**JETS FAIR 2012 SENIOR BIOLOGY PRACTICAL**

**ADVANCE INFORMATION: *The chicken Heart to be used as Specimen Q per station.***

**QUESTION 1.**

**You are provided with a specimen Q, an organ from a bird. Make a large diagram and label the positions of the four chambers.**

1. **Calculate the magnification of the drawing.**
2. **The muscle of specimen Q is myogenic in nature. Explain what myogenic nature of the muscle means.**

**Ans: The stimulus for muscle contraction originates from the muscle of specimen Q**

**itself and not from the brain**

1. **Name the membrane that surrounds the specimen given.**

**Ans: Pericardium membrane.**

1. **What is the fluid that reduces friction between specimen Q and the walls of the organism’s body?**

**Ans: Pericardium fluid.**

1. **The beating of specimen Q is controlled by the Sino-Atrial Node and conducting systems. State the fibres that transmit impulses downwards to the base of the heart.**

**Ans: Bundle of His and Purkynefibres.**

ADVANCE INFORMATION FOR PRACT QUESTION 2

**Instructions : Each candidate must be provided with the under listed specimens:**

**1 .Specimens ( parts of a mouse , stomach, duodenum and ileum**

**2. Scapel or razor blade**

**3. 14 test tubes**

**4 .pH PAPER**

**5 .pH colour chart**

**6. Water bath ( boiling water)**

**7. Saline solution**

**8. Motor and pestel**

**QUESTION 2**

You are provided with parts of the gut of specimen G1. Grind each tissue in 5cm3 saline.

1. Using the pH paper, determine the pH of the Stomach, Duodenum and Ileum. Record your results in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| REGION | OBSERVATION | pH RANGE | CONCLUSION |
| STOMACH |  |  |  |
| DUODENUM |  |  |  |
| ILEUM |  |  |  |

 [3]

1. Use the extract formed from each region in the above test and divide volume of each into 2 test tubes labelled P and Q. Boil each content put in test tube Q for 15 minutes in the water bath. On each test tube labelled P and Q carryout the following tests;
2. Protease test-;
3. Invertase -;
4. Amylase.

|  |  |  |  |
| --- | --- | --- | --- |
| REGION | TEST METHOD  | OBSERVATION  | CONCLUSION |
| STOMACH | P |  |  |  |
| Q |  |  |
| DUODENUM | P |  |  |  |
| Q |  |  |
| ILEUM | P |  |  |  |
| Q |  |  |

 [6]

1. What are the effects of boiling contents in test tube Q.

.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….. [1]

**QUESTION 3.**

You are provided with the following materials-:

1. A graduated capillary tube
2. A 500ml beaker
3. Source of water and sand.

Set the experiment as shown in the diagram below and observe for 5 minutes.

1. State your observations………………………………………………….

……………………………………………………………………[1]

1. Which property of water accounts for your observation(s) ? ……………………………………………………………………[1]
2. What is the significance of the property stated in (1b) to plants?

……………………………………………………………………[1]

1. Why did water go up instead of going down ? ……………..................................................................................[1]

3 (a) Which internal part of the plant is related to the capillary tube?

(b) What process in plants is similar to the overflowing of water from the capillary tube?

( c ) Explain four (4) significant roles played by the process mentioned in

 ( 3 b) to plants ?

( d) What are the three (3) types of processes mentioned in 2b?

**Solutions for Question 3**

3 (i) (a) Water starts going upward in the capillary tube

 (b) Capillarity/ Ability to wet

( c) Helps the up take of water through xylem

( d) Due to the adhesive and cohesive forces

(ii) (a) Xylem

 (b) Transpiration

 ( c ) –Cooling effects

 -Transpiration of materials

 - Maintanane of cell turgidity

 - Removal of excess water

( d) – Stomata

 -Venticular

 -Carticular