CBSE CLASS X

Science (086)

QUESTION PAPER

AI-generated question paper

Code: P3HA2R **Questions: 31** **Maximum Marks: 71** **Generated: 2026-06-25 17:27**

SELECTIONS USED

Subject	Science
Lessons	5 Life Processes
Level of understanding	Exam-ready
Question selection	CBSE board paper, whole lesson (~80 marks across Sections A-E)
Model	claude-sonnet-4-6

Composition — Difficulty: 7 straightforward · 17 medium · 7 deep | Types: 8 MCQ · 7 Short · 5 Assertion–reason · 5 Very short · 3 Long · 3 Case-based | Sections: A 13Q/13m · B 5Q/10m · C 7Q/21m · D 3Q/15m · E 3Q/12m

Q1. straightforward exam-ready **[1]**

Which of the following is the correct site for the breakdown of pyruvate in aerobic respiration?
(A) Cytoplasm
(B) Nucleus
(C) Mitochondria
(D) Chloroplast

A Cytoplasm
B Nucleus
C Mitochondria
D Chloroplast

◆ Life Processes

Q2. straightforward exam-ready **[1]**

In the human digestive system, which sphincter muscle regulates the release of food from the stomach into the small intestine?
(A) Anal sphincter
(B) Pyloric sphincter
(C) Cardiac sphincter
(D) Ileocaecal sphincter

A Anal sphincter
B Pyloric sphincter
C Cardiac sphincter
D Ileocaecal sphincter

◆ Life Processes

Q3. straightforward exam-ready **[1]**

Oxygen-rich blood returning from the lungs first enters which chamber of the human heart?
(A) Right atrium
(B) Right ventricle
(C) Left ventricle
(D) Left atrium

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

◆ Life Processes

Q4. medium exam-ready **[1]**

Which of the following correctly describes the role of bile in digestion?
(A) It chemically digests proteins using enzymes.
(B) It breaks large fat globules into smaller droplets and makes the medium alkaline.
(C) It converts starch into simple sugars.
(D) It absorbs digested food directly into the blood.

A It chemically digests proteins using enzymes.
B It breaks large fat globules into smaller droplets and makes the medium alkaline.
C It converts starch into simple sugars.
D It absorbs digested food directly into the blood.

◆ Life Processes

Q5. straightforward exam-ready **[1]**

Which of the following organisms performs anaerobic respiration and produces ethanol and carbon dioxide?
(A) Human muscle cells during exercise
(B) Yeast during fermentation
(C) Fish in oxygenated water
(D) Leaves during the day

A Human muscle cells during exercise
B Yeast during fermentation
C Fish in oxygenated water
D Leaves during the day

◆ Life Processes

Q6. medium exam-ready **[1]**

In a fish, blood passes through the heart only once during each complete circulatory cycle. This type of circulation is called:
(A) Double circulation
(B) Open circulation
(C) Single circulation
(D) Pulmonary circulation

A Double circulation
B Open circulation
C Single circulation
D Pulmonary circulation

◆ Life Processes

Q7. medium exam-ready **[1]**

Lymph is similar to blood plasma but differs from it in one important way. Which of the following correctly states this difference?

(A) Lymph contains more red blood cells than plasma.

(B) Lymph is colourless and contains less protein than plasma.

(C) Lymph has a higher concentration of nitrogenous wastes than plasma.

(D) Lymph does not flow in the direction of veins.

A Lymph contains more red blood cells than plasma.
B Lymph is colourless and contains less protein than plasma.
C Lymph has a higher concentration of nitrogenous wastes than plasma.
D Lymph does not flow in the direction of veins.

◆ Life Processes

Q8. straightforward exam-ready **[1]**

Which of the following end products of digestion are produced from fats by the action of lipase?

(A) Amino acids and glycerol

(B) Glucose and fructose

(C) Fatty acids and glycerol

(D) Glycogen and fatty acids

A Amino acids and glycerol
B Glucose and fructose
C Fatty acids and glycerol
D Glycogen and fatty acids

◆ Life Processes

Q9. medium exam-ready **[1]**

Assertion (A): Aquatic animals breathe at a much faster rate compared to most terrestrial animals.

Reason (R): The concentration of dissolved oxygen in water is much lower than the concentration of oxygen in air.

(A) Both A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is not the correct explanation of A.

(C) A is true but R is false.

(D) A is false but R is true.

A Both A and R are true and R is the correct explanation of A.
B Both A and R are true but R is not the correct explanation of A.
C A is true but R is false.
D A is false but R is true.

◆ Life Processes

Q10. medium exam-ready **[1]**

Assertion (A): In mammals and birds, the left and right sides of the heart are completely separated.
Reason (R): This separation prevents oxygenated and deoxygenated blood from mixing, ensuring efficient oxygen supply for high energy needs.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

A Both A and R are true and R is the correct explanation of A.
B Both A and R are true but R is not the correct explanation of A.
C A is true but R is false.
D A is false but R is true.

◆ Life Processes

Q11. medium exam-ready **[1]**

Assertion (A): Arteries have thicker and more elastic walls compared to veins.
Reason (R): Blood flows through arteries under much higher pressure than through veins.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

A Both A and R are true and R is the correct explanation of A.
B Both A and R are true but R is not the correct explanation of A.
C A is true but R is false.
D A is false but R is true.

◆ Life Processes

Q12. deep exam-ready **[1]**

Assertion (A): Translocation of food in phloem can occur both upward and downward in a plant.
Reason (R): Phloem transport is driven by ATP energy and osmotic pressure differences, allowing movement according to the plant's needs.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

A Both A and R are true and R is the correct explanation of A.
B Both A and R are true but R is not the correct explanation of A.
C A is true but R is false.
D A is false but R is true.

◆ Life Processes

Q13. deep exam-ready **[1]**

Assertion (A): Desert plants take in carbon dioxide at night rather than during the day.
Reason (R): Opening stomata during the day in a desert would cause excessive water loss, so CO_2 is fixed at night and stored as an intermediate for use during daytime photosynthesis.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

A Both A and R are true and R is the correct explanation of A.
B Both A and R are true but R is not the correct explanation of A.
C A is true but R is false.
D A is false but R is true.

◆ Life Processes

Q14. straightforward exam-ready **[2]**

State any two roles of hydrochloric acid secreted by the gastric glands in the stomach.

◆ Life Processes

Q15. straightforward exam-ready **[2]**

Name two nitrogenous waste products excreted by the human kidneys. Why is it essential to remove them from the body?

◆ Life Processes

Q16. medium exam-ready **[2]**

Muscle cramps in athletes often occur during intense exercise. Explain the biochemical reason for this.

◆ Life Processes

Q17. medium exam-ready **[2]**

Explain why the walls of the left ventricle are thicker than those of the right ventricle.

◆ Life Processes

Q18. medium exam-ready **[2]**

State two ways in which plants store or dispose of waste products that are different from the method used by animals.

◆ Life Processes

Q19. medium exam-ready **[3]**

Describe the role of villi in the small intestine. How does their structure make them well-suited to their function?

◆ Life Processes

Q20. medium exam-ready **[3]**

Trace the complete pathway of air from the nostrils to the alveoli in human beings, naming each structure the air passes through. State one structural feature of the alveoli that makes them efficient for gas exchange.

◆ Life Processes

Q21. medium exam-ready **[3]**

What is transpiration? Explain how it helps in the movement of water and minerals from the roots to the leaves in a plant.

◆ Life Processes

Q22. medium exam-ready **[3]**

Compare aerobic and anaerobic respiration under the following heads: (i) requirement of oxygen, (ii) end products, (iii) amount of energy released.

◆ Life Processes

Q23. medium exam-ready **[3]**

Explain how the length of the small intestine in herbivores and carnivores differs and why this difference exists.

◆ Life Processes

Q24. medium exam-ready **[3]**

(a) State the location of haemoglobin in human blood and mention one structural feature that makes it suitable for oxygen transport.
(b) Why is haemoglobin considered essential for the survival of large multicellular animals?

◆ Life Processes

Q25. deep exam-ready **[3]**

How does the process of translocation in phloem differ from the transport of water in xylem? Give two points of difference. What provides the energy for translocation?

◆ Life Processes

Q26. medium exam-ready **[5]**

(a) Draw a labelled diagram of the human excretory system showing the kidneys, ureters, urinary bladder and urethra.
(b) Describe the process by which the kidneys filter blood and produce urine, including the role of selective reabsorption in the nephron tubule.

◆ Life Processes

Q27. deep exam-ready **[5]**

With the help of a labelled diagram of the human heart, explain the mechanism of double circulation. Why is double circulation necessary for mammals and birds but not for fish?

◆ Life Processes

Q28. deep exam-ready **[5]**

(a) List the three main events that occur during photosynthesis.
(b) Explain the role of each of the following in photosynthesis: (i) chlorophyll, (ii) stomata, (iii) water.
(c) A plant kept in a dark room for 72 hours is then placed in bright sunlight. After a few hours, a leaf is tested for starch using iodine solution. Predict the result and explain.

◆ Life Processes

Q29. deep exam-ready **[4]**

Read the following passage and answer the questions that follow.

Rohan is a 45-year-old man who was recently diagnosed with chronic kidney disease. His doctor explained that both his kidneys were functioning at only 20% of their normal capacity. As a result, harmful nitrogenous wastes were accumulating in his blood. The doctor recommended he undergo hemodialysis three times a week. During hemodialysis, Rohan's blood is passed through tubes with a semi-permeable lining immersed in a dialysing fluid that has the same osmotic pressure as normal blood but contains no nitrogenous wastes.

(i) Name the nitrogenous waste products that accumulate in Rohan's blood due to kidney failure. (1 mark)
(ii) By what process do the waste products move from Rohan's blood into the dialysing fluid during hemodialysis? (1 mark)
(iii) A healthy person produces about 180 L of initial filtrate in the kidneys each day but excretes only 1–2 L of urine. Explain the process responsible for this difference and where it occurs. (2 marks)

◆ Life Processes

Q30. medium exam-ready **[4]**

Read the following passage and answer the questions that follow.

During a science fair, Priya set up two identical healthy potted plants of the same species and size. She placed both in a dark room for three days. She then placed Plant A under a bell jar sealed airtight to a glass plate, with a watch-glass of potassium hydroxide inside the jar. Plant B was placed under a similar sealed bell jar but without any potassium hydroxide. Both plants were kept in bright sunlight for two hours. Priya then tested a leaf from each plant for the presence of starch.

(i) What was the purpose of keeping the plants in a dark room for three days before the experiment? (1 mark)
(ii) What result did Priya observe when she tested the leaf of Plant A with iodine solution? Give a reason. (1 mark)
(iii) What role does potassium hydroxide play in this experiment? (1 mark)
(iv) What conclusion can Priya draw from comparing the results of both plants? (1 mark)

◆ Life Processes

Q31. deep exam-ready **[4]**

Read the following passage and answer the questions that follow.

Amit's grandfather was admitted to hospital with complaints of breathlessness and fatigue. The doctor found that the alveolar walls had thickened and some alveoli were damaged, reducing the surface area available for gas exchange. The doctor also noted that his haemoglobin levels were significantly low (anaemia). The doctor explained that both conditions together were seriously reducing oxygen delivery to body tissues.

(i) How does thickening and damage of alveolar walls reduce the efficiency of gas exchange in the lungs? (1 mark)
(ii) Name the pigment that normally carries oxygen in human blood and state where it is located in the blood. (1 mark)
(iii) Carbon dioxide is transported differently from oxygen in human blood. Explain how carbon dioxide is mainly transported. (1 mark)
(iv) Even if the alveoli were healthy, explain why a very low haemoglobin level would still cause oxygen deficiency in body tissues. (1 mark)

◆ Life Processes

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