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# Biology Grade 10 — Complete MCQs

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# Biology Grade 10 — Chapter 1

Digestive System

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. What is the taking in of food called?**

(A) Ingestion
(B) Digestion
(C) Absorption
(D) Assimilation

**Correct Answer: A**

*Explanation: Ingestion is the process of taking food into the body through the mouth.*

**2. What is the process by which undigested food is removed from the body called?**

(A) Absorption
(B) Egestion
(C) Assimilation
(D) Digestion

**Correct Answer: B**

*Explanation: Egestion is the removal of undigested food from the body through the anus.*

**3. Which of the following is the longest part of the alimentary canal?**

(A) Oesophagus
(B) Stomach
(C) Small intestine
(D) Large intestine

**Correct Answer: C**

*Explanation: The small intestine is the longest part of the alimentary canal, about 6–7 meters long.*

**4. What is the muscular tube that connects the pharynx to the stomach called?**

(A) Trachea
(B) Larynx
(C) Bronchus
(D) Oesophagus

**Correct Answer: D**

*Explanation: The oesophagus is a muscular tube about 25 cm long that leads from the pharynx to the stomach.*

**5. Which enzyme is present in saliva?**

(A) Salivary amylase
(B) Pepsin
(C) Trypsin
(D) Lipase

**Correct Answer: A**

*Explanation: Saliva contains salivary amylase, which digests starch into maltose.*

**6. What is the soupy mixture formed in the stomach called?**

(A) Bolus
(B) Chyme
(C) Faeces
(D) Emulsion

**Correct Answer: B**

*Explanation: By the churning action of the stomach wall, food gets mixed into a soupy mixture called chyme.*

**7. Which part of the alimentary canal is the main site of absorption?**

(A) Stomach
(B) Oesophagus
(C) Small intestine
(D) Large intestine

**Correct Answer: C**

*Explanation: Small intestine — this correctly answers the question.*

**8. What is the wave of muscular contraction that moves food through the alimentary canal called?**

(A) Segmentation
(B) Churning
(C) Mastication
(D) Peristalsis

**Correct Answer: D**

*Explanation: Peristalsis is the rhythmic wave of muscular contraction and relaxation that causes food to move through the alimentary canal.*

**9. Which gland produces bile?**

(A) Liver
(B) Pancreas
(C) Gallbladder
(D) Salivary glands

**Correct Answer: A**

*Explanation: The liver produces bile, which is stored in the gallbladder.*

**10. What is the function of bile?**

(A) Digest proteins
(B) Emulsify fats
(C) Digest starch
(D) Absorb water

**Correct Answer: B**

*Explanation: Bile emulsifies fats, breaking them into small droplets for lipase action.*

**11. Which part of the small intestine receives bile and pancreatic juice?**

(A) Jejunum
(B) Ileum
(C) Duodenum
(D) Caecum

**Correct Answer: C**

*Explanation: The duodenum receives bile from the gallbladder and pancreatic juice from the pancreas.*

**12. What is the finger-like projection in the small intestine called?**

(A) Crypt
(B) Alveolus
(C) Nephron
(D) Villus

**Correct Answer: D**

*Explanation: Villi are finger-like projections that increase the surface area for absorption in the small intestine.*

**13. Which vitamin is stored in the liver?**

(A) Vitamin A
(B) Vitamin C
(C) Vitamin B
(D) Vitamin B12

**Correct Answer: A**

*Explanation: Vitamin A — this correctly answers the question.*

**14. What is the removal of the amino group from amino acids called?**

(A) Assimilation
(B) Deamination
(C) Absorption
(D) Egestion

**Correct Answer: B**

*Explanation: Deamination is the removal of the amino group from amino acids, which occurs in the liver.*

**15. What is the condition called when stools become watery and frequent?**

(A) Constipation
(B) Ulcer
(C) Diarrhoea
(D) Indigestion

**Correct Answer: C**

*Explanation: Diarrhoea is characterized by watery stools and increased frequency of defecation.*

**16. Which of the following is NOT a part of the alimentary canal?**

(A) Mouth
(B) Oesophagus
(C) Stomach
(D) Liver

**Correct Answer: D**

*Explanation: The liver is an associated organ (digestive gland), not a part of the alimentary canal.*

**17. Which structure prevents food from entering the trachea during swallowing?**

(A) Epiglottis
(B) Glottis
(C) Soft palate
(D) Larynx

**Correct Answer: A**

*Explanation: The epiglottis is a flap of cartilage that covers the glottis during swallowing to prevent food from entering the trachea.*

**18. What is the role of hydrochloric acid in the stomach?**

(A) Digest carbohydrates
(B) Activate pepsinogen to pepsin
(C) Emulsify fats
(D) Absorb water

**Correct Answer: B**

*Explanation: Activate pepsinogen to pepsin — this correctly answers the question.*

**19. Which enzyme digests proteins in the stomach?**

(A) Amylase
(B) Lipase
(C) Pepsin
(D) Trypsin

**Correct Answer: C**

*Explanation: Pepsin is the enzyme in gastric juice that digests proteins into polypeptides and peptides.*

**20. Which of the following is NOT a function of the liver?**

(A) Production of bile
(B) Storage of glycogen
(C) Deamination of amino acids

(D) Production of insulin

**Correct Answer: D**

*Explanation: Insulin is produced by the pancreas, not the liver.*

**21. What is the function of the lacteal in a villus?**

(A) Absorb glycerol and fatty acids
(B) Absorb simple sugars
(C) Absorb amino acids
(D) Absorb vitamins

**Correct Answer: A**

*Explanation: The lacteal is a lymph capillary that absorbs glycerol and fatty acids.*

**22. Which part of the large intestine stores faeces temporarily?**

(A) Colon
(B) Rectum
(C) Caecum
(D) Anus

**Correct Answer: B**

*Explanation: Rectum — this correctly answers the question.*

**23. What is the main cause of constipation?**

(A) Infection
(B) Excess water intake
(C) Lack of fibre in diet
(D) Overeating

**Correct Answer: C**

*Explanation: Constipation is commonly caused by not enough fibre in the diet, lack of exercise, and not enough liquids.*

**24. Which of the following is a function of the large intestine?**

(A) Digestion of proteins
(B) Production of bile
(C) Absorption of glucose
(D) Absorption of water

**Correct Answer: D**

*Explanation: The large intestine absorbs water and some vitamins from the undigested material.*

**25. What is the function of goblet cells in the villus?**

(A) Secrete mucus
(B) Absorb nutrients
(C) Produce enzymes
(D) Store vitamins

**Correct Answer: A**

*Explanation: Goblet cells secrete mucus, which protects and lubricates the intestine.*

## B. Less Important / Secondary Topics

**26. Which enzyme converts maltose to glucose?**

(A) Maltase
(B) Lactase
(C) Sucrase
(D) Erepsin

**Correct Answer: A**

*Explanation: Maltase — this correctly answers the question.*

**27. What is the role of enterokinase?**

(A) Digests proteins
(B) Activates trypsinogen to trypsin
(C) Emulsifies fats
(D) Digests starch

**Correct Answer: B**

*Explanation: Enterokinase is secreted by the intestinal lining and activates pancreatic trypsinogen into trypsin.*

**28. Which of the following is a symptom of diarrhoea?**

(A) Hard stools
(B) Abdominal pain
(C) Watery stools
(D) Bloating

**Correct Answer: C**

*Explanation: Diarrhoea is characterized by watery stools and increased frequency of defecation.*

**29. What is the treatment for diarrhoea?**

(A) Laxatives
(B) Antibiotics
(C) Surgery
(D) ORS

**Correct Answer: D**

*Explanation: ORS (oral rehydration solution) is given to replace lost water and electrolytes in diarrhoea.*

**30. Which part of the alimentary canal has no digestion?**

(A) Oesophagus
(B) Mouth
(C) Stomach
(D) Small intestine

**Correct Answer: A**

*Explanation: No digestion takes place in the oesophagus; food is only transported by peristalsis.*

**31. What is the function of the cardiac sphincter?**

(A) Controls exit of chyme from stomach
(B) Controls entry of food into stomach
(C) Prevents food from entering trachea
(D) Absorbs water

**Correct Answer: B**

*Explanation: The cardiac sphincter is between the oesophagus and stomach and controls the entry of food.*

**32. What is the function of the pyloric sphincter?**

(A) Controls entry of food into stomach
(B) Prevents food from entering trachea
(C) Controls exit of chyme from stomach
(D) Absorbs water

**Correct Answer: C**

*Explanation: The pyloric sphincter is between the stomach and duodenum and controls the exit of chyme.*

**33. Which of the following is NOT a function of the stomach?**

(A) Storage of food
(B) Churning of food
(C) Digestion of proteins
(D) Absorption of glucose

**Correct Answer: D**

*Explanation: Absorption of glucose — this correctly answers the question.*

**34. Which enzyme in pancreatic juice digests fats?**

(A) Pancreatic lipase
(B) Pancreatic amylase
(C) Trypsin
(D) Erepsin

**Correct Answer: A**

*Explanation: Pancreatic lipase — this correctly answers the question.*

**35. What is the cause of ulcer?**

(A) Lack of fibre
(B) Infection with H. pylori
(C) Excess water intake
(D) Lack of exercise

**Correct Answer: B**

*Explanation: Ulcer is commonly caused by infection with Helicobacter pylori bacteria, NSAIDs, excess acid, smoking, and stress.*

**36. A patient has a blocked bile duct. Which process will be most affected?**

(A) Digestion of proteins
(B) Absorption of glucose
(C) Emulsification of fats
(D) Digestion of starch

**Correct Answer: C**

*Explanation: Bile is needed for emulsification of fats. If the bile duct is blocked, fats cannot be emulsified properly.*

**37. If the pancreatic duct is blocked, which of the following will be affected?**

(A) Only protein digestion
(B) Only fat digestion
(C) Only starch digestion
(D) Digestion of starch, proteins, and fats

**Correct Answer: D**

*Explanation: Pancreatic juice contains amylase, lipase, and trypsinogen, which digest starch, fats, and proteins respectively.*

**38. A person has reduced mucous production in the stomach. What is the most likely consequence?**

(A) Stomach wall damage by pepsin
(B) Reduced protein digestion
(C) Reduced starch digestion
(D) Reduced fat digestion

**Correct Answer: A**

*Explanation: Mucous protects the stomach wall from digestion by pepsin. Reduced mucous can lead to stomach wall damage and ulcer.*

**39. Which of the following would decrease the rate of peristalsis?**

(A) Increased circular muscle contraction
(B) Decreased circular muscle contraction
(C) Increased longitudinal muscle contraction
(D) Increased churning

**Correct Answer: B**

*Explanation: Decreased circular muscle contraction — this correctly answers the question.*

**40. A patient has a tumour in the pyloric sphincter. What is the most likely effect?**

(A) Food cannot enter the stomach
(B) Bile cannot enter the duodenum
(C) Chyme cannot leave the stomach
(D) Pancreatic juice cannot enter the duodenum

**Correct Answer: C**

*Explanation: The pyloric sphincter controls the exit of chyme from the stomach. A tumour would block this exit.*

**41. Which of the following is the correct order of the parts of the small intestine?**

(A) Duodenum → Ileum → Jejunum
(B) Jejunum → Duodenum → Ileum
(C) Ileum → Jejunum → Duodenum
(D) Duodenum → Jejunum → Ileum

**Correct Answer: D**

*Explanation: The small intestine is divided into duodenum, jejunum, and ileum, in that order.*

**42. Which of the following is NOT a function of the liver?**

(A) Production of digestive enzymes
(B) Synthesis of plasma proteins
(C) Destruction of old red blood cells
(D) Storage of fat-soluble vitamins

**Correct Answer: A**

*Explanation: Production of digestive enzymes — this correctly answers the question.*

**43. A person has a diet deficient in fibre. What is the most likely consequence?**

(A) Diarrhoea
(B) Constipation
(C) Ulcer
(D) Indigestion

**Correct Answer: B**

*Explanation: Lack of fibre in the diet is a common cause of constipation.*

**44. Which of the following statements about the large intestine is correct?**

(A) It is the main site of digestion
(B) It produces bile
(C) It absorbs water and some vitamins
(D) It absorbs glucose

**Correct Answer: C**

*Explanation: It absorbs water and some vitamins — this correctly answers the question.*

**45. Which of the following is the correct pathway of urea from blood to urethra?**

(A) Liver → Urea → Blood → Kidney → Nephron → Bowman's capsule → Glomerulus → PCT → Loop of Henle → DCT → Collecting duct → Ureter → Bladder → Urethra
(B) Liver → Urea → Blood → Kidney → Nephron → Glomerulus → Bowman's capsule → Loop of Henle → PCT → DCT → Collecting duct → Ureter → Bladder → Urethra
(C) Liver → Urea → Blood → Kidney → Nephron → Glomerulus → Bowman's capsule → PCT → DCT → Loop of Henle → Collecting duct → Ureter → Bladder → Urethra
(D) Liver → Urea → Blood → Kidney → Nephron → Glomerulus → Bowman's capsule → PCT → Loop of Henle → DCT → Collecting duct → Ureter → Bladder → Urethra

**Correct Answer: D**

*Explanation: Urea is formed in the liver, carried by blood to the kidney, filtered in the glomerulus, and passes through Bowman's capsule, PCT, loop of Henle, DCT, collecting duct, ureter, bladder, and urethra.*

**46. Which of the following is a function of the villus?**

(A) Increase surface area for absorption
(B) Produce bile
(C) Store glycogen
(D) Produce insulin

**Correct Answer: A**

*Explanation: Villi are finger-like projections that increase the surface area for absorption in the small intestine.*

**47. A patient has a blocked lacteal. Which of the following will be affected?**

(A) Absorption of glucose
(B) Absorption of glycerol and fatty acids
(C) Absorption of amino acids
(D) Absorption of vitamins

**Correct Answer: B**

*Explanation: Absorption of glycerol and fatty acids — this correctly answers the question.*

**48. Which of the following is the correct sequence of the digestive process?**

(A) Ingestion → Absorption → Digestion → Assimilation → Egestion
(B) Digestion → Ingestion → Absorption → Assimilation → Egestion
(C) Ingestion → Digestion → Absorption → Assimilation → Egestion
(D) Ingestion → Digestion → Assimilation → Absorption → Egestion

**Correct Answer: C**

*Explanation: The correct sequence is ingestion, digestion, absorption, assimilation, and egestion.*

**49. Which of the following statements about the stomach is correct?**

(A) It has three openings
(B) It is the main site of absorption
(C) It produces bile
(D) It is J-shaped and has cardiac and pyloric sphincters

**Correct Answer: D**

*Explanation: The stomach is J-shaped, has cardiac and pyloric sphincters, and is the site of protein digestion and churning.*

**50. A person has a condition where the mucous lining of the stomach breaks down. What is the most likely diagnosis?**

(A) Ulcer
(B) Diarrhoea
(C) Constipation
(D) Indigestion

**Correct Answer: A**

*Explanation: Ulcer occurs when the mucous lining covering the stomach breaks down, and stomach tissues are damaged by gastric juice.*

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# Biology Grade 10 — Chapter 2

Circulatory System

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. Which blood vessels carry oxygen-rich blood from the heart to the body?**

(A) Arteries
(B) Veins
(C) Capillaries
(D) Venules

**Correct Answer: A**

*Explanation: Arteries are strong, muscular blood vessels that carry oxygen-rich blood from the heart to the body.*

**2. What is the liquid part of blood called?**

(A) Serum
(B) Plasma
(C) Lymph
(D) Platelets

**Correct Answer: B**

*Explanation: Plasma is the liquid part of blood, constituting about 55% by volume.*

**3. Which blood cells carry oxygen?**

(A) White blood cells
(B) Platelets
(C) Red blood cells
(D) Plasma cells

**Correct Answer: C**

*Explanation: Red blood cells contain haemoglobin, which carries oxygen.*

**4. What is the life span of red blood cells?**

(A) 3–4 days
(B) 7–10 days
(C) 1 year
(D) 120 days

**Correct Answer: D**

*Explanation: The life span of red blood cells is 120 days.*

**5. Which chamber of the heart has the thickest wall?**

(A) Left ventricle
(B) Right atrium
(C) Left atrium
(D) Right ventricle

**Correct Answer: A**

*Explanation: The left ventricle has the thickest wall because it pumps blood to the whole body.*

**6. What is the vertical partition that divides the heart into right and left halves called?**

(A) Pericardium
(B) Septum
(C) Myocardium
(D) Endocardium

**Correct Answer: B**

*Explanation: The septum is the vertical partition that divides the heart into right and left halves.*

**7. Which valve is between the right atrium and right ventricle?**

(A) Bicuspid valve
(B) Pulmonary valve
(C) Tricuspid valve
(D) Aortic valve

**Correct Answer: C**

*Explanation: The tricuspid valve is between the right atrium and right ventricle and has three cusps.*

**8. Which valve is between the left atrium and left ventricle?**

(A) Tricuspid valve
(B) Pulmonary valve
(C) Aortic valve
(D) Bicuspid valve

**Correct Answer: D**

*Explanation: The bicuspid (mitral) valve is between the left atrium and left ventricle and has two cusps.*

**9. What is the largest artery in the human body?**

(A) Aorta
(B) Pulmonary artery
(C) Renal artery
(D) Carotid artery

**Correct Answer: A**

*Explanation: The aorta is the largest artery in the human body, carrying oxygenated blood from the left ventricle.*

**10. Which blood cells help in blood clotting?**

(A) Red blood cells
(B) Platelets
(C) White blood cells
(D) Plasma cells

**Correct Answer: B**

*Explanation: Platelets patch damaged blood vessels and release substances essential for blood clotting.*

**11. What is the normal adult pulse rate?**

(A) 30–50 per minute
(B) 100–150 per minute
(C) 60–100 per minute
(D) 150–200 per minute

**Correct Answer: C**

*Explanation: A normal adult pulse rate can vary from 60–100 times per minute.*

**12. Which blood vessels are the site of exchange of materials between blood and tissues?**

(A) Arteries
(B) Veins
(C) Arterioles
(D) Capillaries

**Correct Answer: D**

*Explanation: Capillaries are thin-walled vessels where oxygen and nutrients are exchanged for carbon dioxide and waste.*

**13. Which scientist discovered the pumping action of the heart?**

(A) William Harvey
(B) Ibn al-Nafees
(C) Alexander Fleming
(D) Edward Jenner

**Correct Answer: A**

*Explanation: William Harvey — this correctly answers the question.*

**14. What is the clear liquid part of blood that remains after blood cells and clotting proteins have been removed called?**

(A) Plasma
(B) Serum
(C) Lymph
(D) Platelets

**Correct Answer: B**

*Explanation: Serum is the clear liquid part of blood that remains after blood cells and clotting proteins have been removed.*

**15. Which vitamin is essential for blood clotting?**

(A) Vitamin A
(B) Vitamin C
(C) Vitamin K
(D) Vitamin D

**Correct Answer: C**

*Explanation: Vitamin K is needed for the synthesis of several clotting factors.*

**16. Which of the following is NOT a function of blood?**

(A) Transport of oxygen
(B) Transport of hormones
(C) Distribution of heat
(D) Production of insulin

**Correct Answer: D**

*Explanation: Insulin is produced by the pancreas, not by blood.*

**17. What is the role of the pericardial fluid?**

(A) Reduce friction between heart and pericardium
(B) Transport oxygen
(C) Produce blood cells
(D) Store blood

**Correct Answer: A**

*Explanation: Pericardial fluid is a lubricating fluid that reduces friction between the pericardium and heart.*

**18. Which of the following is the correct pathway of blood through the heart?**

(A) Right atrium → Left atrium → Right ventricle → Left ventricle → Body
(B) Right atrium → Right ventricle → Lungs → Left atrium → Left ventricle → Body
(C) Left atrium → Left ventricle → Lungs → Right atrium → Right ventricle → Body
(D) Left atrium → Right atrium → Left ventricle → Right ventricle → Body

**Correct Answer: B**

*Explanation: Blood flows from the right atrium to the right ventricle, then to the lungs, then to the left atrium, left ventricle, and finally to the body.*

**19. What is the function of the semilunar valves?**

(A) Prevent backflow from ventricles to atria
(B) Prevent backflow from atria to ventricles
(C) Prevent backflow from arteries to ventricles
(D) Prevent backflow from veins to atria

**Correct Answer: C**

*Explanation: Semilunar valves (pulmonary and aortic) prevent backflow from arteries to ventricles.*

**20. Which of the following is a function of white blood cells?**

(A) Oxygen transport

(B) Blood clotting
(C) Transport of hormones
(D) Defence against disease

**Correct Answer: D**

*Explanation: Defence against disease — this correctly answers the question.*

**21. What is the role of fibrinogen in blood?**

(A) Blood clotting
(B) Transport oxygen
(C) Defence against disease
(D) Maintain osmotic pressure

**Correct Answer: A**

*Explanation: Fibrinogen is a plasma protein that takes part in blood clotting.*

**22. Which of the following is NOT a component of plasma?**

(A) Water
(B) Red blood cells
(C) Plasma proteins
(D) Mineral ions

**Correct Answer: B**

*Explanation: Red blood cells are blood cells, not a component of plasma.*

**23. What is the function of the coronary circuit?**

(A) Carry blood to lungs
(B) Carry blood to body
(C) Supply blood to heart muscle
(D) Carry blood to kidneys

**Correct Answer: C**

*Explanation: The coronary circuit provides the heart muscle with oxygenated blood.*

**24. Which of the following is a symptom of myocardial infarction?**

(A) Watery stools
(B) Sneezing
(C) Constipation
(D) Chest pain

**Correct Answer: D**

*Explanation: Chest pain — this correctly answers the question.*

**25. What is the cause of angina?**

(A) Reduced blood flow to heart
(B) Infection of lungs
(C) Lack of fibre in diet
(D) Kidney failure

**Correct Answer: A**

*Explanation: Angina is chest pain that happens when the heart is not receiving enough oxygen-rich blood.*

## B. Less Important / Secondary Topics

**26. Which of the following is a harmful effect of smoking on the heart?**

(A) Increases blood pressure
(B) Increases oxygen supply
(C) Decreases heart rate
(D) Improves blood circulation

**Correct Answer: A**

*Explanation: Increases blood pressure — this correctly answers the question.*

**27. What is the role of albumin in plasma?**

(A) Blood clotting
(B) Maintain osmotic pressure
(C) Defence against disease
(D) Transport oxygen

**Correct Answer: B**

*Explanation: Albumin is a plasma protein that maintains osmotic pressure.*

**28. Which of the following is NOT a type of white blood cell?**

(A) Neutrophil
(B) Eosinophil
(C) Erythrocyte
(D) Basophil

**Correct Answer: C**

*Explanation: Erythrocytes are red blood cells. Neutrophils, eosinophils, and basophils are types of white blood cells.*

**29. What is the function of the pulmonary circuit?**

(A) Carry blood to body
(B) Carry blood to heart muscle
(C) Carry blood to kidneys
(D) Carry blood to lungs

**Correct Answer: D**

*Explanation: The pulmonary circuit carries deoxygenated blood from the heart to the lungs and returns oxygenated blood to the heart.*

**30. Which of the following is the correct sequence of blood clotting?**

(A) Injury → Constriction → Platelet plug → Fibrin clot
(B) Injury → Platelet plug → Constriction → Fibrin clot
(C) Injury → Fibrin clot → Platelet plug → Constriction
(D) Constriction → Injury → Fibrin clot → Platelet plug

**Correct Answer: A**

*Explanation: The correct sequence of blood clotting is injury, constriction, platelet plug formation, and fibrin clot formation.*

**31. Which of the following is a function of the lymphatic system?**

(A) Transport of oxygen
(B) Return of tissue fluid to blood
(C) Production of insulin
(D) Digestion of food

**Correct Answer: B**

*Explanation: Return of tissue fluid to blood — this correctly answers the question.*

**32. What is the role of the sinoatrial (SA) node?**

(A) Valve of the heart
(B) Chamber of the heart
(C) Pacemaker of the heart
(D) Blood vessel of the heart

**Correct Answer: C**

*Explanation: The SA node acts as the pacemaker of the heart, generating electrical impulses that initiate the heartbeat.*

**33. Which of the following is a risk factor for heart disease?**

(A) Regular exercise
(B) Healthy diet
(C) Normal blood pressure

(D) Smoking

**Correct Answer: D**

*Explanation: Smoking is a major risk factor for heart disease.*

**34. What is the function of the hepatic portal vein?**

(A) Carry blood from intestine to liver
(B) Carry blood from heart to liver
(C) Carry blood from liver to heart
(D) Carry blood from liver to intestine

**Correct Answer: A**

*Explanation: The hepatic portal vein carries blood from the intestine to the liver.*

**35. Which of the following is NOT a function of the circulatory system?**

(A) Transport of nutrients
(B) Production of bile
(C) Transport of oxygen
(D) Removal of waste

**Correct Answer: B**

*Explanation: Bile is produced by the liver, not the circulatory system.*

**36. A patient has a blocked coronary artery. What is the most likely consequence?**

(A) Reduced blood flow to lungs
(B) Reduced blood flow to kidneys
(C) Reduced blood flow to heart muscle
(D) Reduced blood flow to intestines

**Correct Answer: C**

*Explanation: Reduced blood flow to heart muscle — this correctly answers the question.*

**37. A person has a deficiency of platelets. What is the most likely consequence?**

(A) Reduced oxygen transport
(B) Reduced immunity
(C) Increased blood pressure
(D) Increased risk of bleeding

**Correct Answer: D**

*Explanation: Platelets are essential for blood clotting. A deficiency would increase the risk of bleeding.*

**38. Which of the following would increase the risk of atherosclerosis?**

(A) High cholesterol diet
(B) Regular exercise
(C) Low blood pressure
(D) Healthy weight

**Correct Answer: A**

*Explanation: High cholesterol diet — this correctly answers the question.*

**39. A patient has a hole in the septum. What is the most likely effect?**

(A) Reduced heart rate
(B) Mixing of oxygenated and deoxygenated blood
(C) Increased blood pressure
(D) Reduced blood clotting

**Correct Answer: B**

*Explanation: Mixing of oxygenated and deoxygenated blood — this correctly answers the question.*

**40. Which of the following is the correct order of blood vessels from the heart to the body and back?**

(A) Vein → Venule → Capillary → Arteriole → Artery
(B) Artery → Capillary → Arteriole → Vein → Venule
(C) Artery → Arteriole → Capillary → Venule → Vein

(D) Arteriole → Artery → Capillary → Vein → Venule

**Correct Answer: C**

*Explanation: Blood flows from the heart through arteries, arterioles, capillaries, venules, and veins back to the heart.*

**41. A person has a diet deficient in iron. What is the most likely consequence?**

(A) Reduced blood clotting
(B) Reduced immunity
(C) Increased blood pressure
(D) Reduced oxygen transport

**Correct Answer: D**

*Explanation: Iron is needed for haemoglobin synthesis. A deficiency would reduce oxygen transport.*

**42. Which of the following statements about the left ventricle is correct?**

(A) It has the thickest wall
(B) It pumps blood to the lungs
(C) It receives blood from the body
(D) It has three cusps

**Correct Answer: A**

*Explanation: The left ventricle has the thickest wall because it pumps blood to the whole body.*

**43. A patient has a condition where the bicuspid valve does not close properly. What is the most likely effect?**

(A) Backflow of blood from right ventricle to right atrium
(B) Backflow of blood from left ventricle to left atrium
(C) Backflow of blood from aorta to left ventricle
(D) Backflow of blood from pulmonary artery to right ventricle

**Correct Answer: B**

*Explanation: The bicuspid valve is between the left atrium and left ventricle. If it does not close properly, blood can flow back from the left ventricle to the left atrium.*

**44. Which of the following is a function of the pericardium?**

(A) Pump blood
(B) Produce blood cells
(C) Protect the heart
(D) Store blood

**Correct Answer: C**

*Explanation: The pericardium is a protective sac that surrounds the heart.*

**45. A person has a condition where the SA node is not functioning properly. What is the most likely effect?**

(A) Reduced oxygen transport
(B) Increased blood clotting
(C) Reduced immunity
(D) Irregular heartbeat

**Correct Answer: D**

*Explanation: The SA node is the pacemaker of the heart. If it is not functioning properly, the heartbeat may become irregular.*

**46. Which of the following is the correct sequence of the cardiac cycle?**

(A) Systole → Diastole
(B) Diastole → Systole
(C) Systole → Systole
(D) Diastole → Diastole

**Correct Answer: A**

*Explanation: Systole → Diastole — this correctly answers the question.*

**47. A patient has a condition where the aortic semilunar valve does not close properly. What is the most likely effect?**

(A) Backflow of blood from left ventricle to left atrium
(B) Backflow of blood from aorta to left ventricle
(C) Backflow of blood from pulmonary artery to right ventricle
(D) Backflow of blood from right ventricle to right atrium

**Correct Answer: B**

*Explanation: The aortic semilunar valve is between the left ventricle and aorta. If it does not close properly, blood can flow back from the aorta to the left ventricle.*

**48. Which of the following is the correct pathway of blood through the pulmonary circuit?**

(A) Left ventricle → Pulmonary artery → Lungs → Pulmonary vein → Right atrium
(B) Right ventricle → Pulmonary vein → Lungs → Pulmonary artery → Left atrium
(C) Right ventricle → Pulmonary artery → Lungs → Pulmonary vein → Left atrium
(D) Left ventricle → Pulmonary vein → Lungs → Pulmonary artery → Right atrium

**Correct Answer: C**

*Explanation: The pulmonary circuit carries blood from the right ventricle to the lungs via the pulmonary artery and returns it to the left atrium via the pulmonary vein.*

**49. Which of the following would decrease the risk of heart disease?**

(A) Smoking
(B) High cholesterol diet
(C) High blood pressure
(D) Regular exercise

**Correct Answer: D**

*Explanation: Regular exercise — this correctly answers the question.*

**50. A person has a condition where the tricuspid valve does not close properly. What is the most likely effect?**

(A) Backflow of blood from right ventricle to right atrium
(B) Backflow of blood from left ventricle to left atrium
(C) Backflow of blood from aorta to left ventricle
(D) Backflow of blood from pulmonary artery to right ventricle

**Correct Answer: A**

*Explanation: The tricuspid valve is between the right atrium and right ventricle. If it does not close properly, blood can flow back from the right ventricle to the right atrium.*

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# Biology Grade 10 — Chapter 3

Respiratory System

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. What is the process by which cells obtain energy from glucose called?**

(A) Respiration
(B) Breathing
(C) Inhalation
(D) Exhalation

**Correct Answer: A**

*Explanation: Respiration is the process by which cells obtain energy from glucose.*

**2. What is the movement of air into and out of the lungs called?**

(A) Respiration
(B) Breathing
(C) Diffusion
(D) Osmosis

**Correct Answer: B**

*Explanation: Breathing is the movement of air into and out of the lungs.*

**3. Which structure is the voice box?**

(A) Pharynx
(B) Trachea
(C) Larynx
(D) Bronchus

**Correct Answer: C**

*Explanation: The larynx is also called the voice box.*

**4. What is the windpipe called?**

(A) Larynx
(B) Pharynx
(C) Bronchus
(D) Trachea

**Correct Answer: D**

*Explanation: The trachea is commonly known as the windpipe.*

**5. Which structure prevents food from entering the trachea?**

(A) Epiglottis
(B) Glottis
(C) Larynx
(D) Pharynx

**Correct Answer: A**

*Explanation: The epiglottis is a flap of cartilage that prevents food from entering the trachea during swallowing.*

**6. What are the tiny air sacs in the lungs called?**

(A) Bronchi
(B) Alveoli
(C) Bronchioles
(D) Capillaries

**Correct Answer: B**

*Explanation: Alveoli are tiny air sacs in the lungs where gas exchange occurs.*

**7. Which gas is taken in during inspiration?**

(A) Carbon dioxide
(B) Nitrogen
(C) Oxygen
(D) Water vapour

**Correct Answer: C**

*Explanation: Oxygen is taken in during inspiration for cellular respiration.*

**8. Which gas is expelled during expiration?**

(A) Oxygen
(B) Nitrogen
(C) Hydrogen
(D) Carbon dioxide

**Correct Answer: D**

*Explanation: Carbon dioxide is a waste product of cellular respiration and is expelled during expiration.*

**9. What percentage of oxygen is present in inspired air?**

(A) 21%
(B) 16%
(C) 4%
(D) 79%

**Correct Answer: A**

*Explanation: 21% — this correctly answers the question.*

**10. What percentage of carbon dioxide is present in expired air?**

(A) 0.04%
(B) 4%
(C) 16%
(D) 21%

**Correct Answer: B**

*Explanation: 4% — this correctly answers the question.*

**11. Which muscle separates the chest from the abdomen?**

(A) Intercostal muscle
(B) Cardiac muscle
(C) Diaphragm
(D) Smooth muscle

**Correct Answer: C**

*Explanation: The diaphragm is a large muscular sheet that separates the chest from the abdomen.*

**12. What happens to the diaphragm during inspiration?**

(A) It relaxes and moves up
(B) It remains stationary
(C) It contracts and moves up
(D) It contracts and moves down

**Correct Answer: D**

*Explanation: It contracts and moves down — this correctly answers the question.*

**13. What is the inflammation of the bronchi called?**

(A) Bronchitis
(B) Emphysema
(C) Pneumonia
(D) Asthma

**Correct Answer: A**

*Explanation: Bronchitis is the inflammation of the lining of the air passages like trachea, bronchi, and bronchioles.*

**14. Which disease is characterized by the breakdown of alveoli walls?**

(A) Bronchitis
(B) Emphysema
(C) Pneumonia
(D) Asthma

**Correct Answer: B**

*Explanation: Emphysema is a respiratory disease where there is breakdown of the thin walls of alveoli.*

**15. Which disease is caused by bacteria Streptococcus pneumoniae?**

(A) Bronchitis
(B) Emphysema
(C) Pneumonia
(D) Asthma

**Correct Answer: C**

*Explanation: The most common cause of pneumonia is bacteria Streptococcus pneumoniae.*

**16. Which of the following is NOT a function of the nasal cavity?**

(A) Warming air
(B) Moistening air
(C) Filtering air
(D) Producing sound

**Correct Answer: D**

*Explanation: Sound is produced by the larynx, not the nasal cavity.*

**17. What is the role of cilia in the respiratory system?**

(A) Sweep mucus and trapped particles towards the pharynx
(B) Produce mucus
(C) Exchange gases
(D) Produce sound

**Correct Answer: A**

*Explanation: Sweep mucus and trapped particles towards the pharynx — this correctly answers the question.*

**18. Which of the following is the correct pathway of air?**

(A) Nose → Larynx → Pharynx → Trachea → Bronchi → Bronchioles → Alveoli
(B) Nose → Pharynx → Larynx → Trachea → Bronchi → Bronchioles → Alveoli
(C) Nose → Pharynx → Trachea → Larynx → Bronchi → Bronchioles → Alveoli
(D) Nose → Trachea → Pharynx → Larynx → Bronchi → Bronchioles → Alveoli

**Correct Answer: B**

*Explanation: Nose → Pharynx → Larynx → Trachea → Bronchi → Bronchioles → Alveoli — this correctly answers the question.*

**19. What is the function of the C-shaped cartilage rings in the trachea?**

(A) Produce mucus
(B) Exchange gases
(C) Keep the trachea open
(D) Produce sound

**Correct Answer: C**

*Explanation: Keep the trachea open — this correctly answers the question.*

**20. Which of the following is a symptom of asthma?**

(A) Cough with blood
(B) Chest pain
(C) Weight loss
(D) Wheezing

**Correct Answer: D**

*Explanation: Wheezing — this correctly answers the question.*

**21. What is the main cause of chronic bronchitis?**

(A) Smoking
(B) Viral infection
(C) Bacteria
(D) Allergy

**Correct Answer: A**

*Explanation: Chronic bronchitis is most commonly caused by smoking.*

**22. Which of the following is a treatment for pneumonia?**

(A) Bronchodilators
(B) Antibiotics
(C) Surgery
(D) Radiation

**Correct Answer: B**

*Explanation: Antibiotics are prescribed for bacterial pneumonia.*

**23. What is the function of the pleural fluid?**

(A) Exchange gases
(B) Produce mucus
(C) Reduce friction between lungs and chest wall
(D) Keep the trachea open

**Correct Answer: C**

*Explanation: Reduce friction between lungs and chest wall — this correctly answers the question.*

**24. Which of the following is NOT a symptom of lung cancer?**

(A) Cough
(B) Weight loss
(C) Chest pain
(D) Increased appetite

**Correct Answer: D**

*Explanation: Increased appetite — this correctly answers the question.*

**25. What is the main cause of lung cancer?**

(A) Tobacco smoke
(B) Viral infection
(C) Bacteria
(D) Allergy

**Correct Answer: A**

*Explanation: Tobacco smoke is the main cause of lung cancer.*

## B. Less Important / Secondary Topics

**26. Which of the following is a function of the alveoli?**

(A) Exchange gases
(B) Produce sound
(C) Filter air
(D) Warm air

**Correct Answer: A**

*Explanation: Alveoli are the site of gas exchange in the lungs.*

**27. What happens to the ribs during inspiration?**

(A) They move down and in
(B) They move up and out

(C) They remain stationary
(D) They move down and out

**Correct Answer: B**

*Explanation: They move up and out — this correctly answers the question.*

**28. Which of the following is a symptom of emphysema?**

(A) Chest pain
(B) Fever
(C) Increased breathlessness
(D) Cough with blood

**Correct Answer: C**

*Explanation: The main sign of emphysema is increasing breathlessness.*

**29. What is the function of the epiglottis?**

(A) Produce sound
(B) Exchange gases
(C) Filter air
(D) Prevent food from entering the trachea

**Correct Answer: D**

*Explanation: The epiglottis prevents food from entering the glottis during swallowing.*

**30. Which of the following is a treatment for asthma?**

(A) Bronchodilators
(B) Antibiotics
(C) Surgery
(D) Radiation

**Correct Answer: A**

*Explanation: Mild attacks of asthma are controlled with bronchodilators that dilate the airway.*

**31. What is the function of the goblet cells in the respiratory system?**

(A) Exchange gases
(B) Produce mucus
(C) Produce sound
(D) Filter air

**Correct Answer: B**

*Explanation: Goblet cells produce sticky fluid called mucus.*

**32. Which of the following is a symptom of pneumonia?**

(A) Wheezing
(B) Increased appetite
(C) Fever
(D) Weight gain

**Correct Answer: C**

*Explanation: Fever, shaking chills, and chest pain are symptoms of pneumonia.*

**33. Which of the following is NOT a part of the air passageway?**

(A) Nose
(B) Pharynx
(C) Larynx
(D) Alveoli

**Correct Answer: D**

*Explanation: Alveoli are part of the lungs, not the air passageway.*

**34. What is the function of the intercostal muscles?**

(A) Move the ribs during breathing
(B) Exchange gases

(C) Produce mucus
(D) Produce sound

**Correct Answer: A**

*Explanation: Move the ribs during breathing — this correctly answers the question.*

**35. Which of the following is a risk factor for lung cancer?**

(A) Regular exercise
(B) Air pollution
(C) Healthy diet
(D) Normal weight

**Correct Answer: B**

*Explanation: Air pollution — this correctly answers the question.*

**36. A patient has a condition where the alveoli walls break down. What is the most likely effect?**

(A) Increased surface area for gas exchange
(B) Increased mucus production
(C) Decreased surface area for gas exchange
(D) Increased lung elasticity

**Correct Answer: C**

*Explanation: Breakdown of alveoli walls decreases the total surface area for gaseous exchange.*

**37. A person has a blocked bronchiole. What is the most likely effect?**

(A) Increased airflow to alveoli
(B) Increased gas exchange
(C) Increased mucus production
(D) Reduced airflow to alveoli

**Correct Answer: D**

*Explanation: Reduced airflow to alveoli — this correctly answers the question.*

**38. Which of the following would increase the rate of breathing?**

(A) Exercise
(B) Resting
(C) Sleeping
(D) Meditating

**Correct Answer: A**

*Explanation: Exercise — this correctly answers the question.*

**39. A patient has a condition where the epiglottis does not function properly. What is the most likely effect?**

(A) Reduced oxygen intake
(B) Food entering the trachea
(C) Reduced carbon dioxide removal
(D) Increased mucus production

**Correct Answer: B**

*Explanation: The epiglottis prevents food from entering the trachea. If it does not function properly, food may enter the trachea, causing choking.*

**40. Which of the following is the correct order of the phases of breathing?**

(A) Expiration → Inspiration
(B) Inspiration → Inspiration
(C) Inspiration → Expiration
(D) Expiration → Expiration

**Correct Answer: C**

*Explanation: Inspiration → Expiration — this correctly answers the question.*

**41. A person is breathing rapidly. What is the most likely reason?**

(A) Decreased oxygen demand
(B) Increased carbon dioxide in blood
(C) Decreased carbon dioxide in blood
(D) Increased oxygen demand

**Correct Answer: D**

*Explanation: Rapid breathing occurs when there is increased oxygen demand, such as during exercise.*

**42. Which of the following statements about the trachea is correct?**

(A) It has C-shaped rings of cartilage
(B) It has complete rings of cartilage
(C) It has no cartilage
(D) It has irregular plates of cartilage

**Correct Answer: A**

*Explanation: The trachea is held open by C-shaped rings of cartilage.*

**43. A patient has a condition where the alveoli fill with fluid. What is the most likely effect?**

(A) Increased gas exchange
(B) Decreased gas exchange
(C) Increased mucus production
(D) Increased lung elasticity

**Correct Answer: B**

*Explanation: Fluid in the alveoli would impair gas exchange, as in pneumonia.*

**44. Which of the following is the correct composition of expired air?**

(A) 21% oxygen, 0.04% carbon dioxide
(B) 16% oxygen, 0.04% carbon dioxide
(C) 16% oxygen, 4% carbon dioxide
(D) 21% oxygen, 4% carbon dioxide

**Correct Answer: C**

*Explanation: 16% oxygen, 4% carbon dioxide — this correctly answers the question.*

**45. A person has a condition where the cilia in the respiratory tract are damaged. What is the most likely effect?**

(A) Increased mucus removal
(B) Increased gas exchange
(C) Increased oxygen intake
(D) Reduced mucus removal

**Correct Answer: D**

*Explanation: Reduced mucus removal — this correctly answers the question.*

**46. Which of the following is the correct pathway of air during expiration?**

(A) Alveoli → Bronchioles → Bronchi → Trachea → Larynx → Pharynx → Nose
(B) Alveoli → Bronchi → Bronchioles → Trachea → Larynx → Pharynx → Nose
(C) Alveoli → Bronchioles → Trachea → Bronchi → Larynx → Pharynx → Nose
(D) Alveoli → Trachea → Bronchi → Bronchioles → Larynx → Pharynx → Nose

**Correct Answer: A**

*Explanation: During expiration, air flows from alveoli through bronchioles, bronchi, trachea, larynx, pharynx, and out through the nose.*

**47. A patient has a condition where the diaphragm is paralyzed. What is the most likely effect?**

(A) Increased breathing rate
(B) Reduced breathing capacity
(C) Increased oxygen intake
(D) Increased carbon dioxide removal

**Correct Answer: B**

*Explanation: The diaphragm is essential for breathing. Paralysis would reduce breathing capacity.*

**48. Which of the following statements about smoking is correct?**

(A) It improves lung function
(B) It increases oxygen supply
(C) It damages the cilia in the respiratory tract
(D) It reduces the risk of lung cancer

**Correct Answer: C**

*Explanation: It damages the cilia in the respiratory tract — this correctly answers the question.*

**49. Which of the following would decrease the risk of respiratory diseases?**

(A) Smoking
(B) Air pollution
(C) Exposure to dust
(D) Regular exercise

**Correct Answer: D**

*Explanation: Regular exercise — this correctly answers the question.*

**50. A person has a condition where the bronchi are inflamed and produce excess mucus. What is the most likely diagnosis?**

(A) Bronchitis
(B) Emphysema
(C) Pneumonia
(D) Asthma

**Correct Answer: A**

*Explanation: Bronchitis is the inflammation of the bronchi, causing excess mucus production and cough.*

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# Biology Grade 10 — Chapter 4

Urinary System

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. What is the process by which metabolic waste products are removed from the body called?**

(A) Excretion
(B) Digestion
(C) Respiration
(D) Circulation

**Correct Answer: A**

*Explanation: Excretion is the process by which metabolic waste products and toxic materials are removed from the body of an organism.*

**2. Which organ produces urine?**

(A) Liver
(B) Kidney
(C) Bladder
(D) Ureter

**Correct Answer: B**

*Explanation: Kidney — this correctly answers the question.*

**3. What is the structural and functional unit of the kidney called?**

(A) Neuron
(B) Alveolus
(C) Nephron
(D) Villus

**Correct Answer: C**

*Explanation: The nephron is the structural and functional unit of the kidney.*

**4. Which tube carries urine from the kidney to the urinary bladder?**

(A) Urethra
(B) Fallopian tube
(C) Vas deferens
(D) Ureter

**Correct Answer: D**

*Explanation: The ureter carries urine from the kidney to the urinary bladder.*

**5. What is the elastic muscular bag that stores urine called?**

(A) Urinary bladder
(B) Ureter
(C) Urethra
(D) Kidney

**Correct Answer: A**

*Explanation: The urinary bladder is an elastic muscular bag that stores urine.*

**6. Which tube carries urine out of the body?**

(A) Ureter
(B) Urethra
(C) Fallopian tube
(D) Vas deferens

**Correct Answer: B**

*Explanation: The urethra is a tube that leads out of the body from the urinary bladder.*

**7. What is the main nitrogenous waste material in the urine of man?**

(A) Ammonia
(B) Uric acid
(C) Urea
(D) Creatinine

**Correct Answer: C**

*Explanation: Urea is the main nitrogenous waste material in the urine of man.*

**8. In which organ is urea formed?**

(A) Kidney
(B) Bladder
(C) Ureter
(D) Liver

**Correct Answer: D**

*Explanation: Urea is formed in the liver and is carried to the kidney.*

**9. What is the cup-shaped structure that surrounds the glomerulus called?**

(A) Bowman's capsule
(B) Loop of Henle
(C) Collecting duct
(D) Renal pelvis

**Correct Answer: A**

*Explanation: Bowman's capsule is a cup-shaped structure that surrounds the glomerulus.*

**10. What is the network of capillaries in the nephron called?**

(A) Bowman's capsule
(B) Glomerulus
(C) Loop of Henle
(D) Collecting duct

**Correct Answer: B**

*Explanation: The glomerulus is a network of capillaries in the nephron.*

**11. What is the darker outer region of the kidney called?**

(A) Renal medulla
(B) Renal pelvis
(C) Renal cortex
(D) Renal pyramid

**Correct Answer: C**

*Explanation: Renal cortex is the darker outer region of the kidney.*

**12. What is the light inner region of the kidney called?**

(A) Renal cortex
(B) Renal pelvis
(C) Renal capsule
(D) Renal medulla

**Correct Answer: D**

*Explanation: Renal medulla is the light inner region of the kidney.*

**13. What is the hollow chamber that is the enlarged end of the ureter within the kidney called?**

(A) Renal pelvis
(B) Renal cortex
(C) Renal medulla
(D) Renal pyramid

**Correct Answer: A**

*Explanation: Renal pelvis is the hollow chamber and it is the enlarged end of the ureter within the kidney.*

**14. What is the process of removing waste and excess water from the blood called?**

(A) Filtration
(B) Dialysis
(C) Reabsorption
(D) Secretion

**Correct Answer: B**

*Explanation: Dialysis is a process for removing waste and excess water from the blood.*

**15. What is the non-surgical method of stone removal called?**

(A) Dialysis
(B) Transplant
(C) Lithotripsy
(D) Surgery

**Correct Answer: C**

*Explanation: Lithotripsy is a technique to break up stones that form in the kidney and ureter by shock waves targeted from outside the body.*

**16. Which of the following is NOT a part of the urinary system?**

(A) Kidney
(B) Ureter
(C) Urethra
(D) Liver

**Correct Answer: D**

*Explanation: The liver is not a part of the urinary system. The urinary system consists of kidneys, ureters, urinary bladder, and urethra.*

**17. What is the function of the renal artery?**

(A) Carry blood to kidney
(B) Carry blood away from kidney
(C) Carry urine to bladder
(D) Carry urine out of body

**Correct Answer: A**

*Explanation: The renal artery carries blood to the kidney from the dorsal aorta.*

**18. What is the function of the renal vein?**

(A) Carry blood to kidney
(B) Carry blood away from kidney
(C) Carry urine to bladder
(D) Carry urine out of body

**Correct Answer: B**

*Explanation: The renal vein carries blood away from the kidney to the inferior vena cava.*

**19. Which of the following is the correct order of urine flow?**

(A) Kidney → Bladder → Ureter → Urethra
(B) Kidney → Urethra → Bladder → Ureter
(C) Kidney → Ureter → Bladder → Urethra
(D) Kidney → Ureter → Urethra → Bladder

**Correct Answer: C**

*Explanation: Urine flows from the kidney to the ureter, then to the bladder, and finally out through the urethra.*

**20. What is the function of the loop of Henle?**

(A) Filtration
(B) Secretion

(C) Storage of urine
(D) Reabsorption of water and salts

**Correct Answer: D**

*Explanation: Reabsorption of water and salts — this correctly answers the question.*

**21. What is the function of the proximal convoluted tubule?**

(A) Reabsorption
(B) Filtration
(C) Secretion
(D) Storage of urine

**Correct Answer: A**

*Explanation: The proximal convoluted tubule is the site of most reabsorption.*

**22. What is the function of the distal convoluted tubule?**

(A) Filtration
(B) Reabsorption and secretion
(C) Storage of urine
(D) Production of urine

**Correct Answer: B**

*Explanation: Reabsorption and secretion — this correctly answers the question.*

**23. What is the function of the collecting duct?**

(A) Filtration
(B) Reabsorption
(C) Collects urine and passes to renal pelvis
(D) Production of urine

**Correct Answer: C**

*Explanation: The collecting duct collects urine from several nephrons and passes it to the renal pelvis.*

**24. What is the role of the kidney in osmoregulation?**

(A) Produce bile
(B) Produce insulin
(C) Digest food
(D) Regulate water and salt balance

**Correct Answer: D**

*Explanation: The kidneys are osmoregulatory organs which regulate the concentration of water and salts in the blood.*

**25. What is the cause of kidney stones?**

(A) High calcium in blood
(B) Low calcium in blood
(C) High water intake
(D) Low oxalate in blood

**Correct Answer: A**

*Explanation: High level of calcium in the blood can lead to the formation of kidney stones.*

## B. Less Important / Secondary Topics

**26. Which of the following is a treatment for kidney stones?**

(A) Lithotripsy
(B) Dialysis
(C) Transplant
(D) Radiation

**Correct Answer: A**

*Explanation: Lithotripsy is a non-surgical method of stone removal using shock waves.*

**27. What is the most common cause of kidney failure?**

(A) High blood pressure
(B) Diabetes
(C) Infection
(D) Kidney stones

**Correct Answer: B**

*Explanation: Diabetes is the most common cause of kidney failure.*

**28. What is the second most common cause of kidney failure?**

(A) Diabetes
(B) Infection
(C) High blood pressure
(D) Kidney stones

**Correct Answer: C**

*Explanation: High blood pressure is the second most common cause of kidney failure.*

**29. What is the process of removing waste and excess water from the blood using a machine called?**

(A) Peritoneal dialysis
(B) Lithotripsy
(C) Transplant
(D) Haemodialysis

**Correct Answer: D**

*Explanation: Haemodialysis is a process where blood is filtered through a machine called a dialyzer.*

**30. What is the process of using the peritoneum as a dialysis membrane called?**

(A) Peritoneal dialysis
(B) Haemodialysis
(C) Lithotripsy
(D) Transplant

**Correct Answer: A**

*Explanation: In peritoneal dialysis, the dialysis fluid is pumped into the peritoneal cavity, and the peritoneum functions as the dialysis membrane.*

**31. What is the function of the antidiuretic hormone (ADH)?**

(A) Decreases water reabsorption
(B) Increases water reabsorption
(C) Increases salt reabsorption
(D) Decreases salt reabsorption

**Correct Answer: B**

*Explanation: ADH increases the reabsorption of water from the distal convoluted tubule and collecting duct.*

**32. What is the condition called when the kidneys fail to function?**

(A) Diabetes
(B) Kidney stones
(C) Kidney failure
(D) UTI

**Correct Answer: C**

*Explanation: Kidney failure is a general term for declined kidney function.*

**33. Which of the following is a type of kidney failure?**

(A) Acute kidney injury
(B) Chronic kidney disease
(C) None of the above
(D) Both A and B

**Correct Answer: D**

*Explanation: Kidney failure can be acute (AKI) or chronic (CKD).*

**34. What is the treatment for kidney failure?**

(A) Both A and B
(B) Dialysis
(C) Kidney transplant
(D) None of the above

**Correct Answer: A**

*Explanation: Dialysis and kidney transplant are treatment options for kidney failure.*

**35. What is the role of the kidney in pH regulation?**

(A) Produce bile
(B) Regulate acid-base balance
(C) Produce insulin
(D) Digest food

**Correct Answer: B**

*Explanation: Regulate acid-base balance — this correctly answers the question.*

**36. A patient has a blocked ureter. What is the most likely effect?**

(A) Increased urine flow to bladder
(B) Increased filtration
(C) Reduced urine flow to bladder
(D) Increased reabsorption

**Correct Answer: C**

*Explanation: A blocked ureter would reduce urine flow from the kidney to the bladder.*

**37. A person has a condition where the glomerulus is damaged. What is the most likely effect?**

(A) Increased filtration
(B) Increased reabsorption
(C) Increased secretion
(D) Reduced filtration

**Correct Answer: D**

*Explanation: Reduced filtration — this correctly answers the question.*

**38. Which of the following would increase the volume of urine?**

(A) Decreased ADH
(B) Increased ADH
(C) Increased aldosterone
(D) Decreased blood pressure

**Correct Answer: A**

*Explanation: Decreased ADH — this correctly answers the question.*

**39. A patient has a condition where the loop of Henle is not functioning properly. What is the most likely effect?**

(A) Increased urine concentration
(B) Reduced urine concentration
(C) Increased filtration
(D) Increased reabsorption

**Correct Answer: B**

*Explanation: The loop of Henle is important for concentrating urine. If it is not functioning properly, urine concentration would be reduced.*

**40. Which of the following is the correct order of the parts of the nephron?**

(A) Glomerulus → Bowman's capsule → Loop of Henle → PCT → DCT → Collecting duct
(B) Bowman's capsule → Glomerulus → PCT → Loop of Henle → DCT → Collecting duct
(C) Glomerulus → Bowman's capsule → PCT → Loop of Henle → DCT → Collecting duct

(D) Bowman's capsule → Glomerulus → Loop of Henle → PCT → DCT → Collecting duct

**Correct Answer: C**

*Explanation: The correct order is glomerulus, Bowman's capsule, proximal convoluted tubule, loop of Henle, distal convoluted tubule, and collecting duct.*

**41. A person has a condition where the renal artery is blocked. What is the most likely effect?**

(A) Increased blood flow to kidney
(B) Increased urine production
(C) Increased filtration
(D) Reduced blood flow to kidney

**Correct Answer: D**

*Explanation: Reduced blood flow to kidney — this correctly answers the question.*

**42. Which of the following statements about the kidney is correct?**

(A) The right kidney is lower than the left
(B) The right kidney is higher than the left
(C) Both kidneys are at the same level
(D) The left kidney is lower than the right

**Correct Answer: A**

*Explanation: The right kidney is slightly lower than the left kidney due to the position of the liver.*

**43. A patient has a condition where the collecting duct is not responding to ADH. What is the most likely effect?**

(A) Increased water reabsorption
(B) Reduced water reabsorption
(C) Increased salt reabsorption
(D) Increased filtration

**Correct Answer: B**

*Explanation: ADH increases water reabsorption in the collecting duct. If the collecting duct is not responding to ADH, water reabsorption would be reduced.*

**44. Which of the following is a function of the kidney?**

(A) Production of bile
(B) Production of insulin
(C) Regulation of blood pressure
(D) Digestion of food

**Correct Answer: C**

*Explanation: The kidneys produce renin, which helps regulate blood pressure.*

**45. A person has a condition where the proximal convoluted tubule is damaged. What is the most likely effect?**

(A) Increased reabsorption
(B) Increased filtration
(C) Increased secretion
(D) Reduced reabsorption

**Correct Answer: D**

*Explanation: The proximal convoluted tubule is the site of most reabsorption. Damage would reduce reabsorption.*

**46. Which of the following is the correct composition of urine?**

(A) 95% water, 9.3 g/L urea
(B) 50% water, 9.3 g/L urea
(C) 95% water, 0.04% urea
(D) 50% water, 0.04% urea

**Correct Answer: A**

*Explanation: Urine is about 95% water and contains about 9.3 g/L urea.*

**47. A patient has a condition where the renal pelvis is blocked. What is the most likely effect?**

(A) Increased urine flow to ureter
(B) Reduced urine flow to ureter
(C) Increased filtration
(D) Increased reabsorption

**Correct Answer: B**

*Explanation: Reduced urine flow to ureter — this correctly answers the question.*

**48. Which of the following would decrease the glomerular filtration rate?**

(A) Increased blood pressure
(B) Increased blood volume
(C) Decreased blood pressure
(D) Increased cardiac output

**Correct Answer: C**

*Explanation: Glomerular filtration is driven by blood pressure. Decreased blood pressure would decrease the filtration rate.*

**49. Which of the following is a risk factor for kidney stones?**

(A) High water intake
(B) Low calcium intake
(C) Low oxalate intake
(D) Low water intake

**Correct Answer: D**

*Explanation: A decrease in water intake is a cause of kidney stones.*

**50. A patient has a condition where both kidneys fail. What is the most likely outcome?**

(A) Fatal without treatment
(B) Normal life
(C) Mild discomfort
(D) Increased urine production

**Correct Answer: A**

*Explanation: If both kidneys fail to work, it is fatal without treatment such as dialysis or transplant.*

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# Biology Grade 10 — Chapter 5

Nervous System

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. What is the change in the environment of an organism that causes it to react called?**

(A) Stimulus
(B) Response
(C) Reflex
(D) Impulse

**Correct Answer: A**

*Explanation: Any change in the environment of an organism is called a stimulus.*

**2. What is the structural and functional unit of the nervous system?**

(A) Nephron
(B) Neuron
(C) Alveolus
(D) Villus

**Correct Answer: B**

*Explanation: The structural and functional unit of the nervous system is the neuron.*

**3. Which part of the neuron contains the nucleus?**

(A) Axon
(B) Dendrite
(C) Cell body
(D) Myelin sheath

**Correct Answer: C**

*Explanation: Cell body — this correctly answers the question.*

**4. Which part of the neuron transmits impulses away from the cell body?**

(A) Dendrite
(B) Cell body
(C) Synapse
(D) Axon

**Correct Answer: D**

*Explanation: The axon transmits impulses away from the cell body.*

**5. What is the fatty covering around some axons called?**

(A) Myelin sheath
(B) Schwann cell
(C) Node of Ranvier
(D) Synapse

**Correct Answer: A**

*Explanation: Long neuron fibres are covered by a fatty myelin sheath.*

**6. What is the junction between two neurons called?**

(A) Node of Ranvier
(B) Synapse
(C) Dendrite
(D) Axon

**Correct Answer: B**

*Explanation: The junction between two neurons is called a synapse.*

**7. Which part of the brain controls balance and muscle coordination?**

(A) Cerebrum
(B) Medulla
(C) Cerebellum
(D) Thalamus

**Correct Answer: C**

*Explanation: Cerebellum — this correctly answers the question.*

**8. Which part of the brain controls involuntary processes like heartbeat and blood pressure?**

(A) Cerebrum
(B) Cerebellum
(C) Thalamus
(D) Medulla oblongata

**Correct Answer: D**

*Explanation: Medulla oblongata — this correctly answers the question.*

**9. How many pairs of cranial nerves are there in the human body?**

(A) 12
(B) 31
(C) 10
(D) 21

**Correct Answer: A**

*Explanation: There are 12 pairs of cranial nerves in the human body.*

**10. How many pairs of spinal nerves are there in the human body?**

(A) 12
(B) 31
(C) 10
(D) 21

**Correct Answer: B**

*Explanation: There are 31 pairs of spinal nerves in the human body.*

**11. Which division of the autonomic nervous system prepares the body for fight or flight?**

(A) Somatic
(B) Parasympathetic
(C) Sympathetic
(D) Central

**Correct Answer: C**

*Explanation: The sympathetic system prepares the body for fight or flight response.*

**12. Which division of the autonomic nervous system returns the body to normal after an emergency?**

(A) Somatic
(B) Sympathetic
(C) Central
(D) Parasympathetic

**Correct Answer: D**

*Explanation: Parasympathetic — this correctly answers the question.*

**13. Which gland is called the master gland?**

(A) Pituitary gland
(B) Thyroid gland
(C) Adrenal gland
(D) Pancreas

**Correct Answer: A**

*Explanation: The pituitary gland is called the master gland because it controls the.*

**14. Which hormone lowers blood sugar?**

(A) Glucagon
(B) Insulin
(C) Adrenaline
(D) Thyroxin

**Correct Answer: B**

*Explanation: Insulin — this correctly answers the question.*

**15. Which hormone raises blood sugar?**

(A) Insulin
(B) Thyroxin
(C) Glucagon
(D) Calcitonin

**Correct Answer: C**

*Explanation: Glucagon — this correctly answers the question.*

**16. Which of the following is NOT a part of the central nervous system?**

(A) Brain
(B) Spinal cord
(C) None of the above
(D) Cranial nerves

**Correct Answer: D**

*Explanation: Cranial nerves are part of the peripheral nervous system, not the central nervous system.*

**17. What is the function of the myelin sheath?**

(A) Insulate the axon and increase speed of impulse
(B) Produce neurotransmitters
(C) Receive impulses
(D) Transmit impulses away from cell body

**Correct Answer: A**

*Explanation: Insulate the axon and increase speed of impulse — this correctly answers the question.*

**18. What are the gaps between consecutive Schwann cells called?**

(A) Synapses
(B) Nodes of Ranvier
(C) Dendrites
(D) Axon terminals

**Correct Answer: B**

*Explanation: Small gaps between consecutive Schwann cells are called nodes of Ranvier.*

**19. Which type of neuron carries impulses from receptors to the central nervous system?**

(A) Motor neuron
(B) Interneuron
(C) Sensory neuron
(D) None of the above

**Correct Answer: C**

*Explanation: Sensory neurons carry sensory information from receptors to the brain and spinal cord.*

**20. Which type of neuron carries impulses from the central nervous system to effectors?**

(A) Sensory neuron
(B) Interneuron
(C) None of the above
(D) Motor neuron

**Correct Answer: D**

*Explanation: Motor neurons carry impulses from the brain and spinal cord to the effectors.*

**21. Which type of neuron connects sensory and motor neurons?**

(A) Interneuron
(B) Sensory neuron
(C) Motor neuron
(D) None of the above

**Correct Answer: A**

*Explanation: Interneuron — this correctly answers the question.*

**22. What is the resting potential of a neuron?**

(A) Inside positive, outside negative
(B) Inside negative, outside positive
(C) Inside and outside both positive
(D) Inside and outside both negative

**Correct Answer: B**

*Explanation: During resting potential, the inside of the neuron is negatively charged compared to the extracellular fluid.*

**23. What causes the action potential?**

(A) Potassium ions entering the cell
(B) Calcium ions leaving the cell
(C) Sodium ions entering the cell
(D) Chloride ions entering the cell

**Correct Answer: C**

*Explanation: The action potential begins when sodium ion channels open, allowing positive sodium ions to flow back into the cell.*

**24. Which part of the brain is the largest?**

(A) Cerebellum
(B) Medulla
(C) Thalamus
(D) Cerebrum

**Correct Answer: D**

*Explanation: Cerebrum is the largest part of the human brain.*

**25. Which lobe of the cerebrum is responsible for vision?**

(A) Occipital lobe
(B) Frontal lobe
(C) Parietal lobe
(D) Temporal lobe

**Correct Answer: A**

*Explanation: Occipital lobe is responsible for vision.*

## B. Less Important / Secondary Topics

**26. Which lobe of the cerebrum is concerned with hearing and smelling?**

(A) Temporal lobe
(B) Frontal lobe
(C) Parietal lobe
(D) Occipital lobe

**Correct Answer: A**

*Explanation: Temporal lobe is concerned with hearing and smelling.*

**27. What is the function of the corpus callosum?**

(A) Control balance

(B) Connect the two cerebral hemispheres
(C) Regulate body temperature
(D) Produce hormones

**Correct Answer: B**

*Explanation: The two hemispheres are connected by a bundle of nerve fibres called corpus callosum.*

**28. What is the function of oxytocin?**

(A) Lower blood sugar
(B) Raise blood sugar
(C) Cause uterine contractions during birth
(D) Regulate metabolism

**Correct Answer: C**

*Explanation: Cause uterine contractions during birth — this correctly answers the question.*

**29. What is the function of antidiuretic hormone (ADH)?**

(A) Lower blood sugar
(B) Raise blood sugar
(C) Regulate metabolism
(D) Cause reabsorption of water from nephrons

**Correct Answer: D**

*Explanation: ADH causes reabsorption of water from the nephrons.*

**30. What is the condition called when there is under-secretion of ADH?**

(A) Diabetes insipidus
(B) Diabetes mellitus
(C) Goitre
(D) Acromegaly

**Correct Answer: A**

*Explanation: Under-secretion of ADH results in large quantity of dilute urine, a disease called diabetes insipidus.*

**31. What is the function of thyroxin?**

(A) Lower blood calcium
(B) Regulate basic metabolism
(C) Raise blood calcium
(D) Lower blood sugar

**Correct Answer: B**

*Explanation: Regulate basic metabolism — this correctly answers the question.*

**32. What is the cause of goitre?**

(A) Excess thyroxin
(B) Excess insulin
(C) Deficiency of iodine
(D) Deficiency of calcium

**Correct Answer: C**

*Explanation: The deficiency of iodine in diet causes the disease goitre, which is the enlargement of thyroid gland.*

**33. Which hormone is secreted by the adrenal medulla?**

(A) Insulin
(B) Glucagon
(C) Thyroxin
(D) Adrenaline

**Correct Answer: D**

*Explanation: Adrenal medulla produces hormones called adrenaline and nor-adrenaline.*

**34. What is the function of adrenaline?**

(A) Prepare body for emergency

(B) Lower blood sugar
(C) Raise blood sugar
(D) Regulate metabolism

**Correct Answer: A**

*Explanation: Adrenaline is secreted to meet emergency situations e.g., fight and flight.*

**35. Which hormone is secreted by the testes?**

(A) Oestrogen
(B) Testosterone
(C) Progesterone
(D) Thyroxin

**Correct Answer: B**

*Explanation: The male hormone testosterone is secreted by the testes of males.*

**36. A patient has a condition where the myelin sheath is damaged. What is the most likely effect?**

(A) Increased speed of nerve impulse
(B) Increased neurotransmitter release
(C) Reduced speed of nerve impulse
(D) Reduced neurotransmitter release

**Correct Answer: C**

*Explanation: Reduced speed of nerve impulse — this correctly answers the question.*

**37. A person has a condition where the cerebellum is damaged. What is the most likely effect?**

(A) Loss of memory
(B) Loss of vision
(C) Loss of hearing
(D) Loss of balance and coordination

**Correct Answer: D**

*Explanation: Loss of balance and coordination — this correctly answers the question.*

**38. Which of the following would increase the speed of nerve impulse?**

(A) Myelinated axon
(B) Unmyelinated axon
(C) Short axon
(D) Thin axon

**Correct Answer: A**

*Explanation: Myelinated axon — this correctly answers the question.*

**39. A patient has a condition where the medulla oblongata is damaged. What is the most likely effect?**

(A) Loss of balance
(B) Loss of heartbeat and breathing control
(C) Loss of memory
(D) Loss of vision

**Correct Answer: B**

*Explanation: Loss of heartbeat and breathing control — this correctly answers the question.*

**40. Which of the following is the correct sequence of a reflex arc?**

(A) Receptor → Motor neuron → Interneuron → Sensory neuron → Effector
(B) Effector → Sensory neuron → Interneuron → Motor neuron → Receptor
(C) Receptor → Sensory neuron → Interneuron → Motor neuron → Effector
(D) Receptor → Interneuron → Sensory neuron → Motor neuron → Effector

**Correct Answer: C**

*Explanation: Receptor → Sensory neuron → Interneuron → Motor neuron → Effector — this correctly answers the question.*

**41. A person has a condition where the pituitary gland is not functioning properly. What is the most likely effect?**

(A) Loss of balance
(B) Loss of vision
(C) Loss of hearing
(D) Hormonal imbalances

**Correct Answer: D**

*Explanation: The pituitary gland is the master gland and controls other endocrine glands. Dysfunction would cause hormonal imbalances.*

**42. Which of the following would decrease blood sugar?**

(A) Insulin
(B) Glucagon
(C) Adrenaline
(D) Thyroxin

**Correct Answer: A**

*Explanation: Insulin — this correctly answers the question.*

**43. A patient has a condition where the thyroid gland is overactive. What is the most likely effect?**

(A) Slow metabolism
(B) Fast metabolism
(C) Low blood calcium
(D) High blood calcium

**Correct Answer: B**

*Explanation: Fast metabolism — this correctly answers the question.*

**44. Which of the following is a function of the hypothalamus?**

(A) Control balance
(B) Control heartbeat
(C) Regulate body temperature
(D) Produce insulin

**Correct Answer: C**

*Explanation: Regulate body temperature — this correctly answers the question.*

**45. A person has a condition where the adrenal medulla is not functioning properly. What is the most likely effect?**

(A) Loss of balance
(B) Loss of memory
(C) Loss of vision
(D) Reduced ability to respond to stress

**Correct Answer: D**

*Explanation: The adrenal medulla produces adrenaline and nor-adrenaline, which prepare the body for emergencies.*

**46. Which of the following is the correct order of the parts of the brain?**

(A) Forebrain → Midbrain → Hindbrain
(B) Hindbrain → Midbrain → Forebrain
(C) Midbrain → Forebrain → Hindbrain
(D) Forebrain → Hindbrain → Midbrain

**Correct Answer: A**

*Explanation: The brain is divided into forebrain, midbrain, and hindbrain.*

**47. A patient has a condition where the sympathetic nervous system is overactive. What is the most likely effect?**

(A) Decreased heart rate

(B) Increased heart rate
(C) Increased digestion
(D) Decreased blood pressure

**Correct Answer: B**

*Explanation: The sympathetic nervous system prepares the body for fight or flight, increasing heart rate and blood pressure.*

**48. Which of the following would increase the release of neurotransmitters?**

(A) Decreased calcium influx
(B) Increased potassium influx
(C) Increased calcium influx
(D) Decreased sodium influx

**Correct Answer: C**

*Explanation: Calcium influx causes synaptic vesicles to fuse with the presynaptic membrane and release neurotransmitters.*

**49. A person has a condition where the frontal lobe is damaged. What is the most likely effect?**

(A) Loss of vision
(B) Loss of hearing
(C) Loss of balance
(D) Loss of movement and speech

**Correct Answer: D**

*Explanation: Loss of movement and speech — this correctly answers the question.*

**50. Which of the following is the correct sequence of events during a nerve impulse?**

(A) Resting potential → Depolarization → Repolarization → Resting potential
(B) Depolarization → Resting potential → Repolarization → Resting potential
(C) Resting potential → Repolarization → Depolarization → Resting potential
(D) Repolarization → Depolarization → Resting potential → Resting potential

**Correct Answer: A**

*Explanation: Resting potential → Depolarization → Repolarization → Resting potential — this correctly answers the question.*

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# Biology Grade 10 — Chapter 6

Reproduction

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. At what age does the reproductive system become functional?**

(A) Puberty
(B) Birth
(C) Childhood
(D) Old age

**Correct Answer: A**

*Explanation: The reproductive system becomes functional at a certain age after birth, called puberty.*

**2. Which hormone is primarily responsible for male sexual development?**

(A) Estrogen
(B) Testosterone
(C) Progesterone
(D) Oxytocin

**Correct Answer: B**

*Explanation: Testosterone is the main male sex hormone responsible for male sexual development.*

**3. Which hormone is primarily responsible for female sexual development?**

(A) Testosterone
(B) Insulin
(C) Estrogen
(D) Thyroxin

**Correct Answer: C**

*Explanation: Estrogen is responsible for the development of female reproductive organs and secondary sexual characteristics.*

**4. Where are sperm cells produced?**

(A) Ovaries
(B) Uterus
(C) Fallopian tubes
(D) Testes

**Correct Answer: D**

*Explanation: Sperm cells are produced in the testes through spermatogenesis.*

**5. Where are egg cells produced?**

(A) Ovaries
(B) Testes
(C) Uterus
(D) Fallopian tubes

**Correct Answer: A**

*Explanation: Egg cells are produced in the ovaries through oogenesis.*

**6. What is the process of sperm cell production called?**

(A) Oogenesis
(B) Spermatogenesis
(C) Fertilization
(D) Ovulation

**Correct Answer: B**

*Explanation: Spermatogenesis is the process of sperm cell production in the testes.*

**7. What is the process of egg cell production called?**

(A) Spermatogenesis
(B) Fertilization
(C) Oogenesis
(D) Ovulation

**Correct Answer: C**

*Explanation: Oogenesis is the process of egg cell production in the ovaries.*

**8. What is the union of sperm and egg called?**

(A) Ovulation
(B) Implantation
(C) Gestation
(D) Fertilization

**Correct Answer: D**

*Explanation: Fertilization is the union of a male gamete (sperm) and a female gamete (egg) to form a zygote.*

**9. What is the fertilized egg called?**

(A) Zygote
(B) Sperm
(C) Egg
(D) Embryo

**Correct Answer: A**

*Explanation: The fertilized egg is called a zygote.*

**10. In which type of fertilization does the union of gametes occur inside the female body?**

(A) External fertilization
(B) Internal fertilization
(C) Both A and B
(D) None of the above

**Correct Answer: B**

*Explanation: Internal fertilization — this correctly answers the question.*

**11. Which type of asexual reproduction involves the parent splitting into two equal parts?**

(A) Budding
(B) Fragmentation
(C) Binary fission
(D) Parthenogenesis

**Correct Answer: C**

*Explanation: In binary fission, the parent organism splits into two equal parts, each of which develops into a new organism.*

**12. Which type of asexual reproduction involves a new organism growing out of the parent?**

(A) Binary fission
(B) Fragmentation
(C) Parthenogenesis
(D) Budding

**Correct Answer: D**

*Explanation: Budding — this correctly answers the question.*

**13. What is the process by which an unfertilized egg develops into a new individual called?**

(A) Parthenogenesis
(B) Binary fission
(C) Budding

(D) Fragmentation

**Correct Answer: A**

*Explanation: Parthenogenesis is a form of reproduction in which an unfertilized egg develops into a new individual.*

**14. What is the sex chromosome combination for a human female?**

(A) XY
(B) XX
(C) XO
(D) YY

**Correct Answer: B**

*Explanation: In females, the sex chromosome pair consists of two completely homologous chromosomes called XX.*

**15. What is the sex chromosome combination for a human male?**

(A) XX
(B) XO
(C) XY
(D) YY

**Correct Answer: C**

*Explanation: In males, the sex chromosome pair consists of two partially homologous chromosomes called X and Y.*

**16. Which hormone is responsible for the development of secondary sexual characteristics in males?**

(A) Estrogen
(B) Progesterone
(C) Oxytocin
(D) Testosterone

**Correct Answer: D**

*Explanation: Testosterone promotes the development of secondary sexual characteristics, such as the growth of facial hair, deepening of the voice, and increased muscle mass.*

**17. Which hormone is responsible for the development of secondary sexual characteristics in females?**

(A) Estrogen
(B) Testosterone
(C) Insulin
(D) Thyroxin

**Correct Answer: A**

*Explanation: Estrogen is responsible for the development of female reproductive organs and secondary sexual characteristics.*

**18. What is the function of follicle stimulating hormone (FSH) in males?**

(A) Produce testosterone
(B) Support development of sperm cells
(C) Cause ovulation
(D) Prepare uterus for pregnancy

**Correct Answer: B**

*Explanation: Support development of sperm cells — this correctly answers the question.*

**19. What is the function of luteinizing hormone (LH) in females?**

(A) Produce estrogen
(B) Prepare uterus for pregnancy
(C) Cause ovulation
(D) Produce progesterone

**Correct Answer: C**

*Explanation: LH causes the rupturing of matured follicle and the release of developing ovum, a process called ovulation.*

**20. What is the function of progesterone?**

(A) Cause ovulation
(B) Produce estrogen
(C) Produce testosterone
(D) Prepare body for pregnancy

**Correct Answer: D**

*Explanation: Progesterone prepares the body for pregnancy by thickening the uterine lining.*

**21. Which of the following is NOT a part of the male reproductive system?**

(A) Ovary
(B) Testes
(C) Epididymis
(D) Vas deferens

**Correct Answer: A**

*Explanation: The ovary is part of the female reproductive system.*

**22. Which of the following is NOT a part of the female reproductive system?**

(A) Ovary
(B) Vas deferens
(C) Fallopian tube
(D) Uterus

**Correct Answer: B**

*Explanation: The vas deferens is part of the male reproductive system.*

**23. What is the function of the seminal vesicles?**

(A) Produce sperm
(B) Neutralize acidity
(C) Provide nutrients for sperm
(D) Produce lubricant

**Correct Answer: C**

*Explanation: Seminal vesicles provide nutrients for the sperm.*

**24. What is the function of the prostate gland?**

(A) Produce sperm
(B) Provide nutrients for sperm
(C) Produce lubricant
(D) Neutralize acidity

**Correct Answer: D**

*Explanation: The prostate gland adds a fluid that neutralizes acidity.*

**25. What is the function of Cowper's glands?**

(A) Produce lubricant
(B) Produce sperm
(C) Provide nutrients for sperm
(D) Neutralize acidity

**Correct Answer: A**

*Explanation: Cowper's glands produce a lubricant for the ducts.*

## B. Less Important / Secondary Topics

**26. Where does fertilization occur in humans?**

(A) Fallopian tube
(B) Uterus
(C) Ovary
(D) Vagina

**Correct Answer: A**

*Explanation: Fallopian tube — this correctly answers the question.*

**27. What is the gestation period in rabbits?**

(A) 10–15 days
(B) 30–32 days
(C) 20–25 days
(D) 60–65 days

**Correct Answer: B**

*Explanation: The pregnancy period in rabbits is about 30–32 days.*

**28. Which type of development involves giving birth to live young?**

(A) Oviparous
(B) Ovoviviparous
(C) Viviparous
(D) None of the above

**Correct Answer: C**

*Explanation: Viviparous — this correctly answers the question.*

**29. Which type of development involves laying shelled eggs?**

(A) Viviparous
(B) Ovoviviparous
(C) None of the above
(D) Oviparous

**Correct Answer: D**

*Explanation: Oviparous — this correctly answers the question.*

**30. Which type of development involves eggs hatching inside the body?**

(A) Ovoviviparous
(B) Viviparous
(C) Oviparous
(D) None of the above

**Correct Answer: A**

*Explanation: Ovoviviparous — this correctly answers the question.*

**31. What is the probability of having a son or daughter during each pregnancy?**

(A) 25%
(B) 50%
(C) 75%
(D) 100%

**Correct Answer: B**

*Explanation: The probability for a couple to have a son or a daughter during each pregnancy is 50%.*

**32. Which parent determines the sex of the baby?**

(A) Mother
(B) Both
(C) Father
(D) Neither

**Correct Answer: C**

*Explanation: The father determines the sex of the baby because he can contribute either an X or a Y chromosome.*

**33. What is the term for animals in which male and female reproductive organs are found in separate individuals?**

(A) Hermaphroditic
(B) Asexual
(C) Monoecious
(D) Dioecious

**Correct Answer: D**

*Explanation: Most animals are dioecious, meaning male and female reproductive organs are found in separate individuals.*

**34. What is the function of the placenta?**

(A) Exchange nutrients and waste between mother and fetus
(B) Produce sperm
(C) Produce egg
(D) Produce hormones

**Correct Answer: A**

*Explanation: Exchange nutrients and waste between mother and fetus — this correctly answers the question.*

**35. What is the role of the cervix?**

(A) Produce sperm
(B) Separate uterus from birth canal
(C) Produce egg
(D) Produce hormones

**Correct Answer: B**

*Explanation: The cervix is the part of the uterus that separates it from the birth canal.*

**36. A patient has a condition where the fallopian tubes are blocked. What is the most likely effect?**

(A) Sperm cannot be produced
(B) Uterus cannot develop
(C) Egg cannot be fertilized
(D) Ovulation cannot occur

**Correct Answer: C**

*Explanation: Egg cannot be fertilized — this correctly answers the question.*

**37. A person has a condition where the testes are not producing testosterone. What is the most likely effect?**

(A) Reduced sperm production
(B) Reduced egg production
(C) Reduced female secondary sexual characteristics
(D) Reduced male secondary sexual characteristics

**Correct Answer: D**

*Explanation: Testosterone is responsible for male secondary sexual characteristics. Reduced production would lead to reduced male secondary sexual characteristics.*

**38. Which of the following would prevent ovulation?**

(A) Decreased LH
(B) Increased FSH
(C) Increased LH
(D) Increased estrogen

**Correct Answer: A**

*Explanation: Decreased LH — this correctly answers the question.*

**39. A patient has a condition where the uterus lining does not thicken. What is the most likely effect?**

(A) Sperm cannot be produced
(B) Embryo cannot implant
(C) Egg cannot be fertilized
(D) Ovulation cannot occur

**Correct Answer: B**

*Explanation: The uterus lining must thicken for embryo implantation. If it does not thicken, implantation cannot occur.*

**40. Which of the following is the correct sequence of sexual reproduction?**

(A) Fertilization → Gametogenesis → Development
(B) Development → Fertilization → Gametogenesis
(C) Gametogenesis → Fertilization → Development
(D) Gametogenesis → Development → Fertilization

**Correct Answer: C**

*Explanation: Gametogenesis → Fertilization → Development — this correctly answers the question.*

**41. A person has a condition where the vas deferens is blocked. What is the most likely effect?**

(A) Sperm cannot be produced
(B) Testosterone cannot be produced
(C) Ovulation cannot occur
(D) Sperm cannot be transported

**Correct Answer: D**

*Explanation: Sperm cannot be transported — this correctly answers the question.*

**42. Which of the following is the correct order of the stages of HIV infection?**

(A) Stage 1 → Stage 2 → Stage 3 → Stage 4
(B) Stage 4 → Stage 3 → Stage 2 → Stage 1
(C) Stage 2 → Stage 1 → Stage 4 → Stage 3
(D) Stage 3 → Stage 2 → Stage 1 → Stage 4

**Correct Answer: A**

*Explanation: Stage 1 → Stage 2 → Stage 3 → Stage 4 — this correctly answers the question.*

**43. A patient has a condition where the ovaries are not producing estrogen. What is the most likely effect?**

(A) Reduced sperm production
(B) Reduced female secondary sexual characteristics
(C) Reduced male secondary sexual characteristics
(D) Reduced egg production

**Correct Answer: B**

*Explanation: Estrogen is responsible for female secondary sexual characteristics. Reduced production would lead to reduced female secondary sexual characteristics.*

**44. Which of the following would increase the chance of fertilization?**

(A) Blocked fallopian tube
(B) Low sperm count
(C) Healthy sperm and egg
(D) Abnormal egg

**Correct Answer: C**

*Explanation: Healthy sperm and egg — this correctly answers the question.*

**45. A person has a condition where the pituitary gland is not producing FSH. What is the most likely effect?**

(A) Reduced sperm production
(B) Reduced egg production
(C) None of the above
(D) Both A and B

**Correct Answer: D**

*Explanation: FSH is essential for both spermatogenesis and oogenesis. Reduced FSH would affect both sperm and egg production.*

**46. Which of the following is the correct sequence of the ovarian cycle?**

(A) Follicular phase → Ovulation → Luteal phase
(B) Ovulation → Follicular phase → Luteal phase
(C) Luteal phase → Ovulation → Follicular phase

(D) Follicular phase → Luteal phase → Ovulation

**Correct Answer: A**

*Explanation: Follicular phase → Ovulation → Luteal phase — this correctly answers the question.*

**47. A patient has a condition where the cervix is not producing mucus. What is the most likely effect?**

(A) Sperm cannot be produced
(B) Sperm cannot reach the egg
(C) Egg cannot be fertilized
(D) Ovulation cannot occur

**Correct Answer: B**

*Explanation: Sperm cannot reach the egg — this correctly answers the question.*

**48. Which of the following is the correct sequence of the male reproductive system?**

(A) Testes → Vas deferens → Epididymis → Urethra
(B) Epididymis → Testes → Vas deferens → Urethra
(C) Testes → Epididymis → Vas deferens → Urethra
(D) Vas deferens → Testes → Epididymis → Urethra

**Correct Answer: C**

*Explanation: Sperm travels from the testes to the epididymis, then through the vas deferens, and finally through the urethra.*

**49. A patient has a condition where the prostate gland is enlarged. What is the most likely effect?**

(A) Reduced sperm production
(B) Reduced testosterone production
(C) Reduced egg production
(D) Difficulty in urination

**Correct Answer: D**

*Explanation: The prostate gland surrounds the urethra. Enlargement can cause difficulty in urination.*

**50. Which of the following is the correct sequence of the female reproductive system?**

(A) Ovary → Fallopian tube → Uterus → Cervix → Vagina
(B) Ovary → Uterus → Fallopian tube → Cervix → Vagina
(C) Fallopian tube → Ovary → Uterus → Cervix → Vagina
(D) Uterus → Ovary → Fallopian tube → Cervix → Vagina

**Correct Answer: A**

*Explanation: The egg travels from the ovary to the fallopian tube, then to the uterus, through the cervix, and out through the vagina.*

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# Biology Grade 10 — Chapter 7

Inheritance

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. What is the process by which traits are passed from parents to offspring called?**

(A) Inheritance
(B) Variation
(C) Evolution
(D) Mutation

**Correct Answer: A**

*Explanation: Inheritance is the process by which traits are passed from parents to offspring.*

**2. What is the study of heredity and variation called?**

(A) Biology
(B) Genetics
(C) Ecology
(D) Evolution

**Correct Answer: B**

*Explanation: The study of heredity and variation is called genetics.*

**3. Who is known as the Father of Genetics?**

(A) Charles Darwin
(B) William Harvey
(C) Gregor Mendel
(D) Louis Pasteur

**Correct Answer: C**

*Explanation: Gregor Mendel is known as the Father of Genetics for his work on pea plants.*

**4. What are thread-like structures made of DNA and proteins called?**

(A) Genes
(B) Alleles
(C) Loci
(D) Chromosomes

**Correct Answer: D**

*Explanation: Chromosomes are thread-like structures made of DNA and proteins found in the nucleus of cells.*

**5. What is the unit of inheritance called?**

(A) Gene
(B) Chromosome
(C) Allele
(D) Locus

**Correct Answer: A**

*Explanation: Gene — this correctly answers the question.*

**6. What are different forms of a gene called?**

(A) Chromosomes
(B) Alleles
(C) Loci
(D) Genomes

**Correct Answer: B**

*Explanation: Different forms or variations of a gene are called alleles.*

**7. What is the specific position of a gene on a chromosome called?**

(A) Allele
(B) Genotype
(C) Locus
(D) Phenotype

**Correct Answer: C**

*Explanation: The specific position of a gene on a chromosome is called a locus.*

**8. What is the genetic makeup of a trait called?**

(A) Phenotype
(B) Allele
(C) Locus
(D) Genotype

**Correct Answer: D**

*Explanation: The genetic makeup of a trait at each locus is called the genotype.*

**9. What is the physical appearance of a trait called?**

(A) Phenotype
(B) Genotype
(C) Allele
(D) Locus

**Correct Answer: A**

*Explanation: The physical appearance of a trait is called the phenotype.*

**10. What is an individual with two identical alleles called?**

(A) Heterozygous
(B) Homozygous
(C) Dominant
(D) Recessive

**Correct Answer: B**

*Explanation: If the genotype has two identical alleles (like EE or ee), it is called homozygous.*

**11. What is an individual with two different alleles called?**

(A) Homozygous
(B) Dominant
(C) Heterozygous
(D) Recessive

**Correct Answer: C**

*Explanation: If the genotype has two different alleles (like Ee), it is called heterozygous.*

**12. What is an allele that is expressed even with one copy called?**

(A) Recessive
(B) Homozygous
(C) Heterozygous
(D) Dominant

**Correct Answer: D**

*Explanation: A dominant allele is expressed even when paired with a different (recessive) allele.*

**13. What is an allele that is expressed only with two copies called?**

(A) Recessive
(B) Dominant
(C) Homozygous
(D) Heterozygous

**Correct Answer: A**

*Explanation: A recessive allele is expressed only in the homozygous state.*

**14. What is the complete set of an individual's genes called?**

(A) Gene pool
(B) Genome
(C) Genotype
(D) Phenotype

**Correct Answer: B**

*Explanation: The complete set of an individual's genes is called the genome.*

**15. What is the complete set of all genes and their alleles in a population called?**

(A) Genome
(B) Genotype
(C) Gene pool
(D) Phenotype

**Correct Answer: C**

*Explanation: A gene pool is the complete set of all the genes and their different alleles in all individuals of a population.*

**16. Which part of the chromosome protects it from degradation?**

(A) Centromere
(B) Chromatid
(C) Kinetochore
(D) Telomere

**Correct Answer: D**

*Explanation: Telomeres are repetitive nucleotide sequences at the ends of chromosomes that protect them from degradation.*

**17. What is the constricted region of a chromosome where chromatids are attached called?**

(A) Centromere
(B) Telomere
(C) Chromatid
(D) Kinetochore

**Correct Answer: A**

*Explanation: The centromere is the constricted region of a chromosome where the two chromatids are attached.*

**18. What is the protein complex at the centromere called?**

(A) Telomere
(B) Kinetochore
(C) Chromatid
(D) Chromatin

**Correct Answer: B**

*Explanation: The kinetochore is a protein complex in the centromere which serves as the attachment site for spindle fibers.*

**19. What is the cross between parents differing in one trait called?**

(A) Dihybrid cross
(B) Test cross
(C) Monohybrid cross
(D) Back cross

**Correct Answer: C**

*Explanation: Monohybrid cross — this correctly answers the question.*

**20. What is the cross between parents differing in two traits called?**

(A) Monohybrid cross
(B) Test cross

(C) Back cross
(D) Dihybrid cross

**Correct Answer: D**

*Explanation: Dihybrid cross — this correctly answers the question.*

**21. What was the phenotypic ratio in the F□ generation of Mendel's monohybrid cross?**

(A) 3:1
(B) 1:1
(C) 9:3:3:1
(D) 1:2:1

**Correct Answer: A**

*Explanation: 3:1 — this correctly answers the question.*

**22. What was the phenotypic ratio in the F□ generation of Mendel's dihybrid cross?**

(A) 3:1
(B) 9:3:3:1
(C) 1:1
(D) 1:2:1

**Correct Answer: B**

*Explanation: 9:3:3:1 — this correctly answers the question.*

**23. What is the genotypic ratio in the F□ generation of a monohybrid cross?**

(A) 3:1
(B) 9:3:3:1
(C) 1:2:1
(D) 1:1

**Correct Answer: C**

*Explanation: The genotypic ratio in the F□ generation of a monohybrid cross is 1:2:1.*

**24. What is the law that states that alleles separate during gamete formation?**

(A) Law of Independent Assortment
(B) Law of Dominance
(C) Law of Inheritance
(D) Law of Segregation

**Correct Answer: D**

*Explanation: The Law of Segregation states that co-existing alleles segregate during gamete formation and recombine randomly during fertilization.*

**25. What is the law that states that alleles of different genes assort independently?**

(A) Law of Independent Assortment
(B) Law of Segregation
(C) Law of Dominance
(D) Law of Inheritance

**Correct Answer: A**

*Explanation: The Law of Independent Assortment states that the alleles for one trait are inherited independently of the alleles for another trait.*

## B. Less Important / Secondary Topics

**26. What is an individual with a homozygous genotype called?**

(A) True breed
(B) Non-true breed
(C) Hybrid
(D) Mutant

**Correct Answer: A**

*Explanation: An individual with a homozygous genotype is considered a true breed.*

**27. What is an individual with a heterozygous genotype called?**

(A) True breed
(B) Non-true breed
(C) Pure breed
(D) Mutant

**Correct Answer: B**

*Explanation: A heterozygous individual is non-true breed because it can produce offspring with either form of the trait.*

**28. What is the purpose of a test cross?**

(A) To determine the phenotype
(B) To determine the mutation
(C) To determine the genotype
(D) To determine the gene pool

**Correct Answer: C**

*Explanation: A test cross is used to determine whether an organism displaying a dominant trait is homozygous or heterozygous.*

**29. What is the phenotypic ratio of a monohybrid test cross?**

(A) 3:1
(B) 9:3:3:1
(C) 1:2:1
(D) 1:1

**Correct Answer: D**

*Explanation: 1:1 — this correctly answers the question.*

**30. Which of the following is a dominant trait in pea plants?**

(A) Round seeds
(B) Wrinkled seeds
(C) Green seeds
(D) Short stem

**Correct Answer: A**

*Explanation: Round seeds are dominant over wrinkled seeds in pea plants.*

**31. Which of the following is a recessive trait in pea plants?**

(A) Round seeds
(B) Wrinkled seeds
(C) Yellow seeds
(D) Purple flowers

**Correct Answer: B**

*Explanation: Wrinkled seeds are recessive to round seeds in pea plants.*

**32. What is the symbol for the mean?**

(A) tildex
(B) hatx
(C) barx
(D) x

**Correct Answer: C**

*Explanation: Barx — this correctly answers the question.*

**33. What is the symbol for the median?**

(A) barx
(B) hatx
(C) x
(D) tildex

**Correct Answer: D**

*Explanation: The median is denoted by tildex (x tilde).*

**34. What is the symbol for the mode?**

(A) hatx
(B) barx
(C) tildex
(D) x

**Correct Answer: A**

*Explanation: The mode is denoted by hatx (x-hat).*

**35. Which of the following is a sex-linked trait?**

(A) Height
(B) Colour blindness
(C) Blood type
(D) Skin colour

**Correct Answer: B**

*Explanation: Colour blindness is a sex-linked trait.*

**36. A plant with genotype Rr is crossed with a plant with genotype rr. What is the phenotypic ratio?**

(A) 3:1
(B) 9:3:3:1
(C) 1:1
(D) 1:2:1

**Correct Answer: C**

*Explanation: 1:1 — this correctly answers the question.*

**37. A plant with genotype RrYy is self-fertilized. What is the probability of getting a round, yellow seed?**

(A) 1/16
(B) 3/16
(C) 1/4
(D) 9/16

**Correct Answer: D**

*Explanation: In a dihybrid cross, the probability of getting a round, yellow seed (R_Y_) is 9/16.*

**38. Which of the following genotypes is homozygous dominant?**

(A) EE
(B) Ee
(C) ee
(D) E

**Correct Answer: A**

*Explanation: Homozygous dominant means two identical dominant alleles (EE).*

**39. Which of the following genotypes is homozygous recessive?**

(A) EE
(B) ee
(C) Ee
(D) E

**Correct Answer: B**

*Explanation: Homozygous recessive means two identical recessive alleles (ee).*

**40. Which of the following genotypes is heterozygous?**

(A) EE
(B) ee
(C) Ee
(D) E

**Correct Answer: C**

*Explanation: Heterozygous means two different alleles (Ee).*

**41. A person with free earlobes (Ee) marries a person with attached earlobes (ee). What is the probability of having a child with attached earlobes?**

(A) 0%
(B) 25%
(C) 100%
(D) 50%

**Correct Answer: D**

*Explanation: 50% — this correctly answers the question.*

**42. Which of the following would be affected if the Law of Independent Assortment did not hold?**

(A) Dihybrid cross
(B) Monohybrid cross
(C) Test cross
(D) Back cross

**Correct Answer: A**

*Explanation: Dihybrid cross — this correctly answers the question.*

**43. A plant with genotype RRYY is crossed with a plant with genotype rryy. What is the genotype of the F□ generation?**

(A) RRYY
(B) RrYy
(C) rryy
(D) RrYY

**Correct Answer: B**

*Explanation: The F□ generation from a cross between RRYY and rryy will all be RrYy (round, yellow).*

**44. Which of the following is NOT a Mendelian trait in pea plants?**

(A) Seed shape
(B) Seed color
(C) Leaf shape
(D) Flower color

**Correct Answer: C**

*Explanation: Leaf shape — this correctly answers the question.*

**45. What is the probability of getting a homozygous recessive offspring from a cross between two heterozygous parents (Ee × Ee)?**

(A) 0%
(B) 50%
(C) 75%
(D) 25%

**Correct Answer: D**

*Explanation: A cross between Ee and Ee produces 25% EE, 50% Ee, and 25% ee. The probability of homozygous recessive (ee) is 25%.*

**46. A person has blood type AB. What are the possible genotypes?**

(A) IAIB
(B) IAIA
(C) IBIB
(D) ii

**Correct Answer: A**

*Explanation: IAIB — this correctly answers the question.*

**47. Which of the following is an example of a sex-linked disorder?**

(A) Sickle cell anemia
(B) Colour blindness
(C) Cystic fibrosis
(D) Thalassemia

**Correct Answer: B**

*Explanation: Colour blindness is an example of a sex-linked disorder.*

**48. What is the genotypic ratio of a dihybrid cross in the F□ generation?**

(A) 1:2:1
(B) 1:1:1:1
(C) 9:3:3:1
(D) 3:1

**Correct Answer: C**

*Explanation: The phenotypic ratio of a dihybrid cross is 9:3:3:1.*

**49. Which of the following statements about the Law of Segregation is correct?**

(A) Alleles of different genes assort independently
(B) Dominant alleles are always expressed
(C) Recessive alleles are never expressed
(D) Alleles separate during gamete formation

**Correct Answer: D**

*Explanation: The Law of Segregation states that co-existing alleles segregate during gamete formation.*

**50. A plant with genotype RrYy is crossed with a plant with genotype rryy. What is the probability of getting a wrinkled, green seed?**

(A) 1/4
(B) 1/16
(C) 9/16
(D) 3/16

**Correct Answer: A**

*Explanation: 1/4 — this correctly answers the question.*

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# Biology Grade 10 — Chapter 8

Diseases

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. What is a condition that affects the normal functioning of an organism called?**

(A) Disease
(B) Illness
(C) Infection
(D) Disorder

**Correct Answer: A**

*Explanation: A disease is a condition that affects the normal functioning of an organism, causing harm or discomfort.*

**2. What is a person's subjective experience of feeling unwell called?**

(A) Disease
(B) Illness
(C) Infection
(D) Disorder

**Correct Answer: B**

*Explanation: An illness is a person's subjective experience of feeling unwell.*

**3. What is an agent that causes disease or infection called?**

(A) Vector
(B) Antibody
(C) Pathogen
(D) Antigen

**Correct Answer: C**

*Explanation: A pathogen is an agent that causes disease or infection.*

**4. Which type of disease is short-term and resolves on its own or with treatment?**

(A) Chronic disease
(B) Infectious disease
(C) Non-infectious disease
(D) Acute disease

**Correct Answer: D**

*Explanation: Acute diseases are short-term diseases that resolve on their own or with treatment.*

**5. Which type of disease is long-term and persists or worsens over time?**

(A) Chronic disease
(B) Acute disease
(C) Infectious disease
(D) Non-infectious disease

**Correct Answer: A**

*Explanation: Chronic diseases are long-term diseases that persist or worsen over time.*

**6. Which of the following is an infectious disease?**

(A) Diabetes
(B) COVID-19
(C) Cancer
(D) Heart disease

**Correct Answer: B**

*Explanation: COVID-19 is an infectious disease caused by the coronavirus SARS-CoV-2.*

**7. Which of the following is a non-infectious disease?**

(A) Malaria
(B) Typhoid
(C) Diabetes
(D) Tuberculosis

**Correct Answer: C**

*Explanation: Diabetes is a non-infectious disease; it is not caused by pathogens and cannot spread from person to person.*

**8. What is a disease that is transmitted from animals to humans called?**

(A) Vector-borne disease
(B) Infectious disease
(C) Non-infectious disease
(D) Zoonotic disease

**Correct Answer: D**

*Explanation: A zoonotic disease is an infectious disease that is directly transmitted from animal to humans.*

**9. What is a living organism that transmits an infectious agent called?**

(A) Vector
(B) Pathogen
(C) Antibody
(D) Antigen

**Correct Answer: A**

*Explanation: A vector is a living organism that transmits an infectious agent from an infected animal to a human or another animal.*

**10. Which disease is caused by Plasmodium?**

(A) Dengue
(B) Malaria
(C) Typhoid
(D) COVID-19

**Correct Answer: B**

*Explanation: Malaria is caused by Plasmodium, which is transmitted by mosquitoes.*

**11. Which disease is caused by the coronavirus SARS-CoV-2?**

(A) AIDS
(B) Diabetes
(C) COVID-19
(D) Cancer

**Correct Answer: C**

*Explanation: COVID-19 is caused by the coronavirus SARS-CoV-2.*

**12. What does HIV stand for?**

(A) Human Infectious Virus
(B) High Immunodeficiency Virus
(C) Human Immune Virus
(D) Human Immunodeficiency Virus

**Correct Answer: D**

*Explanation: HIV stands for Human Immunodeficiency Virus.*

**13. What does AIDS stand for?**

(A) Acquired Immune Deficiency Syndrome
(B) Acquired Infectious Disease Syndrome
(C) Auto Immune Deficiency Syndrome

(D) Acute Immune Deficiency Syndrome

**Correct Answer: A**

*Explanation: AIDS stands for Acquired Immune Deficiency Syndrome.*

**14. Which of the following is a type of diabetes?**

(A) Type 1 Diabetes
(B) All of the above
(C) Type 2 Diabetes
(D) Gestational Diabetes

**Correct Answer: B**

*Explanation: The main types of diabetes are Type 1, Type 2, and Gestational Diabetes.*

**15. What is a chemical produced by microorganisms that destroys or inhibits other microorganisms called?**

(A) Vaccine
(B) Antiseptic
(C) Antibiotic
(D) Disinfectant

**Correct Answer: C**

*Explanation: Antibiotics are chemicals produced by microorganisms which are capable of destroying or inhibiting the growth of another microorganism.*

**16. Which of the following is a mode of transmission of infectious diseases?**

(A) Skin contact
(B) Ingesting contaminated food or water
(C) Inhaling airborne particles
(D) All of the above

**Correct Answer: D**

*Explanation: Infectious diseases can spread through skin contact, contaminated food or water, and airborne particles.*

**17. Which pathogen causes typhoid?**

(A) Bacteria
(B) Virus
(C) Fungus
(D) Protozoa

**Correct Answer: A**

*Explanation: Bacteria — this correctly answers the question.*

**18. Which pathogen causes ringworm?**

(A) Virus
(B) Fungus
(C) Bacteria
(D) Protozoa

**Correct Answer: B**

*Explanation: Fungus — this correctly answers the question.*

**19. Which of the following is a symptom of COVID-19?**

(A) Breathing difficulties
(B) Loss of taste and smell
(C) All of the above
(D) Fever

**Correct Answer: C**

*Explanation: All of the above — this correctly answers the question.*

**20. Which of the following is a preventive measure for COVID-19?**

(A) Washing hands frequently
(B) Wearing masks
(C) Social distancing
(D) All of the above

**Correct Answer: D**

*Explanation: Prevention measures for COVID-19 include hand washing, wearing masks, social distancing, staying home if symptomatic, and vaccination.*

**21. How is HIV transmitted?**

(A) Through blood and body fluids
(B) Through casual contact
(C) Through sharing food
(D) Through mosquito bites

**Correct Answer: A**

*Explanation: HIV is transmitted through patient's blood and body fluids.*

**22. Which stage of HIV infection is asymptomatic?**

(A) Stage 2
(B) Stage 1
(C) Stage 3
(D) Stage 4

**Correct Answer: B**

*Explanation: Stage 1 of HIV infection is asymptomatic (no symptoms of HIV disease).*

**23. Which type of diabetes is an autoimmune disease?**

(A) Type 2 Diabetes
(B) Gestational Diabetes
(C) Type 1 Diabetes
(D) All of the above

**Correct Answer: C**

*Explanation: Type 1 Diabetes is an autoimmune disease destroying insulin-producing cells in the pancreas.*

**24. Which type of diabetes develops during pregnancy?**

(A) Type 1 Diabetes
(B) Type 2 Diabetes
(C) All of the above
(D) Gestational Diabetes

**Correct Answer: D**

*Explanation: Gestational Diabetes — this correctly answers the question.*

**25. Which of the following is a long-term effect of unmanaged diabetes?**

(A) All of the above
(B) Kidney damage
(C) Nerve damage
(D) Retina damage

**Correct Answer: A**

*Explanation: All of the above — this correctly answers the question.*

## B. Less Important / Secondary Topics

**26. What is the main cause of lung cancer?**

(A) Tobacco smoke
(B) Viral infection
(C) Bacteria
(D) Allergy

**Correct Answer: A**

*Explanation: Tobacco smoke is the main cause of lung cancer.*

**27. Which plant disease is caused by Puccinia rust fungus?**

(A) Smut
(B) Rust
(C) Red rot
(D) Blight

**Correct Answer: B**

*Explanation: Wheat leaf rust is a fungal disease caused by Puccinia rust fungus.*

**28. Which plant disease is caused by Ustilago tritici?**

(A) Rust
(B) Red rot
(C) Smut
(D) Blight

**Correct Answer: C**

*Explanation: Smut is caused by fungi Ustilago tritici.*

**29. Which plant disease is caused by Colletotrichum falcatum?**

(A) Rust
(B) Smut
(C) Blight
(D) Red rot

**Correct Answer: D**

*Explanation: Red rot is caused by fungi Colletotrichum falcatum.*

**30. Who discovered penicillin?**

(A) Alexander Fleming
(B) Louis Pasteur
(C) Edward Jenner
(D) Robert Koch

**Correct Answer: A**

*Explanation: The discovery of penicillin is attributed to Alexander Fleming in 1928.*

**31. Which of the following is a source of antibiotics?**

(A) Bacteria
(B) All of the above
(C) Fungi
(D) Plants

**Correct Answer: B**

*Explanation: Antibiotics are derived from bacteria, fungi, plants, and animals.*

**32. Which of the following is a mode of action of antibiotics?**

(A) Cell wall inhibition
(B) Protein synthesis inhibition
(C) All of the above
(D) DNA replication inhibition

**Correct Answer: C**

*Explanation: All of the above — this correctly answers the question.*

**33. What is the ability of bacteria to survive in the presence of antibiotics called?**

(A) Antibiotic sensitivity
(B) Antibiotic tolerance
(C) Antibiotic immunity
(D) Antibiotic resistance

**Correct Answer: D**

*Explanation: Antibiotic resistance in bacteria refers to the ability of bacteria to survive and grow in the presence of antibiotics.*

**34. Which of the following contributes to antibiotic resistance?**

(A) All of the above
(B) Overuse of antibiotics
(C) Agricultural use in animal feed
(D) Lack of new antibiotic development

**Correct Answer: A**

*Explanation: Factors contributing to antibiotic resistance include excessive use of antibiotics for humans, agricultural use in animal feed, and lack of new antibiotic development.*

**35. Which of the following is a preventive measure for antibiotic resistance?**

(A) Use antibiotics judiciously
(B) All of the above
(C) Develop new antibiotics
(D) Improve infection control

**Correct Answer: B**

*Explanation: All of the above — this correctly answers the question.*

**36. A patient has a weakened immune system due to HIV. What is the most likely consequence?**

(A) Reduced risk of infections
(B) Increased red blood cell production
(C) Increased risk of opportunistic infections
(D) Reduced blood pressure

**Correct Answer: C**

*Explanation: Increased risk of opportunistic infections — this correctly answers the question.*

**37. Which of the following would be affected if the pancreas does not produce enough insulin?**

(A) Blood pressure regulation
(B) Oxygen transport
(C) Blood clotting
(D) Blood sugar regulation

**Correct Answer: D**

*Explanation: Blood sugar regulation — this correctly answers the question.*

**38. A patient has a condition where the mucous lining of the stomach breaks down. What is the most likely diagnosis?**

(A) Ulcer
(B) Diarrhoea
(C) Constipation
(D) Indigestion

**Correct Answer: A**

*Explanation: Ulcer occurs when the mucous lining covering the stomach breaks down, and stomach tissues are damaged by gastric juice.*

**39. Which of the following statements about antibiotics is correct?**

(A) They are effective against viruses
(B) They are effective against bacteria
(C) They are effective against fungi
(D) They are effective against all pathogens

**Correct Answer: B**

*Explanation: Antibiotics are effective against bacterial infections but are of no use against viruses.*

**40. A patient has a condition where the beta cells of the pancreas are destroyed. What is the most likely diagnosis?**

(A) Type 2 Diabetes
(B) Gestational Diabetes
(C) Type 1 Diabetes
(D) Diabetes insipidus

**Correct Answer: C**

*Explanation: Type 1 Diabetes is an autoimmune disease destroying insulin-producing beta cells in the pancreas.*

**41. Which of the following would be affected if the liver is damaged?**

(A) Bile production
(B) Glycogen storage
(C) Deamination of amino acids
(D) All of the above

**Correct Answer: D**

*Explanation: All of the above — this correctly answers the question.*

**42. Which of the following is the correct sequence of the stages of HIV infection?**

(A) Stage 1 → Stage 2 → Stage 3 → Stage 4
(B) Stage 4 → Stage 3 → Stage 2 → Stage 1
(C) Stage 2 → Stage 1 → Stage 4 → Stage 3
(D) Stage 3 → Stage 2 → Stage 1 → Stage 4

**Correct Answer: A**

*Explanation: Stage 1 → Stage 2 → Stage 3 → Stage 4 — this correctly answers the question.*

**43. A patient has a condition where the kidney is damaged due to diabetes. What is the most likely consequence?**

(A) Liver failure
(B) Kidney failure
(C) Heart failure
(D) Lung failure

**Correct Answer: B**

*Explanation: Diabetes is the most common cause of kidney failure.*

**44. Which of the following is a mode of transmission of zoonotic diseases?**

(A) Bites
(B) Scratches
(C) All of the above
(D) Inhalation

**Correct Answer: C**

*Explanation: Zoonotic diseases can spread through bites, scratches, inhalation, ingestion, or contact with contaminated animal waste or products.*

**45. Which of the following is a vector-borne disease?**

(A) Malaria
(B) Dengue fever
(C) Lyme disease
(D) All of the above

**Correct Answer: D**

*Explanation: Malaria, dengue fever, and Lyme disease are all vector-borne diseases.*

**46. A patient has a condition where the immune system attacks the body's own tissues. What is the most likely diagnosis?**

(A) Autoimmune disease
(B) Immunodeficiency

(C) Allergy
(D) Infection

**Correct Answer: A**

*Explanation: Autoimmune diseases occur when the immune system attacks the body's own tissues.*

**47. Which of the following is the correct sequence of the stages of HIV infection?**

(A) Mild symptoms → Asymptomatic → Advanced symptoms → Severe symptoms
(B) Asymptomatic → Mild symptoms → Advanced symptoms → Severe symptoms
(C) Advanced symptoms → Mild symptoms → Asymptomatic → Severe symptoms
(D) Severe symptoms → Advanced symptoms → Mild symptoms → Asymptomatic

**Correct Answer: B**

*Explanation: HIV infection progresses from asymptomatic (Stage 1) to mild symptoms (Stage 2) to advanced symptoms (Stage 3) to severe symptoms (Stage 4).*

**48. Which of the following would be affected if the thyroid gland is not functioning properly?**

(A) Blood sugar
(B) Blood pressure
(C) Metabolism
(D) Oxygen transport

**Correct Answer: C**

*Explanation: The thyroid gland produces thyroxin, which regulates basic metabolism.*

**49. A patient has a condition where the adrenal medulla is not functioning properly. What is the most likely effect?**

(A) Loss of balance
(B) Loss of memory
(C) Loss of vision
(D) Reduced ability to respond to stress

**Correct Answer: D**

*Explanation: The adrenal medulla produces adrenaline and nor-adrenaline, which prepare the body for emergencies.*

**50. Which of the following statements about penicillin is correct?**

(A) It was discovered by Alexander Fleming
(B) It was discovered by Louis Pasteur
(C) It is effective against viruses
(D) It is a synthetic antibiotic

**Correct Answer: A**

*Explanation: The discovery of penicillin is attributed to Alexander Fleming in 1928.*

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# Biology Grade 10 — Chapter 9

Immunity

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. What is the body's ability to resist or combat infections, diseases, and foreign substances called?**

(A) Immunity
(B) Allergy
(C) Infection
(D) Inflammation

**Correct Answer: A**

*Explanation: Immunity refers to the body's ability to resist or combat infections, diseases, and foreign substances.*

**2. Which organ produces B-cells and T-cells?**

(A) Liver
(B) Bone marrow
(C) Spleen
(D) Thymus

**Correct Answer: B**

*Explanation: B-cells and T-cells are produced in the bone marrow.*

**3. Which organ is responsible for T-cell maturation?**

(A) Bone marrow
(B) Spleen
(C) Thymus
(D) Liver

**Correct Answer: C**

*Explanation: The thymus is responsible for T-cell maturation.*

**4. Which organ filters blood and fights blood infections?**

(A) Liver
(B) Thymus
(C) Bone marrow
(D) Spleen

**Correct Answer: D**

*Explanation: Spleen — this correctly answers the question.*

**5. Which of the following is the largest organ of the body?**

(A) Skin
(B) Liver
(C) Spleen
(D) Thymus

**Correct Answer: A**

*Explanation: The skin is the largest organ of the body and plays a key role in the first line of defence.*

**6. Which cells are responsible for phagocytosis?**

(A) Basophils
(B) Neutrophils
(C) Eosinophils
(D) Lymphocytes

**Correct Answer: B**

*Explanation: Neutrophils — this correctly answers the question.*

**7. Which cells release histamine during allergic reactions?**

(A) Neutrophils
(B) Eosinophils
(C) Basophils
(D) Monocytes

**Correct Answer: C**

*Explanation: Basophils — this correctly answers the question.*

**8. Which cells are involved in the control of allergic reactions?**

(A) Neutrophils
(B) Basophils
(C) Monocytes
(D) Eosinophils

**Correct Answer: D**

*Explanation: Eosinophils are involved in the control of allergic reactions.*

**9. Which cells are the largest type of white blood cells?**

(A) Monocytes
(B) Neutrophils
(C) Lymphocytes
(D) Basophils

**Correct Answer: A**

*Explanation: Monocytes are the largest type of white blood cells.*

**10. Which cells produce antibodies?**

(A) T cells
(B) B cells
(C) Neutrophils
(D) Macrophages

**Correct Answer: B**

*Explanation: B cells — this correctly answers the question.*

**11. Which cells directly destroy virus-infected cells and cancerous cells?**

(A) B cells
(B) Neutrophils
(C) T cells
(D) Basophils

**Correct Answer: C**

*Explanation: T lymphocytes directly destroy any cell that can be harmful e.g., virus infected cells and cancerous cells.*

**12. What is the first line of defence?**

(A) Phagocytes and inflammation
(B) B cells and T cells
(C) Antibodies and memory cells
(D) Skin and mucous membranes

**Correct Answer: D**

*Explanation: The external barriers of our body (skin and mucous membranes) serve as the first line of defence against pathogens.*

**13. What is the third line of defence called?**

(A) Adaptive immunity
(B) Innate immunity
(C) Non-specific immunity

(D) First line of defence

**Correct Answer: A**

*Explanation: The third line of defence is also called adaptive or acquired immune system.*

**14. What is a substance that triggers an allergic reaction called?**

(A) Antibody
(B) Allergen
(C) Antigen
(D) Pathogen

**Correct Answer: B**

*Explanation: An allergen is a harmless substance that triggers an allergic reaction.*

**15. What is a severe, life-threatening allergic reaction called?**

(A) Allergy
(B) Asthma
(C) Anaphylaxis
(D) Eczema

**Correct Answer: C**

*Explanation: Anaphylaxis is a severe, life-threatening allergic reaction.*

**16. Which of the following is NOT a role of the immune system?**

(A) Recognition of foreign antigen
(B) Elimination of pathogens
(C) Memory
(D) Production of insulin

**Correct Answer: D**

*Explanation: Insulin is produced by the pancreas, not the immune system.*

**17. What is the function of macrophages?**

(A) Phagocytosis and antigen presentation
(B) Produce antibodies
(C) Release histamine
(D) Destroy infected cells

**Correct Answer: A**

*Explanation: Macrophages are involved in detection, phagocytosis, and destruction of bacteria, and can present antigens to T cells.*

**18. What is the function of dendritic cells?**

(A) Produce antibodies
(B) Instruct T cells on what to attack
(C) Release histamine
(D) Destroy infected cells

**Correct Answer: B**

*Explanation: Dendritic cells instruct T cells on what to attack and are antigen-presenting cells.*

**19. What is the function of natural killer (NK) cells?**

(A) Produce antibodies
(B) Release histamine
(C) Destroy infected and diseased cells
(D) Present antigens

**Correct Answer: C**

*Explanation: NK cells can destroy infected and diseased cells, like cancer cells.*

**20. What is the function of plasma cells?**

(A) Instruct T cells
(B) Release histamine

(C) Destroy infected cells
(D) Produce antibodies

**Correct Answer: D**

*Explanation: Plasma cells develop from B cells and make specific type of immunoglobulin (antibodies).*

**21. What is the function of memory B cells?**

(A) Remember pathogens for future attacks
(B) Produce antibodies immediately
(C) Release histamine
(D) Destroy infected cells

**Correct Answer: A**

*Explanation: Memory B cells are long-lived and can produce that specific antibody when the same pathogen attacks in future.*

**22. What is the function of cytotoxic T cells?**

(A) Produce antibodies
(B) Kill cells infected with viruses
(C) Release histamine
(D) Present antigens

**Correct Answer: B**

*Explanation: Cytotoxic T cells are responsible for killing cells infected with viruses.*

**23. What is the function of helper T cells?**

(A) Produce antibodies
(B) Release histamine
(C) Help other T cells and B cells
(D) Destroy infected cells

**Correct Answer: C**

*Explanation: Help other T cells and B cells — this correctly answers the question.*

**24. What is the function of suppressor T cells?**

(A) Produce antibodies
(B) Release histamine
(C) Destroy infected cells
(D) Shut down the immune response

**Correct Answer: D**

*Explanation: After infection is controlled, suppressor T cells are formed to shut down the immune response.*

**25. Which of the following is a component of the first line of defence?**

(A) Both A and B
(B) Skin
(C) Mucous membranes
(D) None of the above

**Correct Answer: A**

*Explanation: Both A and B — this correctly answers the question.*

## B. Less Important / Secondary Topics

**26. Which of the following is a component of the second line of defence?**

(A) All of the above
(B) Phagocytes
(C) Inflammation
(D) Fever

**Correct Answer: A**

*Explanation: All of the above — this correctly answers the question.*

**27. What is the role of interferons?**

(A) Kill bacteria
(B) Kill viruses
(C) Kill fungi
(D) Kill parasites

**Correct Answer: B**

*Explanation: Interferons are protective proteins that kill viruses.*

**28. Which of the following is a type of vaccine?**

(A) Influenza vaccine
(B) MMR vaccine
(C) All of the above
(D) COVID-19 vaccine

**Correct Answer: C**

*Explanation: Influenza, MMR, DTaP, and COVID-19 are all examples of vaccines.*

**29. What is the first dose of a vaccine called?**

(A) Secondary immune response
(B) Tertiary immune response
(C) Booster dose
(D) Primary immune response

**Correct Answer: D**

*Explanation: Primary immune response — this correctly answers the question.*

**30. What is a booster dose of a vaccine called?**

(A) Secondary immune response
(B) Primary immune response
(C) Tertiary immune response
(D) Initial dose

**Correct Answer: A**

*Explanation: Secondary immune response — this correctly answers the question.*

**31. What is herd immunity?**

(A) Immunity of an individual
(B) Immunity of a community
(C) Immunity of animals
(D) Immunity of plants

**Correct Answer: B**

*Explanation: Herd immunity occurs when many people are vaccinated, preventing the spread of diseases in their communities.*

**32. Who developed the first vaccine?**

(A) Louis Pasteur
(B) Alexander Fleming
(C) Edward Jenner
(D) Robert Koch

**Correct Answer: C**

*Explanation: Edward Jenner — this correctly answers the question.*

**33. Which of the following is a common allergen?**

(A) Pollen
(B) Dust mites
(C) Peanuts
(D) All of the above

**Correct Answer: D**

*Explanation: All of the above — this correctly answers the question.*

**34. Which of the following is a symptom of an allergic reaction?**

(A) All of the above
(B) Sneezing
(C) Skin rash
(D) Nausea

**Correct Answer: A**

*Explanation: All of the above — this correctly answers the question.*

**35. Which type of allergy involves breathing in allergens?**

(A) Ingestion allergy
(B) Inhalation allergy
(C) Skin contact allergy
(D) Injection allergy

**Correct Answer: B**

*Explanation: Inhalation allergies are caused by airborne and pet allergens that cause respiratory issues on inhalation.*

**36. A patient has a condition where the thymus is not functioning properly. What is the most likely effect?**

(A) Reduced B cell maturation
(B) Reduced antibody production
(C) Reduced T cell maturation
(D) Reduced phagocytosis

**Correct Answer: C**

*Explanation: The thymus is responsible for T-cell maturation. Dysfunction would reduce T cell maturation.*

**37. Which of the following would be affected if the bone marrow is damaged?**

(A) Maturation of T cells
(B) Filtration of blood
(C) Production of bile
(D) Production of blood cells

**Correct Answer: D**

*Explanation: Production of blood cells — this correctly answers the question.*

**38. A patient has a condition where the spleen is removed. What is the most likely effect?**

(A) Reduced filtration of blood
(B) Reduced production of antibodies
(C) Reduced T cell maturation
(D) Reduced production of bile

**Correct Answer: A**

*Explanation: Reduced filtration of blood — this correctly answers the question.*

**39. Which of the following is the correct sequence of the lines of defence?**

(A) Third line → Second line → First line
(B) First line → Second line → Third line
(C) Second line → First line → Third line
(D) First line → Third line → Second line

**Correct Answer: B**

*Explanation: First line → Second line → Third line — this correctly answers the question.*

**40. A patient has a condition where the B cells are not functioning properly. What is the most likely effect?**

(A) Reduced T cell maturation
(B) Reduced phagocytosis

(C) Reduced antibody production
(D) Reduced inflammation

**Correct Answer: C**

*Explanation: Reduced antibody production — this correctly answers the question.*

**41. Which of the following would increase the risk of infection?**

(A) Vaccination
(B) Healthy diet
(C) Regular exercise
(D) Immunodeficiency

**Correct Answer: D**

*Explanation: Immunodeficiency — this correctly answers the question.*

**42. A patient has a condition where the mucous membranes are damaged. What is the most likely effect?**

(A) Increased entry of pathogens
(B) Reduced entry of pathogens
(C) Increased antibody production
(D) Reduced T cell maturation

**Correct Answer: A**

*Explanation: Mucous membranes are part of the first line of defence. Damage would increase the entry of pathogens.*

**43. Which of the following is a function of the immune system?**

(A) Recognition of foreign antigens
(B) All of the above
(C) Memory
(D) Cancer prevention

**Correct Answer: B**

*Explanation: All of the above — this correctly answers the question.*

**44. A patient has a condition where the skin is damaged. What is the most likely effect?**

(A) Reduced entry of pathogens
(B) Increased antibody production
(C) Increased entry of pathogens
(D) Reduced T cell maturation

**Correct Answer: C**

*Explanation: The skin is a physical barrier and part of the first line of defence. Damage would increase the entry of pathogens.*

**45. Which of the following is the correct sequence of immune response?**

(A) Activation → Recognition → Elimination → Memory
(B) Elimination → Recognition → Activation → Memory
(C) Memory → Recognition → Activation → Elimination
(D) Recognition → Activation → Elimination → Memory

**Correct Answer: D**

*Explanation: The immune response involves recognition of the pathogen, activation of immune cells, elimination of the pathogen, and memory for future responses.*

**46. A patient has a condition where the complement proteins are deficient. What is the most likely effect?**

(A) Reduced ability to kill bacteria
(B) Reduced antibody production
(C) Reduced T cell maturation
(D) Reduced phagocytosis

**Correct Answer: A**

*Explanation: Reduced ability to kill bacteria — this correctly answers the question.*

**47. Which of the following would be affected if the lymph nodes are removed?**

(A) Production of antibodies
(B) Filtration of lymph
(C) T cell maturation
(D) Production of bile

**Correct Answer: B**

*Explanation: Filtration of lymph — this correctly answers the question.*

**48. Which of the following is the correct sequence of the stages of an allergic reaction?**

(A) Sensitization → Exposure → Re-exposure → Reaction
(B) Reaction → Exposure → Sensitization → Re-exposure
(C) Exposure → Sensitization → Re-exposure → Reaction
(D) Exposure → Reaction → Sensitization → Re-exposure

**Correct Answer: C**

*Explanation: An allergic reaction involves initial exposure (sensitization), followed by re-exposure, which triggers the allergic reaction.*

**49. A patient has a condition where the immune system attacks the body's own tissues. What is the most likely diagnosis?**

(A) Immunodeficiency
(B) Allergy
(C) Infection
(D) Autoimmune disease

**Correct Answer: D**

*Explanation: Autoimmune diseases occur when the immune system attacks the body's own tissues.*

**50. Which of the following is a function of memory cells?**

(A) Provide long-lasting immunity
(B) Produce antibodies immediately
(C) Release histamine
(D) Destroy infected cells

**Correct Answer: A**

*Explanation: Memory B and T cells are long-lived and provide long-lasting immunity by responding rapidly on re-exposure to the same pathogen.*

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# Biology Grade 10 — Chapter 10

Biotechnology

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. What is the use of living organisms or their processes and products for the welfare of mankind called?**

(A) Biotechnology
(B) Technology
(C) Genetic engineering
(D) Microbiology

**Correct Answer: A**

*Explanation: Biotechnology is defined as the "use of living organisms or their processes and products for the welfare of mankind.".*

**2. Which microorganism is used to raise bread dough?**

(A) Bacteria
(B) Yeast
(C) Virus
(D) Algae

**Correct Answer: B**

*Explanation: Yeast is used to raise bread dough and to prepare alcoholic drinks by alcoholic fermentation.*

**3. Which of the following is a traditional biotechnology product?**

(A) Insulin
(B) GM crops
(C) Yogurt
(D) Gene therapy

**Correct Answer: C**

*Explanation: Yogurt is a traditional biotechnology product made by lactic acid fermentation.*

**4. What is the term for the use of living organisms to clean up pollution?**

(A) Fermentation
(B) Genetic engineering
(C) Aquaculture
(D) Bioremediation

**Correct Answer: D**

*Explanation: Bioremediation is the process of using living organisms to clean up the environment contaminated with pollutants.*

**5. Which century has been termed as the "Century of Biology"?**

(A) 21st century
(B) 19th century
(C) 20th century
(D) 18th century

**Correct Answer: A**

*Explanation: Modern biotechnology is one of the fastest growing areas of science; hence this century has rightly been termed as Century of Biology.*

**6. Which of the following is a GM crop grown in Pakistan?**

(A) Bt cotton

(B) All of the above
(C) GM wheat
(D) GM sugarcane

**Correct Answer: B**

*Explanation: Bt cotton, GM wheat, and GM sugarcane are all GM crops developed and grown in Pakistan.*

**7. What is the gene responsible for pest resistance in Bt cotton?**

(A) AVP1 gene
(B) CP4-epsps gene
(C) cry gene
(D) myostatin gene

**Correct Answer: C**

*Explanation: The 'cry' gene responsible for pest resistance is obtained from Bacillus thuringiensis and transferred to cotton plant.*

**8. Which of the following is an example of medical biotechnology?**

(A) Bt cotton
(B) Bio-fertilizer
(C) Bioremediation
(D) Insulin production

**Correct Answer: D**

*Explanation: Medical biotechnology is used for the production of insulin, vaccines, and other biological drugs.*

**9. Which hormone is used to treat diabetes?**

(A) Insulin
(B) Thyroxin
(C) Adrenaline
(D) Glucagon

**Correct Answer: A**

*Explanation: Insulin is used for the treatment of diabetes.*

**10. What is the process of using marine organisms for human welfare called?**

(A) Green biotechnology
(B) Blue biotechnology
(C) Red biotechnology
(D) White biotechnology

**Correct Answer: B**

*Explanation: Marine biotechnology is also known as blue biotechnology.*

**11. Which of the following is a marine biotechnology product?**

(A) Insulin
(B) Bt cotton
(C) Ziconotide
(D) Bio-fertilizer

**Correct Answer: C**

*Explanation: Ziconotide is a drug derived from the venom of cone snail, used for chronic severe pain.*

**12. What is the process of using microorganisms to produce useful products called?**

(A) Bioremediation
(B) Genetic engineering
(C) Aquaculture
(D) Fermentation

**Correct Answer: D**

*Explanation: Fermentation is the use of microorganisms to produce useful products like yogurt, cheese, and alcohol.*

**13. Which of the following is a type of genetic editing technique?**

(A) All of the above
(B) CRISPR-Cas9
(C) TALENs
(D) ZFNs

**Correct Answer: A**

*Explanation: CRISPR-Cas9, TALENs, and ZFNs are all genetic editing techniques.*

**14. What is the application of biotechnology to agriculture called?**

(A) Red biotechnology
(B) Green biotechnology
(C) Blue biotechnology
(D) White biotechnology

**Correct Answer: B**

*Explanation: Agricultural biotechnology is also known as green biotechnology.*

**15. What is the application of biotechnology to medicine called?**

(A) Green biotechnology
(B) Blue biotechnology
(C) Red biotechnology
(D) White biotechnology

**Correct Answer: C**

*Explanation: Medical biotechnology is also known as red biotechnology.*

**16. Which of the following is a benefit of GM crops?**

(A) Pest resistance
(B) Drought tolerance
(C) Higher yield
(D) All of the above

**Correct Answer: D**

*Explanation: GM crops are developed for pest resistance, drought tolerance, and higher yield.*

**17. Which of the following is a bio-fortified crop developed in Pakistan?**

(A) Zinc wheat
(B) Bt cotton
(C) GM sugarcane
(D) GM tomato

**Correct Answer: A**

*Explanation: Zinc wheat — this correctly answers the question.*

**18. Which of the following is a benefit of bio-fortification?**

(A) Increased vitamin content
(B) All of the above
(C) Increased mineral content
(D) Improved nutrition

**Correct Answer: B**

*Explanation: All of the above — this correctly answers the question.*

**19. What is the advantage of using biopesticides?**

(A) Increased crop yield
(B) Reduced pest resistance
(C) Reduced environmental pollution
(D) All of the above

**Correct Answer: C**

*Explanation: Reduced environmental pollution — this correctly answers the question.*

**20. Which of the following is a benefit of medical biotechnology in diabetes?**

(A) Continuous glucose monitoring
(B) Insulin production
(C) Artificial pancreas
(D) All of the above

**Correct Answer: D**

*Explanation: All of the above — this correctly answers the question.*

**21. What is the function of the artificial pancreas?**

(A) Both A and B
(B) Monitor blood sugar
(C) Deliver insulin automatically
(D) None of the above

**Correct Answer: A**

*Explanation: Both A and B — this correctly answers the question.*

**22. Which of the following is a biomarker for breast cancer?**

(A) CA125
(B) HER2/neu
(C) BRCA1
(D) All of the above

**Correct Answer: B**

*Explanation: Overproduction of HER2/neu protein is related to aggressive nature of breast cancer.*

**23. Which of the following is a biomarker for ovarian and lung cancer?**

(A) HER2/neu
(B) BRCA1
(C) CA125
(D) All of the above

**Correct Answer: C**

*Explanation: CA125 protein is a tumor marker for ovarian and lung cancer.*

**24. What is the function of BRCA1 and BRCA2 genes?**

(A) Promote cell division
(B) Produce antibodies
(C) Digest food
(D) Repair DNA damage

**Correct Answer: D**

*Explanation: BRCA1 and BRCA2 genes produce proteins that help in repair of damage to DNA.*

**25. What is the advantage of targeted cancer therapies?**

(A) All of the above
(B) Specifically target cancer cells
(C) Minimize damage to healthy tissues
(D) Allow higher doses of anticancer drugs

**Correct Answer: A**

*Explanation: All of the above — this correctly answers the question.*

## B. Less Important / Secondary Topics

**26. Which of the following is an innovative tool for cancer treatment?**

(A) All of the above
(B) Liquid biopsy
(C) Next-Generation Sequencing
(D) Monoclonal antibodies

**Correct Answer: A**

*Explanation: Liquid biopsy, NGS, monoclonal antibodies, immunotherapy, gene knockdown/knockout, cancer vaccines, nanoparticles, and AI are innovative tools for cancer treatment.*

**27. What is gene knockdown?**

(A) Complete removal of a gene
(B) Temporary suppression of gene expression
(C) Permanent inactivation of a gene
(D) Insertion of a new gene

**Correct Answer: B**

*Explanation: Gene knockdown reduces the expression of a specific gene temporarily by interfering with the gene's mRNA.*

**28. What is gene knockout?**

(A) Temporary suppression of gene expression
(B) Insertion of a new gene
(C) Complete removal or inactivation of a gene
(D) Duplication of a gene

**Correct Answer: C**

*Explanation: Gene knockout completely inactivates or removes the gene from the genome.*

**29. Which of the following is a benefit of marine biotechnology?**

(A) New pharmaceutical drugs
(B) Cosmetics
(C) Biofuels
(D) All of the above

**Correct Answer: D**

*Explanation: All of the above — this correctly answers the question.*

**30. Which of the following is a benefit of bioremediation?**

(A) All of the above
(B) Natural process
(C) Cost-effective
(D) Environmentally friendly

**Correct Answer: A**

*Explanation: Bioremediation is natural, cost-effective, environmentally friendly, and sustainable.*

**31. Which of the following is an example of bioremediation?**

(A) Oil spill cleanup
(B) All of the above
(C) Sewerage water treatment
(D) Heavy metal removal

**Correct Answer: B**

*Explanation: Bioremediation is used for oil spill cleanup, sewerage water treatment, and heavy metal removal.*

**32. What is industrial biotechnology also called?**

(A) Green biotechnology
(B) Red biotechnology
(C) White biotechnology
(D) Blue biotechnology

**Correct Answer: C**

*Explanation: Industrial biotechnology is also called white biotechnology.*

**33. Which of the following is an application of industrial biotechnology?**

(A) Food and beverage industry
(B) Biopharmaceuticals
(C) Biofuels

(D) All of the above

**Correct Answer: D**

*Explanation: Industrial biotechnology is applied in food and beverage industry, biopharmaceuticals, agriculture, chemicals, biofuels, and bioremediation.*

**34. What is the advantage of industrial biotechnology over traditional chemical industry?**

(A) All of the above
(B) Uses renewable raw materials
(C) Environmentally friendly
(D) Sustainable

**Correct Answer: A**

*Explanation: Industrial biotechnology uses renewable raw materials, is environmentally friendly, and sustainable.*

**35. Which enzyme is used in cheese production?**

(A) Amylase
(B) Rennet
(C) Lipase
(D) Protease

**Correct Answer: B**

*Explanation: Rennet — this correctly answers the question.*

**36. Which of the following would be affected if the cry gene is inserted into a cotton plant?**

(A) Drought tolerance
(B) Herbicide resistance
(C) Pest resistance
(D) Nutritional content

**Correct Answer: C**

*Explanation: The cry gene is responsible for pest resistance in Bt cotton.*

**37. A patient has a condition where the pancreas does not produce enough insulin. What is the most likely treatment using biotechnology?**

(A) Gene therapy
(B) Stem cell therapy
(C) All of the above
(D) Insulin injections

**Correct Answer: D**

*Explanation: Insulin produced through recombinant DNA technology is used for the treatment of diabetes.*

**38. Which of the following would be affected if the BRCA1 gene is mutated?**

(A) DNA repair
(B) Cell division
(C) Antibody production
(D) Digestion

**Correct Answer: A**

*Explanation: BRCA1 is a tumor suppressor gene that produces proteins which help in repair of damage to DNA.*

**39. A patient has a condition where the cancer cells are resistant to chemotherapy. What is the most likely approach using biotechnology?**

(A) Gene editing to alter resistance genes
(B) All of the above
(C) Targeted therapy
(D) Immunotherapy

**Correct Answer: B**

*Explanation: Gene editing, targeted therapy, and immunotherapy are all biotechnology approaches for cancer treatment.*

**40. Which of the following is the correct sequence of insulin production using recombinant DNA technology?**

(A) Insertion into plasmid → Isolation of insulin gene → Introduction into bacteria → Production of insulin
(B) Introduction into bacteria → Isolation of insulin gene → Insertion into plasmid → Production of insulin
(C) Isolation of insulin gene → Insertion into plasmid → Introduction into bacteria → Production of insulin
(D) Production of insulin → Isolation of insulin gene → Insertion into plasmid → Introduction into bacteria

**Correct Answer: C**

*Explanation: Isolation of insulin gene → Insertion into plasmid → Introduction into bacteria → Production of insulin — this correctly answers the question.*

**41. Which of the following is a potential advantage of genetic editing in agriculture?**

(A) Disease resistance
(B) Pest resistance
(C) Drought tolerance
(D) All of the above

**Correct Answer: D**

*Explanation: Genetic editing can develop disease resistance, pest resistance, and drought tolerance in crops.*

**42. Which of the following is a potential advantage of genetic editing in medicine?**

(A) All of the above
(B) Managing genetic diseases
(C) Cancer therapy
(D) Viral resistance

**Correct Answer: A**

*Explanation: Genetic editing can manage genetic diseases, treat cancer, and develop viral resistance.*

**43. Which of the following is a bioethical concern related to gene editing?**

(A) Compromised safety
(B) All of the above
(C) Unequal chances for humanity
(D) Unimaginable consequences

**Correct Answer: B**

*Explanation: Bioethical concerns related to gene editing include compromised safety, unequal chances for humanity, and unimaginable consequences.*

**44. Which of the following is a marine enzyme used in industry?**

(A) α-amylase
(B) β-Agarase
(C) All of the above
(D) Xylanase

**Correct Answer: C**

*Explanation: α-amylase, β-Agarase, and Xylanase are marine enzymes used in industry.*

**45. Which of the following is a benefit of marine algae in biofuel production?**

(A) Produce large amount of lipids
(B) Grow in saline water
(C) Reduce competition for freshwater
(D) All of the above

**Correct Answer: D**

*Explanation: Marine algae produce lipids for biodiesel, grow in saline water, and reduce competition for freshwater resources.*

**46. Which of the following is a mechanism of bioremediation?**

(A) All of the above
(B) Microorganisms utilize contaminants as food and energy

(C) Microorganisms convert contaminants into water and harmless gases
(D) Conditions for growth of microbes are optimized

**Correct Answer: A**

*Explanation: Bioremediation involves microorganisms utilizing contaminants as food, converting them into harmless products, and optimizing conditions for growth.*

**47. Which of the following is an example of bioremediation in Pakistan?**

(A) Oil spill cleanup at Karachi seaport
(B) All of the above
(C) Sewerage water treatment in Lahore
(D) Heavy metal removal

**Correct Answer: B**

*Explanation: Bioremediation has been used for oil spill cleanup at Karachi seaport, sewerage water treatment in Lahore, and heavy metal removal.*

**48. Which of the following is a major component of industrial biotechnology?**

(A) Microorganisms
(B) Enzymes
(C) All of the above
(D) Genetic engineering

**Correct Answer: C**

*Explanation: All of the above — this correctly answers the question.*

**49. Which of the following is the correct sequence of genetic editing using CRISPR-Cas9?**

(A) Cas9 cuts DNA → Guide RNA directs Cas9 to target site → DNA is repaired or modified
(B) DNA is repaired or modified → Guide RNA directs Cas9 to target site → Cas9 cuts DNA
(C) Guide RNA directs Cas9 to target site → DNA is repaired or modified → Cas9 cuts DNA
(D) Guide RNA directs Cas9 to target site → Cas9 cuts DNA → DNA is repaired or modified

**Correct Answer: D**

*Explanation: In CRISPR-Cas9, guide RNA directs Cas9 to the target site, Cas9 cuts the DNA, and the DNA is repaired or modified.*

**50. Which of the following is a benefit of using nanoparticles in cancer treatment?**

(A) All of the above
(B) Deliver drugs directly to cancer cells
(C) Increase effectiveness of chemotherapy
(D) Reduce damage to healthy cells

**Correct Answer: A**

*Explanation: All of the above — this correctly answers the question.*

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# Biology Grade 10 — Chapter 11

Biostatistics and Data Analysis

by Public Library

*Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.*

## A. Important / Main Topics

**1. What is the application of statistical methods to biological, medical, and health sciences called?**

(A) Biostatistics
(B) Biotechnology
(C) Biometry
(D) Biophysics

**Correct Answer: A**

*Explanation: Biostatistics is the application of statistical methods and principles to analyse and interpret the findings of biological, medical and health sciences.*

**2. What is a single value calculated to represent the whole data called?**

(A) Median
(B) Average
(C) Mode
(D) Range

**Correct Answer: B**

*Explanation: Average is a single value which is calculated to represent the whole data.*

**3. What is the sum of all values divided by the total number of values called?**

(A) Median
(B) Mode
(C) Mean
(D) Range

**Correct Answer: C**

*Explanation: Mean is the sum of all the values of data set divided by the total number of values in the data set.*

**4. What is the middle value in a dataset arranged in order called?**

(A) Mean
(B) Mode
(C) Range
(D) Median

**Correct Answer: D**

*Explanation: The median is the middle value in a dataset that is arranged in ascending or descending order of magnitude.*

**5. What is the most frequently occurring value in a dataset called?**

(A) Mode
(B) Mean
(C) Median
(D) Range

**Correct Answer: A**

*Explanation: The mode is the value in a dataset that appears maximum number of times.*

**6. What is the symbol for mean?**

(A) tildex
(B) barx
(C) hatx

(D) x

**Correct Answer: B**

*Explanation: Barx — this correctly answers the question.*

**7. What is the symbol for median?**

(A) barx
(B) hatx
(C) tildex
(D) x

**Correct Answer: C**

*Explanation: The median is denoted by tildex (x tilde).*

**8. What is the symbol for mode?**

(A) barx
(B) tildex
(C) x
(D) hatx

**Correct Answer: D**

*Explanation: The mode is denoted by hatx (x-hat).*

**9. What is the formula for mean of ungrouped data?**

(A) barx = fracsum xn
(B) barx = fracsum fxsum f
(C) tildex = ≤ft(fracn+12right)th
(D) hatx = l + frac(f_m - f□) × h(f_m - f□) + (f_m - f□)

**Correct Answer: A**

*Explanation: The formula for mean of ungrouped data is barx = fracsum xn.*

**10. What is the formula for mean of grouped data?**

(A) barx = fracsum xn
(B) barx = fracsum fxsum f
(C) tildex = ≤ft(fracn+12right)th
(D) hatx = l + frac(f_m - f□) × h(f_m - f□) + (f_m - f□)

**Correct Answer: B**

*Explanation: The formula for mean of grouped data is barx = fracsum fxsum f.*

**11. What is a graph that uses bars of equal width but variable length called?**

(A) Pie chart
(B) Line graph
(C) Bar chart
(D) Histogram

**Correct Answer: C**

*Explanation: A bar chart uses bars of equal width but variable length (or height) to represent data.*

**12. Which axis is horizontal in a bar chart?**

(A) Y-axis
(B) Z-axis
(C) None of the above
(D) X-axis

**Correct Answer: D**

*Explanation: The horizontal line is the X-axis in a bar chart.*

**13. Which axis is vertical in a bar chart?**

(A) Y-axis
(B) X-axis
(C) Z-axis

(D) None of the above

**Correct Answer: A**

*Explanation: The vertical line is the Y-axis in a bar chart.*

**14. What does a bar chart represent?**

(A) Two characteristics of data
(B) One characteristic of data
(C) Three characteristics of data
(D) All of the above

**Correct Answer: B**

*Explanation: One characteristic of data — this correctly answers the question.*

**15. What does the height of a bar represent?**

(A) Frequency
(B) Percentage
(C) Magnitude of a quantity
(D) Average

**Correct Answer: C**

*Explanation: Magnitude of a quantity — this correctly answers the question.*

**16. Which measure of central tendency is affected by extreme values?**

(A) Median
(B) Mode
(C) All of the above
(D) Mean

**Correct Answer: D**

*Explanation: The mean is affected by extreme values (outliers), while the median and mode are not.*

**17. Which measure of central tendency is NOT affected by extreme values?**

(A) Both B and C
(B) Mean
(C) Median
(D) Mode

**Correct Answer: A**

*Explanation: Both median and mode are not affected by extreme values.*

**18. What is the median of 3, 5, 7, 9, 11?**

(A) 5
(B) 7
(C) 9
(D) 11

**Correct Answer: B**

*Explanation: The median of 3, 5, 7, 9, 11 is the middle value, which is 7.*

**19. What is the median of 3, 5, 7, 9?**

(A) 5
(B) 7
(C) 6
(D) 8

**Correct Answer: C**

*Explanation: The median of 3, 5, 7, 9 is the average of the two middle values (5 + 7) / 2 = 6.*

**20. What is the mode of 3, 5, 5, 6, 9, 9, 10, 12?**

(A) 5
(B) 9
(C) No mode

(D) Both 5 and 9

**Correct Answer: D**

*Explanation: Both 5 and 9 appear most frequently (2 times each), so the mode is 5 and 9 (bimodal).*

**21. What is the mode of 3, 5, 6, 6, 9, 10, 9, 6, 6?**

(A) 6
(B) 3
(C) 5
(D) 9

**Correct Answer: A**

*Explanation: 6 — this correctly answers the question.*

**22. What is the mean of 2, 4, 6, 8?**

(A) 4
(B) 5
(C) 6
(D) 7

**Correct Answer: B**

*Explanation: 5 — this correctly answers the question.*

**23. What is the mean of 10, 20, 30, 40, 50?**

(A) 20
(B) 25
(C) 30
(D) 35

**Correct Answer: C**

*Explanation: 30 — this correctly answers the question.*

**24. Which of the following is NOT a type of average?**

(A) Mean
(B) Median
(C) Mode
(D) Range

**Correct Answer: D**

*Explanation: Range is a measure of dispersion, not a measure of central tendency (average).*

**25. What is the first step in sketching a bar chart?**

(A) Take graph paper
(B) Draw the bars
(C) Label the axes
(D) Choose a scale

**Correct Answer: A**

*Explanation: The first step in sketching a bar chart is to take graph paper with sui.*

## B. Less Important / Secondary Topics

**26. What is the first step in biostatistics studies?**

(A) Identification of problem
(B) Designing experiments
(C) Collecting data
(D) Interpreting results

**Correct Answer: A**

*Explanation: Identification of problem is the first step in biostatistics studies.*

**27. Which of the following is a use of biostatistics?**

(A) Agriculture

(B) All of the above
(C) Medical research
(D) Epidemiology

**Correct Answer: B**

*Explanation: Biostatistics is used in agriculture, medical research, epidemiology, public health, genetic diseases, pollution, and survival analysis.*

**28. What is the use of biostatistics in epidemiology?**

(A) Monitoring disease spread
(B) Identifying risk factors
(C) All of the above
(D) Controlling outbreaks

**Correct Answer: C**

*Explanation: All of the above — this correctly answers the question.*

**29. What is the use of biostatistics in survival analysis?**

(A) Predicting survival rate
(B) Estimating life expectancy
(C) Assessing treatment success
(D) All of the above

**Correct Answer: D**

*Explanation: Biostatistics is used to predict survival rate, estimate life expectancy, and assess treatment success.*

**30. What is the formula for median of ungrouped data with odd number of values?**

(A) ≤ft(fracn+12right)th value
(B) frac≤ft(fracn2right)th + ≤ft(fracn2 + 1right)th2
(C) fracsum xn
(D) fracsum fxsum f

**Correct Answer: A**

*Explanation: The formula for median of ungrouped data with odd number of values is ≤ft(fracn+12right)th value.*

**31. What is the formula for median of ungrouped data with even number of values?**

(A) ≤ft(fracn+12right)th value
(B) frac≤ft(fracn2right)th + ≤ft(fracn2 + 1right)th2
(C) fracsum xn
(D) fracsum fxsum f

**Correct Answer: B**

*Explanation: The formula for median of ungrouped data with even number of values is the average of the two middle values.*

**32. What is the formula for mode of grouped data?**

(A) barx = fracsum xn
(B) barx = fracsum fxsum f
(C) hatx = l + frac(f_m - f□) × h(f_m - f□) + (f_m - f□)
(D) tildex = ≤ft(fracn+12right)th

**Correct Answer: C**

*Explanation: The formula for mode of grouped data is hatx = l + frac(f_m - f□) × h(f_m - f□) + (f_m - f□).*

**33. What is the advantage of median over mean?**

(A) It is easier to calculate
(B) It uses all data values
(C) It is more accurate
(D) It is not affected by extreme values

**Correct Answer: D**

*Explanation: The median is not affected by abnormally large and small values in the dataset.*

**34. What is the disadvantage of mode?**

(A) All of the above
(B) It may not exist
(C) It may be multiple
(D) It may not be representative

**Correct Answer: A**

*Explanation: The mode may not exist (amodal), may be multiple (bimodal/multimodal), and may not be representative if data is spread out.*

**35. What is the disadvantage of median?**

(A) It cannot be used for further statistical analysis
(B) All of the above
(C) It may not be in the dataset
(D) It cannot be used for specific values

**Correct Answer: B**

*Explanation: The median cannot be used for further statistical analysis, may not be in the dataset, and cannot be used where specific values (e.g., weight, age) are used.*

**36. A dataset has the following values: 2, 4, 4, 4, 5, 5, 7, 9. What is the mode?**

(A) 5
(B) 4 and 5
(C) 4
(D) No mode

**Correct Answer: C**

*Explanation: 4 — this correctly answers the question.*

**37. A dataset has the following values: 10, 20, 30, 40, 50, 60. What is the median?**

(A) 30
(B) 40
(C) 45
(D) 35

**Correct Answer: D**

*Explanation: The median is the average of the two middle values (30 + 40) / 2 = 35.*

**38. A dataset has the following values: 5, 10, 15, 20, 25. What is the mean?**

(A) 15
(B) 10
(C) 20
(D) 25

**Correct Answer: A**

*Explanation: 15 — this correctly answers the question.*

**39. Which measure of central tendency would be best for a dataset with extreme values?**

(A) Mean
(B) Median
(C) Mode
(D) Range

**Correct Answer: B**

*Explanation: The median is not affected by extreme values, making it the best measure for skewed data.*

**40. A dataset has the following values: 1, 2, 2, 3, 3, 3, 4, 4, 4, 4. What is the mode?**

(A) 2
(B) 3
(C) 4
(D) No mode

**Correct Answer: C**

*Explanation: 4 — this correctly answers the question.*

**41. A dataset has the following values: 100, 200, 300, 400, 500. What is the mean?**

(A) 200
(B) 250
(C) 350
(D) 300

**Correct Answer: D**

*Explanation: 300 — this correctly answers the question.*

**42. Which of the following statements about the mean is correct?**

(A) It uses all data values
(B) It is not affected by extreme values
(C) It is always the best measure
(D) It cannot be calculated for grouped data

**Correct Answer: A**

*Explanation: The mean uses all data values in its calculation.*

**43. A dataset has the following values: 10, 20, 20, 30, 30, 30, 40. What is the mode?**

(A) 20
(B) 30
(C) 20 and 30
(D) No mode

**Correct Answer: B**

*Explanation: 30 — this correctly answers the question.*

**44. What is the median of the following dataset: 5, 10, 15, 20, 25, 30?**

(A) 15
(B) 20
(C) 17.5
(D) 22.5

**Correct Answer: C**

*Explanation: The median is the average of the two middle values (15 + 20) / 2 = 17.5.*

**45. Which of the following would be affected if the sample size is increased?**

(A) Mean
(B) Median
(C) Mode
(D) All of the above

**Correct Answer: D**

*Explanation: Increasing the sample size can affect the mean, median, and mode of the dataset.*

**46. A dataset has the following values: 2, 4, 6, 8, 10, 12, 14. What is the median?**

(A) 8
(B) 6
(C) 10
(D) 12

**Correct Answer: A**

*Explanation: The median is the middle value, which is 8.*

**47. A dataset has the following values: 3, 6, 9, 12, 15. What is the mean?**

(A) 8
(B) 9
(C) 10
(D) 11

**Correct Answer: B**

*Explanation: 9 — this correctly answers the question.*

**48. Which of the following is the correct sequence of steps in biostatistics studies?**

(A) Designing experiments → Identification of problem → Collecting and analysing data → Interpreting results → Developing new tools

(B) Collecting and analysing data → Identification of problem → Designing experiments → Interpreting results → Developing new tools

(C) Identification of problem → Designing experiments → Collecting and analysing data → Interpreting results → Developing new tools

(D) Interpreting results → Identification of problem → Designing experiments → Collecting and analysing data → Developing new tools

**Correct Answer: C**

*Explanation: The correct sequence of biostatistics studies is identification of problem, designing experiments, collecting and analysing data, interpreting results, and developing new tools.*

**49. Which of the following would be affected if the sample size is small?**

(A) Mean

(B) Median

(C) Mode

(D) All of the above

**Correct Answer: D**

*Explanation: A small sample size can affect the accuracy of the mean, median, and mode.*

**50. A dataset has the following values: 1, 1, 2, 2, 3, 3. What is the mode?**

(A) No mode

(B) 1

(C) 2

(D) 3

**Correct Answer: A**

*Explanation: All values (1, 2, and 3) appear the same number of times (2 times each), so there is no mode (amodal).*