from filtrate back to kidney while ascending loop of Henle prevents water out flow but allows active transport of Na<sup>+</sup> ions into kidney interstitium. In this manner both contribute in its high concentration.

**77. How do bony fishes maintain osmoregulation?**

Ans: Bony fishes maintain osmoregulation:

- ❖ Gills and rectal glands actively remove salts from the body.
- ❖ Excrete concentrated urine with maximum salt excretion and minimum water loss.
- ❖ Bony fishes take in large amount of sea water.

**78. Write the position and function of sphincter muscles in excretory system.**

Ans: Sphincter muscles are present near the junction of the urethra and the urinary bladder.

- ❖ The function of sphincter muscles is to control the urine in bladder.

**79. Water, salts and sebum is excreted by skin but still it is not considered as excretory organ. Why?**

Ans: The removal of water and salts from the sweat glands is for the purpose of thermoregulation, and the removal of sebum on the skin is for protection against microorganism not for excretion, so it is not actually considered as excretory organ.

**80. List the substances synthesized by liver.**

Ans: Liver synthesized nitrogenous wastes like NH<sub>3</sub>, urea, uric acid, albumin etc., bile and lipids, cholesterol and lipoproteins.

**81. What is thermostat of the body in humans?**

Ans: Hypothalamus is thermostat of the body and it maintains our body temperature within a narrow range.