CLASS 11 BIOLOGY EXTRA QUESTIONS

Class 11 Biology Chapter 15 Body Fluids and Circulation – Extra Questions with Answers

Extra practice questions for Class 11 Biology Chapter 15 (Body Fluids and Circulation), beyond the textbook. These Class 11 Biology Chapter 15 important questions are handy for last-minute exam practice.

Contents

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Very Short Answer Questions (1 mark)

Q1. Which blood cells are responsible for clotting?
Ans: Platelets (thrombocytes).

Q2. What protein in blood is converted to fibrin during clotting?
Ans: Fibrinogen.

Q3. How many chambers does the human heart have?
Ans: Four (2 atria, 2 ventricles).

Q4. What is the "universal donor" blood group?
Ans: O (specifically O negative).

Q5. What does the QRS complex in an ECG represent?
Ans: Ventricular depolarization (contraction).

Short Answer Questions (2–3 marks)

Q6. Differentiate between blood and lymph.
Ans: Blood is contained within blood vessels, has RBCs, WBCs, platelets in plasma; lymph is derived from blood plasma that leaks into tissue spaces, is colourless (lacks RBCs), contains lymphocytes, and circulates via the lymphatic system.

Q7. Explain the ABO blood group system.
Ans: Based on the presence/absence of A and B antigens on the RBC surface: Group A (A antigen), Group B (B antigen), Group AB (both antigens), Group O (neither antigen). Corresponding antibodies are present in plasma against the antigens NOT present on one's own RBCs.

Q8. What produces the "lub-dub" sounds of the heartbeat?
Ans: The closing of heart valves — "lub" from closure of atrioventricular (AV) valves, "dub" from closure of semilunar valves.

Higher-Order Thinking / Application Questions

Q9. Explain why a person with blood group AB is considered the "universal recipient" while a person with blood group O (specifically O negative) is considered the "universal donor", connecting this to the antigen-antibody basis of blood transfusion compatibility.
Ans: Blood group compatibility during transfusion depends on avoiding a reaction between antigens on the donor's RBCs and antibodies present in the recipient's plasma, since if a recipient's plasma antibodies encounter matching antigens on transfused RBCs, it triggers agglutination (clumping) of the donor RBCs, which can be life-threatening. A person with blood group AB has both A and B antigens on their RBCs, but critically, since their own RBCs display both antigens, their plasma contains neither anti-A nor anti-B antibodies (as the immune system does not typically produce antibodies against antigens present on one's own cells). This means an AB recipient's plasma will not attack incoming RBCs bearing A antigens, B antigens, both, or neither, making them able to safely receive blood from any ABO group, hence "universal recipient". Conversely, a person with blood group O has neither A nor B antigens on their RBCs, meaning their RBCs will not trigger an antigen-antibody reaction with any recipient's plasma (regardless of whether

that recipient has anti-A, anti-B, or both antibodies), since there are simply no A or B antigens present on the donated RBCs for those antibodies to react against, making O blood safely transfusable to recipients of any ABO group, hence “universal donor” (O negative specifically also avoids Rh factor complications).

Q10. Explain why the heartbeat is described as “myogenic” (self-generated by the heart muscle itself) rather than “neurogenic”, using the role of the sinoatrial (SA) node, and describe what would happen to heart rate if the SA node were damaged and the atrioventricular (AV) node had to take over pacemaker function.
Ans: The human heartbeat is termed ‘myogenic’ because the electrical impulse that initiates each heartbeat originates from specialized cardiac muscle cells within the heart itself (specifically the sinoatrial or SA node, located in the right atrium), rather than requiring an external nerve impulse from the central nervous system to trigger each individual contraction (unlike skeletal muscle, which is neurogenic and requires direct neural stimulation for each contraction). The SA node possesses the property of automatic, rhythmic self-depolarization (spontaneously generating its own electrical impulses at a steady rate, roughly 70-75 times per minute at rest), earning it the name ‘natural pacemaker’ of the heart; this impulse then spreads across the atria, reaches the atrioventricular (AV) node, and continues down specialized conducting tissue (bundle of His, Purkinje fibres) to coordinate a synchronized contraction of the ventricles. If the SA node were damaged or non-functional, the AV node (which also possesses some degree of automatic, though normally subordinate, pacemaker-like activity) would take over as the heart’s pacemaker by default; however, the AV node’s intrinsic firing rate is considerably slower than the SA node’s (typically only about 40-60 beats per minute), so the resulting heart rate would drop significantly (a condition called ‘junctional rhythm’), which, while still sufficient to sustain circulation in many cases, would represent an abnormally slow, less efficient heartbeat compared to normal SA-node-driven rhythm, illustrating the SA node’s critical, dominant role in setting the normal, healthy heart rate.

Class 11 Biology Chapter 15 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the Class 11 Biology Chapter 15 Solutions and Class 11 Biology Chapter 15 Revision Notes.

See also: Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6 | Chapter 7 | Chapter 8 | Chapter 9 | Chapter 10 | Chapter 11 | Chapter 12 | Chapter 13 | Chapter 14 | Chapter 15

Practice more: Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6 | Chapter 7 | Chapter 8 | Chapter 9 | Chapter 10 | Chapter 11 | Chapter 12 | Chapter 13 | Chapter 14

Quick revision: Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6 | Chapter 7 | Chapter 8 | Chapter 9 | Chapter 10 | Chapter 11 | Chapter 12 | Chapter 13 | Chapter 14