1. All chemical processes which are necessary for survival and maintenance of life
2. Biocatalysts involved in digestion of food
3. Our food is carbon based as life on earth is based on carbon containing compounds
4. Diffusion is not enough to meet the needs of multi cellular organisms as all the cells in their body are not in contact with the environment directly
5. Alga -auto trophic photosynthetic

   Fungus- heterotrophic parasitic or saprophytic

   Bacteria are autotrophic(maybe photosynthetic or chemosynthetic) or heterotrophic (parasitic or saprophytic)
6. There are three major events during photosynthesis
   1. absorption of light by chlorophyll molecule
   2. conversion of light energy to chemical energy and splitting of water molecule
   3. reduction of carbon dioxide to glucose
7. Carbon dioxide water presence of chlorophyll and sunlight
8. Hydrogen gas an oxygen gas
9. To conserve water so they absorb the carbon dioxide at night when the stomata are open and converted into an intermediate . during the day they absorb sunlight and convert the intermediate into glucose
10. For diagram refer to in NCERT
11. The amount of water present in the guard cells
12. Take a plant put it in a dark room for three to four days to D start it now cover a part of a leaf of the plant with black paper. put the plant in sunlight for 6 to 8 hours. remove the leaf from the plant draw a sketch of the leaf as it is covered with a black paper remove the black paper perform the iodene test . we observe that the part of the leaf which was covered with the black paper does not turn blue black showing that it has not been able to make starch. this shows that light is necessary for photosynthesis
13. A. the non green areas lack chlorophyll

    B. to remove chlorophyll

    C. destarch

    D. iodine solution is used to confirm the presence of starch blue black colour

    E. to absorb carbon dioxide

    F. to create an airtight environment
14. Both are pigments. chlorophyll is present in plants while haemoglobin is present in animals. chlorophyll participates in photosynthesis and haemoglobin is responsible for transport of oxygen in blood
15. For diagram refer to NCERT
16. Extracellular digestion is human beings, dog, frog

    Intracellular digestion - amoeba, paramecium

17. The food is moved along the gut with the rhythmic movement of the muscles in the walls of alimentary canal. this movement is called peristalsis.

18. 1. It kills the bacteria that enter along with food

2. It makes the medium acidic for the action of protein digesting enzyme pepsin

19. Digestive glands in our digestive system table REDO the table

TABLE : SUMMARY OF DIGESTION ENZYMES OF VARIOUS GLANDS WITH THEIR SECRETIONS AND END PRODUCTS OF DIGESTION IN MAN

S.No.	Name of gland	Secretion	Site of action	Enzymes	Food acts upon	End product
1	Salivary glands	Saliva	Buccal cavity	Salivary amylase	Starch	Maltose
2	Gastric glands	Gastric Juice	Stomach	Pepsin	Proteins	Peptones & proteoses
				Renin	Casein of milk	Paracasein
		HCl	Stomach	—	Pepsinogen	Pepsin
3	Liver	Bile	Duodenum	—	Fats	Emulsification of fats
4	Pancreas	Pancreatic Juice	Duodenum	Amylase Trypsin Lipase	Starch & Glycogen Proteins Emulsified fats	Maltose & Isomaltose Peptones & peptides Fatty acids & glycerol
5	Intestinal glands	Intestinal Juice	Samall intestine	Erepsin Maltase Sucrase Lactase Lipase	Peptones & Peptides Maltose Sucrose Lactose Triglycerides	Amino acids Glucose Glucose & fructose Glucose & galactose Monoglycerides & fatty acid
		Mucous	Large intestine	—	Lubrication of faecal matter	—

20. a. Saprophytic nutrition- digestion takes place outside the body of the Organism .food is dead or decaying matter parasitic nutrition the parasite lives on or inside the host and gets nutrition from it. keeps the host alive.

b. Pepsin and salivary amylase pepsin is a protein digesting enzyme produced in the stomach salivary amylase digests starch and is produced by salivary glands

c. Pepsin works in an acidic medium while trypsin works in an alkaline medium pepsin is a protein digesting enzyme produced in stomach trypsin is a protein digesting enzyme produced by pancreas and secreted into the small intestine

21. Pepsin hydrochloric acid and mucus

22. Mucus protects the lining of the stomach from the action of hydrochloric acid

23. Anal sphincter

24. (i) Makes the medium alkaline

(ii) Bile juice contains bile salts which emulsify fats and convert large globules of fat into smaller globules which can be acted upon efficiently by the lipase enzyme.

Bile is produced by liver. stored in the gallbladder

25. Answer same as given in question 24

26. Contains an enzyme called the salivary amylase which digests starch into smaller sugars. saliva also moistens the food and makes it easier to swallow

27. In aerobic respiration oxygen is required for the breakdown of food to release energy the first process is called glycolysis it converts the six carbon compound glucose into a three carbon

pyruvate in the cytoplasm anaerobically .pyruvate is then carried into the mitochondria where it is converted to carbon dioxide and water. it produces a large amount of energy the total amount of energy released from one molecule of glucose in aerobic respiration is 38 ATP

For diagram Refer NCERT

28. a. Breathing and respiration breathing is a physical process breathing involves inhalation and exhalation different breathing organs like lungs gills etc exist in nature respiration is the chemical process of breaking down food to release energy it could be Aerobic or anaerobic respiration is performed at the cellular level

    b. Inhalation and exhalation, inhalation is taking in of air, the diaphragm moves down, chest cavity moves outwards and upwards with the help of intercostal muscles in exhalation the diaphragm moves upwards and becomes Dome shaped. Chest cavity Petit falls downwards and inwards. Its size is reduced. exhalation removes carbon dioxide rich air from our lungs

29. Oxygen is transported by haemoglobin which is present in RBCs. haemoglobin is a protein which has an high affinity for oxygen, carbon dioxide is more soluble as compared to oxygen so it is carried in dissolved form in plasma

30. Glucose molecule is broken down into pyruvate in the cytoplasm and then in cytoplasm itself it is converted into ethanol and carbon dioxide by anaerobic respiration called fermentation. produces a low amount of energy in Lactobacillus bacteria lactic acid is produced from pyruvate after breakdown of glucose to pyruvate.

31. Breakdown of glucose into pyruvate. it takes place in the cytoplasm the process is called glycolysis in mammals and birds have high energy needs and they need a supply of blood which is rich in oxygen This is why they have 4 chambered hearts

33. Breathing is the physical process involving inhalation and exhalation. during inhalation the muscular diaphragm moves downwards (it flattens) the chest cavity is moved outwards and upwards by the action of intercostal muscles which exist between the ribs. this increases the size of the chest cavity, decreasing the pressure inside the chest cavity, this causes air to move in.

    Exhalation -the diaphragm moves back to its original position (it becomes Dome shaped) the intercostal muscles bring back the chest cavity downwards and inwards, this increases the pressure of air inside the lungs and air moves out.

34. The modes of respiration and bacteria and fungus can be Aerobic or anaerobic .

35. Plants need less energy than animals as they are autotrophs and stationary their metabolic needs are low

36. The energy released during respiration is used by the Organism in performing various life processes such as nerve stimulation meeting of the heart movement of muscles etc

37. A. pulmonary veins

    B. left Atrium

    C. left ventricle

38. Valves prevent blood from flowing backwardsin veins

39. Prevents excessive flow of blood loss of blood, prevents the fall in pressure of blood

40. To pump blood away from the heart into the arteries

41. Diagram from NCERT

42. Yeast

43. Rhythmic contraction and relaxation of the heart is called a heartbeat had the heart beats to pump the blood into arteries which carry it to various organs this is caused by the contraction of cardiac muscles in an organised fashion

44. Systolic pressure is the pressure exerted in the blood vessels when the heart is in contraction diastolic pressure is when the heart is in a relaxation . the normal systolic pressure of human beings is 120mm Hg and the diastolic pressure is 80mm Hg

45. Blood is red because of the pigment haemoglobin this respiratory pigment transports Oxygen

46. The device used to measure blood pressure is called sphygmomanometer

47. The normal blood pressure of man is 120/ 80mm Hg

48. Capillary is thin walled to allow for exchange of material such as oxygen and carbon dioxide

49. Lymph is mainly the extracellular fluid that oozes out of capillaries and carries with it proteins and other secretions of the cells lymph also collects the digested and absorbed fats from the small intestine.

50. Lymph drains the extracellular fluid blood cannot do this

51. Plasma transports carbon dioxide, hormones, glucoseand contains the cells

52. Three types artery, vein, capillary

53. Loss of water as water vapour from the aerial parts of plant

54. Xylem -water and minerals, phloem- food

55. In plants water enters the roots due to build up of root pressure it rises up due to transpiration pull

56. The two forces are root pressureand transpiration full

57. Roots take up ions by active transport this builds up osmotic pressure inside root cells water moves in due to osmosis and reaches xylem vessels

58. Preparation of urine and osmoregulation

59. Refer to NECRT

60. Glucose, amino acids

61. Bowmans capsule- filtration takes place

62. Dialysis machine /hemodialysis. required when kidneys are not functioning.

    A no reabsorption takes place unlike the normal kidney

63. Amount of extra water present in the body nd amount of nitrogenous waste present in the body

64. Pair of ureters takes urine from kidney to urinary bladder

    Urethra, single tube, carries urine from urinary bladder to the exterior

65. Since the stomatal pores are blocked no transpiration no respiration no photosynthesis will take place plant will eventually die

66. A. oxygen

    B. carbon dioxide

During the day photosynthesis is going on so CO2 produced by respiration is utilised and oxygen released as byproduct during night photosynthesis is not carried out as there is no light so CO_2 is not used up

68. Referred NCERT

69. Transport of products of photosynthesis -carbohydrates and some amino acidsplants perform photosynthesis in the green parts and the food is required all over

70. Phloem transports the products of photosynthesis carbohydrate in the form of sucrose and also transports amino acids

71. Alveoli in lungs and nephrons in kidney

Alveoli are balloon like multi cellular structures with very thin walls exchange of gases takes place nephrons in the kidney and the filtration units they filter the nitrogenous waste out of blood and produce urine.

72. 1. Nasal cavity
6. cartilage ring of trachea
7. bronchus
12. diaphragm

73. 1. pulmonary artery
2. aorta(oxygenated)
3. Vana cava
4. Right atrium (deoxygenated)
5. Left atrium (oxygenated)
6. Right ventricle (deoxygenated)
7. Septum
8. Left ventricle

74. a. chloroplast
b. 1. cuticle
2. upper epidermis
3. Palisade parenchyma
4. spongy parenchyma
5. xylem
6. phloem
7. lower epidermis
8. guard cells
9. stomatal pore

75. a. nephron
b. 1. Afferent artetiole
2. Glomerulus
3. Bowmans capsule

4. Blood capillary
5. collecting duct
6. efficient reabsorption
7. carries blood
8. carries urine