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SECTION 3: ANIMAL NUTRITION AND DIGESTION

21. Which enzyme converts proteins to polypeptides in the acidic medium of the stomach?

- A. Pepsin
- B. Trypsin
- C. Amylase
- D. Lipase

Answer: A

Detailed Explanation: Pepsin is secreted as inactive pepsinogen by the gastric glands and is activated by hydrochloric acid to digest proteins into simpler peptides.

22. A deficiency of Vitamin D in the diet of growing children results in:

- A. Rickets
- B. Scurvy
- C. Night blindness
- D. Beriberi

Answer: A

Detailed Explanation: Vitamin D is necessary for regular calcium and phosphorus absorption during bone development. Deficiency causes weak, bowed legs (rickets).

28. Which chemical reagent is used to test for the presence of reducing sugars like glucose?

- A. Benedict's solution
- B. Iodine solution
- C. Millon's reagent
- D. Biuret solution

Answer: A

Detailed Explanation: Heating glucose with Benedict's solution yields a color transition from blue to a brick-red precipitate. Iodine tests for starch; Biuret tests for protein.

29. Deamination of excess amino acids in the mammalian body takes place inside the:

- A. Liver
- B. Kidney
- C. Spleen
- D. Pancreas

Answer: A

Detailed Explanation: The liver breaks down excess toxic amino acids by stripping away the amino group to form urea, which is then filtered out by the kidneys.

30. Which organic nutrient group serves as the body's primary high-yield energy storage medium?

- A. Lipids (Fats)
- B. Carbohydrates

Answer: A

Detailed Explanation: Platelets clump at a wound site and release thromboplastin, triggering a cascade that converts soluble fibrinogen into an insoluble fibrin mesh.

33. Which blood vessel carries oxygenated blood directly from the lungs to the heart?

- A. Pulmonary vein
- B. Pulmonary artery
- C. Vena cava
- D. Hepatic vein

Answer: A

Detailed Explanation: The pulmonary vein is an exception to the rule; it transports freshly oxygenated blood from the lungs into the left atrium of the heart.

34. A person with blood group O is regarded as a universal donor because their red blood cells lack:

- A. Antigens A and B
- B. Antibodies a and b
- C. Rhesus factors
- D. Hemoglobin chains

Answer: A

Detailed Explanation: Group O blood contains no surface A or B antigens, meaning it will not trigger an immune attack when transfused into individuals of other blood types.

heterozygous phenotype that blends the two parental traits.

74. Which of the following conditions is a sex-linked genetic disorder?

- A. Haemophilia
- B. Sickle-cell anaemia
- C. Albinism
- D. Down's syndrome

Answer: A

Detailed Explanation: Haemophilia and red-green color blindness are caused by recessive alleles carried on the X chromosome, making them more common in males.

75. What is the phenotypic ratio of a Mendelian dihybrid cross in the F_2 generation?

- A. 9:3:3:1
- B. 3:1
- C. 1:2:1
- D. 1:1:1:1

Answer: A

Detailed Explanation: Crossing individuals heterozygous for two traits (e.g., $RrYy \times RrYy$) yields a characteristic 9:3:3:1 phenotypic distribution in the offspring.

76. The genetic constitution of an organism is its:

Discontinuous variations (like blood groups) fall into distinct categories.

92. The scientist who proposed the theory of evolution by natural selection was:

- A. Charles Darwin
- B. Jean-Baptiste Lamarck
- C. Gregor Mendel
- D. Louis Pasteur

Answer: A

Detailed Explanation: Charles Darwin published the theory of natural selection, stating that individuals with traits better suited to their environment are more likely to survive and reproduce.

93. Structural features that share a common evolutionary origin but perform different functions are called:

- A. Homologous structures
- B. Analogous structures
- C. Vestigial organs
- D. Atavistic features

Answer: A

Detailed Explanation: Homologous structures (e.g., the pentadactyl limb of mammals) show shared ancestry. Analogous structures (e.g., wings of birds and insects) have different origins but similar functions due to convergent evolution.