

BIO 3323 - Entomology

Final Examination – April 22, 2004 (this is not an open book exam)

Name: _____

Student No: _____

45 pts 1) Briefly explain, using one or two sentences, and where ever possible an example, what each of the following biological terms means.

Vitellophages

Economic damage

Causative agent

Organophosphate

Arbovirus

Name: _____

Student Number: _____

Bee space

Myiasis

Insect growth regulators

Peritrophic membrane

Follicle cells

Name: _____

Student Number: _____

Interneurone

Sartorial legs

Tentorium

Endopterygota

Insecta

Name: _____

Student Number: _____

10 pts 2) There is a choice here: answer one of these in the space below, use point form or tables if that will help with your answer. This doesn't have to be an essay.

Insects have an immune system, briefly describe its components.

OR

What is a physical gill and how does it work?

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10 pts 3) There is a choice here: answer one of these in the space below, use point form or tables if that will help with your answer. This doesn't have to be an essay.

What did the caterpillar ligation studies reveal about the hormonal events controlling metamorphosis in insects?

OR

Insect ovaries come in three different types, what are they, and how are they distinguished from each other?

Name: _____

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20 pts 4) Provide the one word, or in some cases two word, answer in the space provided.

4.1) Name for the cells that form the cell layer surrounding the developing insect oocyte. _____

4.2) Fertilization of an insect egg causes it to complete this process, a necessary prerequisite for fertilization. _____

4.3) In ametabolous metamorphosis adults can do this, unlike any of the other types of metamorphosis. _____

4.4) These cells are set aside early in the development of the insect egg - they'll be important for reproduction later in life. _____

4.5) In addition to protein another key element that is found in high concentrations in an insect egg. _____

4.6) A state of arrested development in insects. _____

4.7) This type of axon fires when a grasshopper jumps. _____

4.8) The upstroke of insect flight is generated by these muscles. _____

4.9) A fly swatter is a good example of this type of insect control mechanism. _____

4.10) Causative organism for typhus _____

4.11) Not being able to bring plants into the country is a good example of this type of control. _____

4.12) A haploid, unfertilized adult bee. _____

4.13) A good medical maggot only feeds in this type of tissue. _____

4.14) These sugars aren't found in nectar but they're in honey. _____ and _____.

4.15) The gas that is important in insuring that a physical gill doesn't collapse. _____

4.16) A plant's male gamete is packaged as this. _____

4.17) Acacia plnts provide their ants with protein using these. (2words). _____

4.18) Living between the layers of a plant's leaf is referred to as _____.

4.19) Number of phytophagous insect orders. _____

4.20) GABA does this to the nerve it connects to. _____

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35 pts Complete **only 7 of the following 11 questions**. Each answer is worth 5 points

5.1) The inner walls of the tracheal system of an insect are a potential site for water loss, how is this prevented?

5.2) What is the entomological basis to the children's rhyme "Ring around the rosie, a pocket full of posies, Husha, husha We all fall down."?

Name: _____

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5.3) There are a number of types of Biological control that can be used to control insect pests. Define Biological control and briefly describe the different categories, or types of biological control.

5.4) Briefly describe the social structure of a bumble bee colony over its full cycle.

Name: _____

Student Number: _____

5.5) Two theories are proposed for the origins of phytophagy in insects. Briefly describe each of the two theories

5.6) Plants weren't an easy food source for insects to adapt to and conquer, why?

Name: _____

Student Number: _____

5.7) One of the direct effects that insects have on animals includes venoms and allergins. What are they?

5.8) Briefly describe the life cycle of the fig and the fig wasp **OR** Describe how silk is produced.

Name: _____

Student Number: _____

5.9) There are three criteria that are necessary to describe an insect as social. What are they and give examples for each.

5.10) What kind of morphological defences does a plant have against insect attack.

Name: _____

Student Number: _____

5.11) Define resistance and briefly explain biochemical resistance in insects.

20 pts 6 - Essay Question – Answer in the booklet provided

From the very start of the course we have described insects as being a very successful and given criteria for measuring this success. There is a biological basis for that success which included: Body size, flight, the exoskeleton, metamorphosis, reproductive potential and their co-evolution with plants. Discuss the criteria that are used to measure success, and in detail, the biological basis for any three reasons for success (excluding body size).

TOTAL: 140 pts