

DPP - Daily Practice Problems

Chapter-wise Sheets

Date : Start Time : End Time :

BIOLOGY

CB16

SYLLABUS : Digestion and Absorption

Max. Marks : 180

Marking Scheme : + 4 for correct & (-1) for incorrect

Time : 60 min.

INSTRUCTIONS : This Daily Practice Problem Sheet contains 45 MCQs. For each question only one option is correct. Darken the correct circle/ bubble in the Response Grid provided on each page.

- Dark purplish gland lying on the left side of abdomen is called :
(a) liver (b) spleen
(c) gall bladder (d) appendix
- Which of the following are water soluble vitamins?
(a) B, C (b) A, D, K
(c) A, D, E, K (d) K, B, A, E
- Jaundice is a disorder of
(a) Excretory system (b) Skin and eyes
(c) Digestive system (d) Circulatory system
- Which one of the following pairs of food components in humans reaches the stomach totally undigested ?
(a) Starch and cellulose (b) Protein and starch
(c) Starch and fat (d) Fat and cellulose
- Which of following teeth are lophodont?
(a) Incisor and canine (b) Premolar and molar
(c) Canine and premolar (d) Premolar and incisor
- Oxyntic cells are located in
(a) Islets of Langerhans
(b) Gastric epithelium and secrete pepsin
(c) Kidneys and secrete renin
(d) Gastric epithelium and secrete HCl
- Continued consumption of a diet rich in butter, red meat and eggs for a long period may lead to
(a) vitamin A toxicity
(b) kidney stones
(c) hypercholesterolemia
(d) urine laden with ketone bodies
- Which one of the following is a matching pair of a substrate and its particular digestive enzyme?
(a) Starch — maltase (b) Lactose — rennin
(c) Maltose — steapsin (d) Casein — chymotrypsin

**RESPONSE
GRID**

1. (a) (b) (c) (d) 2. (a) (b) (c) (d) 3. (a) (b) (c) (d) 4. (a) (b) (c) (d) 5. (a) (b) (c) (d)
6. (a) (b) (c) (d) 7. (a) (b) (c) (d) 8. (a) (b) (c) (d)

Space for Rough Work



9. Which one of the following is a matching pair of a vitamin and the deficiency disease related with it ?
 (a) Riboflavin — beri beri
 (b) Thiamine — xerophthalmia
 (c) Niacin — pellagra
 (d) Calciferol — scurvy
10. Which one of the following pairs of the cells with their secretion is **correctly** matched?
 (a) Oxyntic cells - A secretion with pH between 2.0 and 3.0.
 (b) Alpha cells of Islets of Langerhans -Secretion that decreases blood sugar level.
 (c) Kupffer cells - A digestive enzyme that hydrolysis nucleic acids.
 (d) Sebaceous glands - A digestive enzyme that hydrolysis nucleic acids
11. 'Kwashiorkar' and 'Beri-Beri' are
 (a) communicable diseases
 (b) infectious diseases
 (c) deficiency diseases
 (d) None of the above
12. First milk produced after child birth is called
 (a) sebum (b) cerumen
 (c) true milk (d) colostrum
13. Cirrhosis of liver is caused by the chronic intake of
 (a) Opium
 (b) Alcohol
 (c) Tobacco (Chewing)
 (d) Cocaine
14. The sphincter of Oddi is present between
 (a) Oesophagus and cardiac stomach
 (b) Pyloric stomach and duodenum
 (c) Hepatic duct and cystic duct
 (d) Hepatopancreatic duct and duodenum
15. The structure which prevents the entry of food into the windpipe is
 (a) Gullet (b) Glottis
 (c) Tonsil (d) Epiglottis
16. Layer of cells that secrete enamel of tooth is
 (a) Osteoblast (b) Ameloblast
 (c) Odontoblast (d) Dentoblast
17. Cow's milk is slightly yellowish in colour due to the presence of
 (a) Carotene
 (b) Riboflavin
 (c) Xanthophyll
 (d) Xanthophyll and Carotene
18. Accessory excretory organs of man are
 (a) only skin
 (b) only skin and liver
 (c) only skin and lungs
 (d) skin, lungs, liver and intestine
19. Cholecystokinin is secretion of
 (a) Duodenum that causes contraction of gall bladder
 (b) Globlet cells of ileum, stimulates secretion of succus entericus
 (c) Liver and controls secondary sex characters
 (d) Stomach that stimulates pancreas to release juice
20. Which of the following sets represents vestigial organs?
 (a) Vermiform appendix, body hair and patella
 (b) Wisdom teeth, body hair and atlas vertebra
 (c) Ear muscles, cochlea and coccyx
 (d) Vermiform appendix, ear muscles and coccyx.
21. Which part of the alimentary canal does not secrete any enzyme?
 (a) Mouth (b) Oesophagus
 (c) Stomach (d) Duodenum
22. The protein coated, water soluble fat globules are called
 (a) Chylomicrons (b) Micelles
 (c) Chyle (d) Monoglycerides
23. Where do certain symbiotic micro-organisms normally occur in human body?
 (a) Caecum
 (b) Oral lining and tongue surface
 (c) Vermiform appendix and rectum
 (d) Duodenum

RESPONSE
GRID

9. (a) (b) (c) (d) 10. (a) (b) (c) (d) 11. (a) (b) (c) (d) 12. (a) (b) (c) (d) 13. (a) (b) (c) (d)
 14. (a) (b) (c) (d) 15. (a) (b) (c) (d) 16. (a) (b) (c) (d) 17. (a) (b) (c) (d) 18. (a) (b) (c) (d)
 19. (a) (b) (c) (d) 20. (a) (b) (c) (d) 21. (a) (b) (c) (d) 22. (a) (b) (c) (d) 23. (a) (b) (c) (d)

Space for Rough Work



24. Both the crown and root of a tooth is covered by a layer of bony hard substance. It is called
 (a) enamel (b) dentine
 (c) bony socket (d) cementum
25. Which one of the following pairs of the kind of cells and their secretion is correctly matched?
 (a) Oxyntic cells—a secretion with pH between 2.0 and 3.0
 (b) Alpha cells of islets of Langerhans—secretion that decreases blood sugar level
 (c) Kupffer cell—a digestive enzyme that hydrolyses nucleic acids
 (d) Sebaceous glands—a secretion that evaporates for cooling
26. Which one of the following is the correct matching of the site of action on the given substrate, the enzyme acting upon it and the end product?
 (a) Small intestine : Proteins $\xrightarrow{\text{Pepsin}}$ Amino acids
 (b) Stomach : Fats $\xrightarrow{\text{Lipase}}$ Micelles
 (c) Duodenum : Triglycerides $\xrightarrow{\text{Trypsin}}$ Monoglycerides
 (d) Small intestine : Starch $\xrightarrow{\alpha\text{-Amylase}}$ Disaccharide (maltose)
27. Read the following four statements (i) - (iv) with certain mistakes in two of them.
 (i) Fructose is generally absorbed by simple diffusion.
 (ii) The digestive wastes, solidified into coherent faeces in the rectum initiate and endocrinal action causing an urge or desire for its removal
 (iii) The food mixes thoroughly with the acidic gastric juice of the stomach by the churning movements of its muscular wall and is called the chyme.
 (iv) The secretions of the brush border cells of the mucosa along with the secretions of the goblet cells constitute the succus entericus.
28. Which of the following dietary deficiencies will affect the functioning of enzymes in the human body most quickly?
 (a) Too few carbohydrates
 (b) Shortage of fat-soluble vitamins
 (c) Shortage of water-soluble vitamins
 (d) Insufficient variety of fats
29. Pancreatic cancer is an especially dangerous disease in people because the pancreas is
 (a) the organ that produces and stores bile.
 (b) the site of synthesis for all of the essential amino acids.
 (c) one of the organs through which food must pass on its way to the colon.
 (d) an organ in which many different kinds of digestive enzymes are manufactured
30. How does a gastrovascular cavity differ from an alimentary canal? The gastrovascular cavity
 (a) stores food but does not digest it.
 (b) is usually much larger.
 (c) has only one opening.
 (d) functions in digestion but not absorption.
31. The largest variety of digestive enzymes function in the
 (a) large intestine. (b) oral cavity.
 (c) stomach. (d) small intestine.
32. Certain amino acids are essential to the diet of animals because
 (a) they prevent overnourishment
 (b) they are cofactors and coenzymes that are required for normal physiological function.
 (c) an animal cannot directly synthesize them through the transfer of an amino group to an appropriate carbon skeleton.
 (d) animals need these substances in order to make the stored fats that are used during hibernation and migration

RESPONSE
GRID

24. (a)(b)(c)(d) 25. (a)(b)(c)(d) 26. (a)(b)(c)(d) 27. (a)(b)(c)(d) 28. (a)(b)(c)(d)
 29. (a)(b)(c)(d) 30. (a)(b)(c)(d) 31. (a)(b)(c)(d) 32. (a)(b)(c)(d)

Space for Rough Work



33. Protection of the walls of the stomach against the action of its own digestive juices
 (a) results from the presence of an anti-enzyme chemical formed by the gastric glands
 (b) results from the nervous reactions of the lining of the stomach.
 (c) is controlled by a centre in the medulla of the brain.
 (d) results from the neutralizing, buffering, and a coating mucus covering its inner surface
34. Most of the chemical digestion of food in humans is completed in the
 (a) small intestine. (b) appendix.
 (c) ascending colon (d) stomach
35. Which of the following is characteristic of the large intestine?
 (a) It has almost no bacterial populations.
 (b) It contains chyme.
 (c) It absorbs much of the water remaining in waste materials.
 (d) It is the site of most of digestion.
36. The innermost layer of the digestive tract is the
 (a) serosa membrane.
 (b) mucosa membrane.
 (c) submucosa membrane.
 (d) lumen.
37. The _____ is primarily a storage chamber within the digestive system, while the _____ reabsorbs water, ions, and generates the faeces.
 (a) buccal cavity; midgut
 (b) crop; midgut
 (c) stomach; hindgut
 (d) buccal cavity; hindgut
38. What does an increase in the secretion of insulin produce?
 (a) a decrease in glucose metabolism
 (b) a decrease in glucose permeability of cells
 (c) an increase in blood sugar level
 (d) an increase in glucose permeability of cells
39. Which function of the liver results in the production of bile pigments?
 (a) breakdown of haemoglobin
 (b) deamination of amino acids
 (c) detoxification of metabolic poisons
 (d) release of stored vitamin A
40. The centre of hunger or centre which regulates the amount of food we eat or our appetite is located in –
 (a) Medulla (b) Cerebrum
 (c) Hypothalamus (d) Alimentary canal
41. Fatty acid and glycerol are first taken up from alimentary canal by
 (a) Villi (b) Blood capillaries
 (c) Hepatic portal vein (d) Lymph vessels
42. Mammals may drink water and also get it from
 (a) Breakdown of glycogen into glucose
 (b) Secretion of saliva
 (c) Oxidation of glucose
 (d) Conversion of oxyhaemoglobin into haemoglobin
43. When a piece of bread is chewed it tastes sweet because
 (a) The sugar contents are drawn out
 (b) Saliva converts starch into maltose
 (c) It does not taste sweet
 (d) The taste buds are stimulated by chewing
44. Anxiety and eating spicy food together in an otherwise normal human, may lead to
 (a) Indigestion (b) Jaundice
 (c) Diarrhoea (d) Vomiting
45. A young infant may be feeding entirely on mother's milk which is white in colour but the stools which the infant passes out is quite yellowish. What is this yellow colour due to ?
 (a) bile pigments passed through bile juice
 (b) undigested milk protein casein
 (c) pancreatic juice poured into duodenum
 (d) intestinal juice

**RESPONSE
GRID**

- | | | | | |
|------------------|------------------|------------------|------------------|------------------|
| 33. (a)(b)(c)(d) | 34. (a)(b)(c)(d) | 35. (a)(b)(c)(d) | 36. (a)(b)(c)(d) | 37. (a)(b)(c)(d) |
| 38. (a)(b)(c)(d) | 39. (a)(b)(c)(d) | 40. (a)(b)(c)(d) | 41. (a)(b)(c)(d) | 42. (a)(b)(c)(d) |
| 43. (a)(b)(c)(d) | 44. (a)(b)(c)(d) | 45. (a)(b)(c)(d) | | |

Space for Rough Work

DAILY PRACTICE PROBLEM DPP CHAPTERWISE 16 - BIOLOGY

| | | | |
|---|----|------------------|-----|
| Total Questions | 45 | Total Marks | 180 |
| Attempted | | Correct | |
| Incorrect | | Net Score | |
| Cut-off Score | 45 | Qualifying Score | 60 |
| Success Gap = Net Score – Qualifying Score | | | |
| Net Score = (Correct × 4) – (Incorrect × 1) | | | |



HINTS & SOLUTIONS

DPP/CB16

- (b) Spleen (also known as blood bank and graveyard of RBCs) is a dark, purple gland present in the left side of abdomen against the stomach. It is internally made up of white pulp and red pulp. Its main functions are storage of blood and break down of old and senescent RBCs.
- (a) Vitamins are accessory food factors required in small amount for growth and metabolism. Vitamins are either water soluble → B, complex and vit.C or fat soluble → vit. A, D and K.
- (c) 4. (d)
- (b) Premolar and molar are lophodont teeth. Lophodont teeth with the cusps elongated to form narrow ridges. The molars in elephants and horses have cusps fused by means of intermediate masses of dentine to form ridges or lophs.
- (d)
- (c) Continued consumption of fat rich diet causes hypercholesterolemia. Hypercholesterolemia is the presence of high levels of cholesterol in the blood. High cholesterol raises risk for heart disease, heart attack, and stroke. Kidney stones are solid mass made up of tiny crystals. There are different types of kidney stones. The exact cause depends on the type of stone like, calcium stones, uric acid stone etc. Vitamin A toxicity or hypervitaminosis A is having too much of vitamin A in the body. Ketonuria is condition in which ketone bodies are present in urine. Body products excess ketone bodies as an alternate source of energy during starvation or diabetes mellitus (type 1).
- (a) Fat is mainly digested by pancreatic lipase while protein is digested by enzymes in pancreatic juice, intestinal juice and stomach.
- (c) Beri-beri is a deficiency disease caused by the lack of vitamin B₁ (Thiamine) in the diet. The deficiency of riboflavin (Vit.B₂) causes ariboflavinosis. Scurvy is the result of lack of vitamin C in the diet. Deficiency of calciferol (vitamin D) in the diet causes rickets in children and osteomalacia in adults.
- (a) Oxyntic cells or Parietal cells, are the stomach epithelium cells that secrete gastric acid and intrinsic factor. These cells secrete hydrochloric acid (HCl) which makes the gastric juice acidic (pH = 2.0-3.0). Alpha cells of islets of Langerhans secrete glucagon hormone which increase the glucose level in the blood by converting glycogen to glucose in liver cells. Kupffer's cells are specialized cells in the liver that destroy bacteria, foreign proteins, and worn-out blood cells. Sebaceous glands and microscopic glands in the skin that secrete an oily/waxy matter (called sebum) to lubricate the skin and hair of mammals.
- (c) Kwashiorkor and Beri-Beri are deficiency diseases which occur mostly in children. Kwashiorkor occurs due to deficiency of protein and Beri-Beri due to deficiency of vit-B₁ (Thiamine).
- (d) Colostrum (also known as beesting or first milk) is a form of milk produced by the mammary glands in late pregnancy and the few days after giving birth. Human and bovine colostrums are thick, sticky and yellowish. In humans, it has high concentrations of nutrients and antibodies, but it is small in quantity. Colostrum is high in carbohydrates, high in protein, high in antibodies, and low in fat (as human new borns may find fat difficult to digest). Newborns have very small digestive systems, and colostrum delivers its nutrients in a very concentrated low-volume form. It has a mild laxative effect, encouraging the passing of the baby's first stool, which is called meconium. This clears excess bilirubin, a waste product of dead red blood cells which is produced in large quantities at birth due to blood volume reduction, from the infant's body and helps to prevent jaundice.
- (b) Long term intake of alcohol causes damage to liver which is known as cirrhosis of liver with continued alcohol intake, there is destruction of hepatocytes and fibroblasts (cell which form fibres) and stimulates of collagen protein formation.
- (d) 15. (d) 16. (b) 17. (b) 18. (d) 19. (a)
- (d) 20. (d) 21. (b)
- (a) The chylomicrons are formed inside enterocytes and are absorbed in lacteals.
- (a) The caecum is a pouch-like portion of the large intestine which hosts some symbiotic micro-organism. The caecum absorbs water and salts from undigested foods before they continue on to the large intestine.
- (b) 25. (a)
- (d) In the small intestine, pancreatic juice containing an enzyme, α-amylase acts on starch and converts it into disaccharide, maltose and isomaltose and 'limit' dextrins.
$$\text{Starch} \xrightarrow[\alpha\text{-amylase}]{\text{Pancreatic}} \text{Maltose} + \text{Isomaltose} + \text{'Limit' dextrins}$$
- (a) Fructose is generally absorbed by facilitated transport. The digestive wastes, solidified into coherent faeces in the rectum initiate a neural reflex causing an urge or desire for its removal.
- (c) Many of the water-soluble vitamins play a vital role in enzyme function.
- (d) The pancreas produces a number of important digestive enzymes, without which digestion and nutrient absorption are greatly hampered.
- (c) A gastrovascular cavity has a single opening.
- (d) Enzymes that digest proteins, lipids, and carbohydrates all function in the small intestine.
- (c) Essential amino acids must be acquired through diet because an animal cannot directly synthesize all of the amino acids needed for protein
- (d) The stomach is protected from digestive enzymes and low pH by the neutralizing, buffering, and coating mucus secreted over its inner surface.
- (a) The small intestines are the site for the majority of digestion in humans.
- (c) The large intestine is the site of water and ion absorption. The large population of bacteria in the large intestine contributes vitamins that are useful to the host.
- (b) The membranes of the digestive tract are, from the inside to the outside: mucosa, submucosa, circular and longitudinal muscles, serosa.
- (c) the stomach stores food (and performs some digestion too) before passing it on to the intestines. The small intestine



(midgut) finishes tint digestion and carries out most of the nutrient absorption, while the large intestine (hindgut) reabsorbs water and ions.

38. (d) Insulin increases the rate of glucose uptake from the blood into the muscle cells by increasing the number of glucose transporters in the plasma membrane.
39. (a) The liver produces bile salts and add to the bile pigments bilirubin from the breakdown of red blood cells. The bile pigments are purely excretory.
40. (c)
41. (d) Generally, fatty acids upto a chain length of 10 carbon atoms are primarily absorbed through the blood caillaries, but those with higher chain length through lymphatic route (lymph vessels).
42. (c) Mammals may drink water and also get it from oxidation of glucose.
43. (b) Because saliva converts starch into maltose.
44. (a) Anxiety and eating spicy food together in normal healthy man can lead to indigestion which is difficulty in digestion.
45. (a) Young infant may be feeding entirely on mother's milk which is white in colour but the stools which the infant passes out is quite yellowish because bile pigments passed through bile juice. Bile pigments are any of several coloured compounds derived from porphyrin that are found in bile; principally bilirubin and biliverdin. Bile pigment is produced regularly when old red blood cells are broken down, mainly by the spleen. In some blood-disorders where the red cells are destroyed, more bile pigment is produced.