CBSE CLASS 10 BIOLOGY — PRACTICE WORKSHEET

Chapter: Life Processes (Comprehensive & HOTS Questions)

NEW LOOK CENTRAL SCHOOL, BHILWARA

Name: _____ **Class/Sec:** _____ **Roll No:** _____

Part 1: Direct Analytical & Conceptual HOTS MCQs

Q1. If a potted plant is covered with a bell jar and kept in continuous sunlight for 3 days, which process will stop first, causing eventual harm?

(a) Transpiration (b) Photosynthesis (c) Respiration (d) Water absorption

Q2. Herbivores eating grass require a significantly longer small intestine than carnivores like tigers. Why?

(a) Meat is harder to digest.

(b) Cellulose takes longer to digest, requiring extended transit time.

(c) Herbivores drink less water.

(d) Carnivores have weaker enzymes.

Q3. What happens if the mucous secretion of gastric glands is completely blocked in the human stomach?

(a) Protein digestion speeds up.

(b) The inner lining gets corroded by HCl.

(c) Fats are not emulsified.

(d) Food becomes completely alkaline.

Q4. Bile juice contains no digestive enzymes, yet it is vital for fat digestion because:

(a) It breaks proteins down.

(b) It creates an acidic medium.

(c) It emulsifies large fat globules into micro-globules, increasing surface area.

(d) It digests cellulose directly.

Q5. In Amoeba, food digestion primarily occurs inside which structure?

(a) Pseudopodia (b) Food vacuole (c) Nucleus (d) Contractile vacuole

Q6. Which segment of the human alimentary canal receives digestive juices from both the liver and the pancreas?

(a) Jejunum (b) Ileum (c) Duodenum (d) Cecum

Q7. Villi present in the inner lining of the small intestine are richly supplied with blood vessels to:

(a) Secrete digestive enzymes (b) Slow down food transit (c) Increase surface area for rapid absorption (d) Destroy harmful pathogens

Q8. During vigorous physical exercise, muscle cramps occur due to the accumulation of:

(a) Ethanol (b) Lactic acid (c) Pyruvic acid (d) Carbon dioxide

Q9. What is the correct sequence of anaerobic breakdown pathways of glucose in yeast?

(a) Glucose → Pyruvate → Lactic acid

(b) Glucose → Pyruvate → Ethanol + Carbon dioxide

(c) Glucose → Carbon dioxide + Water

(d) Glucose → Pyruvate → Water + Energy

Q10. Rings of cartilage in the human trachea ensure that:

(a) Air filters e ciently (b) The trachea does not collapse (c) Oxygen mixes rapidly with blood (d) Swallowed food moves smoothly

Q11. Why do aquatic animals breathe much faster than terrestrial organisms?

(a) Dissolved oxygen concentration in water is very low compared to air.

(b) Water contains higher levels of carbon dioxide.

(c) Their lungs are smaller.

(d) They require less energy overall.

Q12. Which structural modification maximizes gas exchange efficiency inside human lungs?

(a) Bronchi

(b) Bronchioles

(c) Alveoli

(d) Larynx

Q13. What happens to the ribs and diaphragm during exhalation?

(a) Ribs move outward, diaphragm flattens.

(b) Ribs move inward, diaphragm rises.

(c) Ribs stay stationary, diaphragm moves down.

(d) Ribs move upward, diaphragm curves downward.

Q14. Why is carbon dioxide transported more easily through blood than oxygen?

(a) It is highly soluble in plasma water.

(b) It has a higher affinity for hemoglobin than oxygen.

(c) It travels exclusively through white blood cells.

(d) It needs no carrier molecule.

Q15. Which molecule acts as the immediate energy currency for cellular processes?

(a) DNA

(b) ADP

(c) ATP

(d) NADP

Q16. The complete separation of the right and left sides of the mammalian heart is necessary to:

(a) Allow mixing of blood types

(b) Prevent mixing of oxygenated/deoxygenated blood for high efficiency

(c) Reduce pumping pressure

(d) Store extra blood volume

Q17. Which blood vessel brings oxygenated blood from the lungs back to the human heart?

(a) Vena cava

(b) Pulmonary artery

(c) Pulmonary vein

(d) Aorta

Q18. Valves are present in veins and heart chambers to ensure that:

(a) Blood flows in one direction only.

(b) Blood pressure remains constant.

(c) White blood cells escape capillaries.

(d) Heart rate is regulated.

Q19. Which statement correctly describes arteries?

(a) They have thin, elastic walls and carry blood away from the heart.

(b) They have thick, elastic walls and carry blood away under high pressure.

(c) They contain valves to prevent backflow.

(d) They carry blood back to the heart.

Q20. Translocation in plants refers to the transport of:

(a) Water and minerals via xylem

(b) Soluble products of photosynthesis via phloem

(c) Oxygen via intercellular spaces

(d) Plant hormones from roots

Q21. The driving force responsible for the upward movement of water in tall trees during the day is:

(a) Root pressure

(b) Transpiration pull

(c) Phloem osmotic pressure

(d) Gravitational force

Q22. Platelets play a critical role in the circulatory system by:

(a) Fighting bacterial infections

(b) Carrying oxygen molecules

(c) Initiating blood clotting at injury sites

(d) Regulating plasma pH levels

Q23. Lymph differs from blood because it:

(a) Contains red blood cells and platelets

(b) Lacks red blood cells and has fewer proteins

(c) Flows unidirectionally toward tissues

(d) Both (b) and (c)

Q24. The functional filtration unit of the human kidney is the:

(a) Neuron (b) Nephron (c) Alveolus (d) Ureter

Q25. During urine formation, which substances are selectively reabsorbed from the initial filtrate?

(a) Urea, excess salts, and water

(b) Glucose, amino acids, salts, and major amounts of water

(c) Creatinine and uric acid

(d) Plasma proteins and blood corpuscles

Q26. The Bowman's capsule encloses a dense cluster of capillaries known as the:

(a) Collecting duct (b) Loop of Henle (c) Glomerulus (d) Renal artery

Q27. Hemodialysis removes nitrogenous waste products from the blood primarily via:

(a) Active transport

(b) Osmosis

(c) Diffusion across a selectively permeable membrane

(d) Ultrafiltration via mechanical pressure

Q28. Which of the following is incorrect regarding plant excretion?

(a) Wastes are stored in old falling leaves.

(b) Resins and gums are stored in old xylem.

(c) Excess water is eliminated via transpiration.

(d) Plants possess specialized kidney-like organs to filter liquid waste.

Q29. The nitrogenous waste excreted primarily by human beings via urine is:

(a) Ammonia (b) Uric acid (c) Urea (d) Amino acid crystals

Q30. If the renal artery of a patient is partially blocked, what immediate physiological impact will occur?

(a) Filtration rate increases sharply.

(b) Glomerular blood pressure drops, lowering the rate of urine formation.

(c) Complete cardiac arrest.

(d) Immediate bladder rupture.

Part 2: Advanced Assertion-Reason Questions

> **Directions for Q31–Q40:** Select the appropriate option based on the codes given below:
> **(a)** Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
> **(b)** Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
> **(c)** Assertion (A) is true, but Reason (R) is false.
> **(d)** Assertion (A) is false, but Reason (R) is true.

Q31.

Assertion (A): Diffusion is insufficient to meet the oxygen requirements of multi-cellular organisms like humans.

Reason (R): All cells of a multi-cellular organism are in direct contact with the external environment.

(a) (b) (c) (d)

Q32.

Assertion (A): Ventricles of the human heart have thicker muscular walls than auricles.

Reason (R): Ventricles have to pump blood into various organs under high pressure.

(a) (b) (c) (d)

Q33.

Assertion (A): Plants have low energy needs compared to animals.

Reason (R): Plants are stationary and their body structure contains a large proportion of dead cells.

(a) (b) (c) (d)

Q34.

Assertion (A): The opening and closing of stomatal pores is governed by the turgor pressure of guard cells.

Reason (R): Water flowing into guard cells causes them to swell and curve, opening the pore.

(a) (b) (c) (d)

Q35.

Assertion (A): Lactic acid accumulation in human muscles causes cramps during sudden rigorous activity.

Reason (R): Pyruvate is converted into lactic acid when there is a shortage of oxygen inside muscle cells.

(a) (b) (c) (d)

Q36.

Assertion (A): Herbivores tend to have shorter alimentary canals than carnivores.

Reason (R): Cellulose is much easier to break down and digest than animal proteins.

(a) (b) (c) (d)

Q37.

Assertion (A): In artificial kidney dialysis, the fluid used has the same concentration of nitrogenous wastes as blood.

Reason (R): This prevents the rapid diffusion of essential toxins out of the patient's blood stream.

(a) (b) (c) (d)

Q38.

Assertion (A): Plants store certain waste products as resins and gums in old xylem tissues.

Reason (R): Plants manage waste disposal through specialized excretory nephridia.

(a) (b) (c) (d)

Q39.

Assertion (A): Pulmonary arteries carry oxygenated blood away from the heart.

Reason (R): All arteries carry blood away from the heart.

(a) (b) (c) (d)

Q40.

Assertion (A): The rate of breathing in aquatic organisms is much slower than in terrestrial organisms.

Reason (R): The amount of dissolved oxygen in water is fairly high compared to the oxygen content in air.

(a) (b) (c) (d)