

Date:09/11/23

MONTHLY TEST-03 (2023-24)

Max marks:20

Grade:XI

BIOLOGY(044)

Time:50min

General Instructions:

1. There are 9 questions in the question paper. All questions are compulsory.

Qn. No	SECTION A	Marks allocated
1	Which of the following components is responsible for the clotting of blood?  A) Platelets	1
2	Directions: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as:  Assertion: In cortical nephrons, vasa recta is absent or highly reduced. Reason: Cortical nephrons are mainly concerned with concentration of urine.  (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion. (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion. (c) If Assertion is true but Reason is false. (d) If both Assertion and Reason are false.	1
3	What is the normal pH range of urine in humans?  a. Acidic (pH < 7)	1

4	Male frogs can be distinguished from female frogs by  d) Both a and c are correct	1
5	<p style="text-align: center;">SECTION B</p> <p>Frog is a poikilotherm, exhibits camouflage and undergoes aestivation and hibernation, how are all these beneficial to it?</p> <ul style="list-style-type: none"> <li>• Poikilothermic animals or cold blooded animals cannot regulate their body temperature.</li> <li>• Camouflage is a defense mechanism that organisms use to disguise their appearance.</li> <li>• Aestivation is the summer sleep which allows the organism to survive periods of high temperature.</li> <li>• Hibernation is the winter sleep which allows the animal to evade the cold temperature.</li> </ul> <p>Advantage:</p> <ul style="list-style-type: none"> <li>• Frog, being poikilothermic, undergoes aestivation and hibernation to protect itself from harsh environmental conditions.</li> <li>• Through the process of camouflage, it protects itself from predators.</li> </ul>	2
6	<p>What is the role of renin-angiotensin in the management of kidney function?</p> <p>Role of Renin -Angiotensin :</p> <p>Renin converts Angiotensinogen to Angiotensin I and then to Angiotensin II. Angiotensin II is a powerful vasoconstrictor. It increases the blood flow to the glomerulus and thus increases glomerular filtration rate.</p>	3

7	<p>a)What is erythroblastosis?</p> <p>b)Which of the following conditions cause erythroblastosis foetalis?</p> <ul style="list-style-type: none"> <li>• When the mother is Rh– and the foetus is having Rh+, the immune cells of the mother will produce the antibodies against the blood cells of the foetus.</li> <li>• This will lead to destruction of the blood cells in the foetus when the antibodies migrate through the placenta and enter the foetal system. This causes the death of the foetus and the condition is known as erythroblastosis foetalis.</li> </ul>	3
8	<p>Explain why in the loop of Henle, the glomerular filtrate gets concentrated in the descending limbs and diluted in the ascending limbs.</p> <p>The descending limb of Henle's loop is more permeable to water and almost impermeable to electrolytes. As a result, filtrate gets concentrated as it moves down the descending limb of Henle's loop.</p> <p>The ascending limb of Henle's loop is impermeable to water but permeable to electrolytes. As a result, the filtrate gets diluted as it moves up the ascending limb of Henle's loop.</p>	3
9	<p style="text-align: center;">SECTION C</p> <p>Answer the following:</p> <p>a) Name the major site where RBCs are formed.</p> <p>b) Which part of the heart is responsible for initiating and maintaining its rhythmic activity?</p> <p>c) What is specific in the heart of crocodiles among reptilians?</p> <p>d)Describe the events in the cardiac cycle.</p> <p>(i) Bone marrow  (ii) SA Node (Sino Atrial Node)  (iii) Reptile have 3 chambered heart with an exception of crocodile which possess 4 chambered heart, due to the partial division of ventricle through a septum.</p>	5

### Cardiac cycle

- The cardiac cycle comprises all of the physiological events associated with a single heartbeat, including electrical events, mechanical events (pressures and volumes), and heart sounds.
- The atria and ventricles alternately contract in each cardiac cycle. The pressures in the chambers change greatly over the course of the cardiac cycle.
- The cardiac cycle is essentially split into two phases, systole (the contraction phase) and diastole (the relaxation phase). Each of these is then further divided into an atrial and ventricular component.

### Atrial systole

- Atrial systole: lasts about 0.1 seconds - both atria contract and force the blood from the atria into the ventricles.

### Ventricular systole

- Ventricular systole: lasts about 0.3 seconds - both ventricles contract, blood is forced to the lungs via the pulmonary trunk, and the rest of the body via the aorta.

### Atrial diastole

- Atrial diastole: lasting about 0.7 seconds - relaxation of the atria, during which the atria fill with blood from the large veins (the vena cava).

### Ventricular diastole

- Ventricular diastole: lasts about 0.5 seconds - begins before atrial systole, allowing the ventricles to fill passively with blood from the atria.