CBT JANUSARY 2024
CLASS – XI: BIOLOGY

GENERAL INSTRUCTION :

SCORE AND REVIEW OF ALL THE QUESTIONS WILL BE PROVIDED IN THE EMAIL TO ALL THE STUDENTS ON NEXT DAY AND AFTER CLOSING OF QUIZ TIME.

IMPORTANT : ALL THE STUDENTS SHOULD FILL THE CORRECT SCHOOL NAME FROM DROP DOWN BUTTON

CHAPTERS COVERED:
Chapter-18: Body Fluids and Circulation
Chapter-19: Excretory Products and their Elimination
Chapter-20: Locomotion and Movement

Q.1: Human ABO blood groups are determined by the presence or absence of antigens on the surface of red blood cells. The ABO system classifies blood into four main types: A, B, AB, and O. These blood groups are determined by the combination of two antigens, A and B, along with the absence of both in the case of blood type O. Additionally, individuals possess antibodies against the antigens they lack, further influencing blood compatibility. For example, type A individuals have anti-B antibodies (b), and type B individuals have anti-A antibodies (a). Type AB individuals have both antigens and lack the corresponding antibodies, while type O individuals lack both antigens but have both anti-A and anti-B antibodies. The ABO blood group system is crucial in blood transfusions and organ transplants to ensure compatibility and prevent adverse reactions. Understanding one's blood type is essential for medical procedures and can also have implications in genetics, as blood type inheritance follows Mendelian principles.

ABO BLOOD GROUPS	Group A	Group B	Group AB	Group O
Red blood cell type				
Antibodies in Plasma	 Anti-B	 Anti-A	NONE	 Anti-A and Anti-B

1. Rh factor is present in
(a) All vertebrates
(b) All mammals
(c) All reptiles
(d) Man and Rhesus monkey only
Ans. (d) :
Explanation : Rh factor was discovered by Karl Landsteiner and Wiener (1940) from rabbits immunized with the blood of rhesus monkey. It is also found in Human.

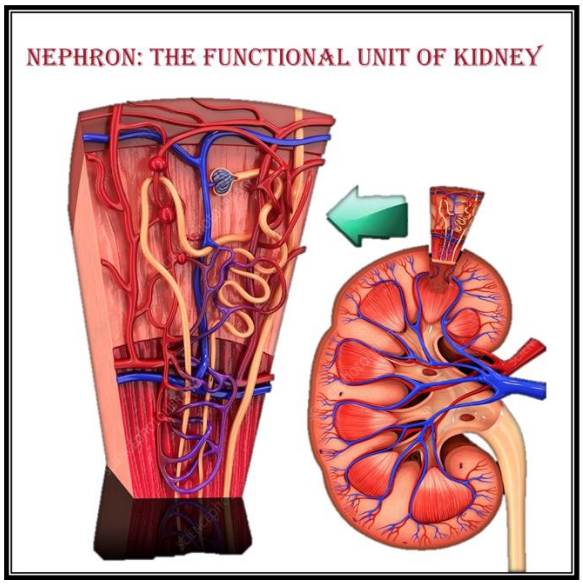
2. The Rh (rhesus) factor is an inherited protein that can be found on the surface of the red blood cell. If your blood type is positive, then your blood cells have the Rh protein. Rh group should also be matched before transfusion of blood. The condition of erythroblastosis foetalis occurs only when
(a) the husband is Rh+ and wife is Rh–
(b) the husband is Rh– and wife is Rh+
(c) the mother is Rh+ and the foetus is Rh–
(d) the mother is Rh– and the foetus is Rh+
Ans. (d)
Explanation Erythroblastosis foetalis is a condition where mother is Rh– and child is Rh+. This could be fatal to the foetus or could cause severe anaemia and jaundice to the baby.

3. A person meet with a severe road accident and immediately is in need of blood transfusion. But there is no time to analyses the blood group of victim which is the safe transfer blood of group?
(a) O,Rh–
(b) O,Rh+
(c) Both (a) and (b)
(d) AB,Rh+
Answer. (a)
Explanation: In an emergency when there is no time to analyze a person's blood group, it is generally considered safe to transfuse them with O-negative (O–, Rh–) blood. O– blood group is referred as the "universal donor" blood type because it can be given to individuals of any blood group type without causing immediate adverse reactions.

4. Assertion: Individuals with blood type AB can donate blood to individuals with any blood type.
Reason: Blood donation compatibility is determined by the absence of antigens on the surface of red blood cells, and individuals with blood type AB lack both anti-A and anti-B antibodies.
a) Both the assertion and reason are true, and the reason is a correct explanation of the assertion.
b) Both the assertion and reason are true, but the reason is NOT a correct explanation of the assertion.
c) The assertion is true, but the reason is false.
d) Both the assertion and reason are false.
Answer : d) Both the assertion and reason are false.
Explanation: While individuals with blood type AB are known as universal recipients, they cannot donate blood to individuals with any blood type. The assertion is false because blood donation compatibility is determined by the presence of specific antigens on the donor's red blood cells, not the absence of antigens. The reason is also false as it incorrectly states that individuals with blood type AB lack both anti-A and anti-B antibodies. In reality, they have neither anti-A nor anti-B antibodies, making them universal recipients, but the absence of antibodies does not make them universal donors.

Q.2: The nephron is the functional unit of the excretory system, playing a crucial role in the filtration and regulation of blood to maintain homeostasis. Structurally, a nephron consists of two main parts: the renal corpuscle and the renal tubule. The renal corpuscle includes the Bowman's capsule and the glomerulus. The Bowman's capsule encapsulates the glomerulus, a network of capillaries, where blood filtration occurs. The renal tubule is divided into the proximal convoluted tubule, loop of

Henle, distal convoluted tubule, and the collecting duct. As filtrate passes through the tubule, essential substances like glucose and ions are reabsorbed, while waste products are secreted. The loop of Henle, with its descending and ascending limbs, plays a crucial role in water and salt reabsorption. The collecting duct receives processed filtrate from multiple nephrons and further concentrates urine. This intricate structure ensures the efficient removal of waste products while retaining essential substances, contributing to the body's overall fluid and electrolyte balance.

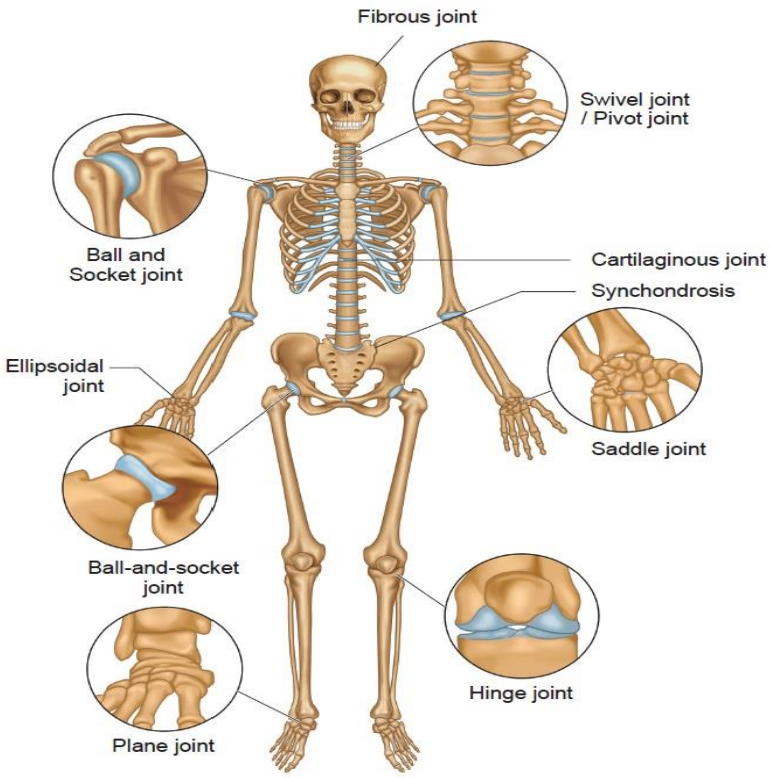


1.Given below are statements one is labelled as Assertion A and the other is labelled as Reason R.
Assertion A : Nephrons are of two types; Cortical and Juxta medullary, based on their relative position in cortex and medulla.
Reason R : Juxta medullary nephrons have short loop of Henle whereas, cortical nephrons have longer loop of Henle.
In the light of the above statement , choose the correct answer from the options given below :
(a) A is false but R is true.
(b) Both A and R are true and R is the correct explanation of A.
(c) Both A and R are true but R is NOT the correct explanation of A.
(d) A is true but R is false.
Answer (d)
Explanation : On the basis of location, the nephrons, are of two types, in majority of nephrons, the loop of Henle is too short and extends only little into the medulla these nephrons are called cortical nephrons and form 85% of the loop of Henle is very long and runs deep into the medulla. These nephrons are called juxtamedullary nephrons and form 15% of the total nephrons.

2. Mark the wrong match
(a) Bowman’s capsule- Glomerular filteration
(b) DCT-Absorption of glucose
(c) Loop of Henle-Concentration of urine
(d) PCT-Absorption of Na+ and K+ ions
Ans. (b)
Explanation : Following is the correct match-
Bowman's capsule – Glomerular filtration
DCT – absorption of sodium ion and water
Loop of Henle – concentration of urine
PCT – Absorption of Na+ and k+ ions

3. Compare the statements A and B.
Statement A: When the urine moves through the descending limb, it becomes hypertonic and as it passes through the ascending limb of Henle's loop. It becomes hypotonic.
Statement B: The descending limb is permeable to sodium ions, while the ascending limb is impermeable to sodium ions.
(a) Statement A is wrong and B is correct
(b) Statement A is correct and B is wrong
(c) Both statements A and B are wrong
(d) Both statements A and B are correct
Ans. (b)
Explanation: When the urine moves through the descending limb, it becomes hypertonic and as it passes through the ascending limb of Henle's loop. It becomes hypotonic.
• The descending limb of loop of Henle is permeable to water but is impermeable to electrolytes.

Q.3: The human skeletal system is a marvel of engineering, featuring a diverse array of joints that facilitate movement and support the body's structure. Joints are points of articulation between two or more bones, and they come in various types based on their structure and range of motion. The three main types of joints are synarthrosis, amphiarthrosis, and diarthrosis. Synarthrosis joints are immovable, providing stability and support, such as the sutures in the skull. Amphiarthrosis joints allow limited movement and include symphysis joints like the intervertebral discs. Diarthrosis joints, also known as synovial joints, are the most flexible, allowing a wide range of motion. They are characterized by the presence of a synovial cavity, articular cartilage, synovial membrane, and ligaments. Examples of diarthrosis joints include the knee, elbow, and shoulder joints. These joints enable complex movements like flexion, extension, abduction, and rotation, contributing to the versatility and agility of the human body.



1. What is the function of articular cartilage in synovial joints?
a) Provides stability
b) Facilitates movement
c) Absorbs shock
d) All of the above
Answer: d) All of the above
Explanation : Articular cartilage in synovial joints provides stability by covering the articulating surfaces, facilitates smooth movement by reducing friction, and absorbs shock during joint activities.

2. Which of the following pairs, is correctly matched –
(a) Fibrous joint – between phalanges
(b) Cartilaginous joint – skull bones
(c) Gliding joint – between zygapophyses of the successive vertebrae
(d) Hinge joint – between vertebrae
Ans. (c)
Explanation : Gliding joint in present between zygapophyses of the successive vertebrae.The gliding joint is a synovial joint built between two bones that meet on flat articular surfaces allowing sliding or gliding motion. Example of a gliding joint is the wrist joint. Other gliding joints are the joints between two vertebras, ankle joints acromioclavicular joint etc.
• The joints between the following structure are between phalanges- hinge joints.
• Between flat bones of skull - fibrous joint
• Between adjacent vertebrae: cartilaginous joint.

3. Assertion: The hinge joint, found in the human body, allows movement in only one plane.
Reason: Hinge joints are characterized by an articular surface with concave and convex components, limiting movement to flexion and extension.
a) Both the assertion and reason are true, and the reason is a correct explanation of the assertion.
b) Both the assertion and reason are true, but the reason is NOT a correct explanation of the assertion.
c) The assertion is true, but the reason is false.
d) Both the assertion and reason are false.
Answer : a) Both the assertion and reason are true, and the reason is a correct explanation of the assertion.
Explanation : Hinge joints, such as the elbow and knee joints, indeed allow movement in only one plane, primarily facilitating flexion and extension. The reason provides an accurate explanation, emphasizing the characteristic features of hinge joints, where the articular surfaces permit a specific range of motion, restricting it to a single plane.