Benha University
Faculty of Science
Department of Zoology

Fish biology and animal behavior (431 Z)

Semester / year: first 2014/2015 **Level:** fourth level

Exam time: 1:00 hours **Sepc**: Zoology & Chemistry

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نصف ورقة

Group (B): **(16 marks)**

3- " Behaviour is not merely a response to external stimuli, but it may be also motivated internally to act in a specific manner" Discuss the previous statement on physiological basis, giving two examples only? (8 marks)

Many patterns of instinctive behavior can be analyzed into drive directed toward a goal, and with the attainment of the goal, there is a reduction of the drive or satiation.

As an example, the hungry animal seeks food, finds it, eats it and then stops eating. The drive is the striving for food, the goal is the food, and satiation is the stopping of eating. The lateral region can be thought of as containing excitatory mechanism for feeding. On the other hand, the destruction of the ventromedial region of the hypothalamus on both sides, results in a great increase in eating, to the point where a rat might double or triple its body weight, if food is provided. The ventromedial region qualifies as a part of the inhibitory mechanism for feeding. An animal usually stops feeding long before the glucose in blood returns to the normal level, as this takes some time. The stopping of feeding is brought about temporarily by the filling of the stomach. Mechanical receptors report the volume of the stomach to the ventromedial hypothalamus, thus eating can be stopped.

The drinking activity is controlled by osmoreceptors in the middle region of the hypothalamus. Injectecting saline solution in the vein of the dog, it can be made thirsty. On the other hand, it is possible to eliminate thirsty by intravenous injection of water. The amount of water in the stomach leads to the stopping of drinking temporarily.

4- Answer two of the followings: (8 marks)

a) Compare between rounds and waggle bee dance.

Round bee dance: It is a bee communication. When the flowers are present within about a hundred yards from the hive, the discoverer dances round and round in narrow circles.

Best wishes

Waggle bee dance: It is a bee communication. When the flowers are present over a hundred yards away, worker bee comes to hive, and performs waggle dance. All the time, the bee wags its abdomen.

b) Compare between intraspecific and interspecific communications.

Intraspecific communications: communications occur between members of one species. Visual, sound, chemicals and signals are used for that communications and they are only understood by members of the same species.

Interspecific communications: communications occur between different species, e.g. crocodile bird enters the mouth of the crocodile and collects the parasites around the teeth.

c) Write an account of instinctive movement and its taxis component.

Instinctive movement may occur with orienting movements or taxis superimposed on them. This is shown by the egg rolling movement of the graylag goose. When the egg rolls out of the nest, the bird stand up and place the underside of the bill beyond the egg. Then, the bird rolls the egg carefully back into the nest, moving the bill from side to side to prevent the egg from slipping away. This egg rolling behavior may be analyzed into two components, the movement of the bill towards the nest in a straight line, and the lateral balancing movements.

The separation of instinctive movement and taxis becomes especially obvious when they are not coupled but occur one after the other. This occurs in a prey catching frog which will turn its body prior to the attack, with its snout pointing directly toward the prey. This turning movement is the taxis, while the tongue flick at the prey comprises the instinctive movement.

Best wishes