RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

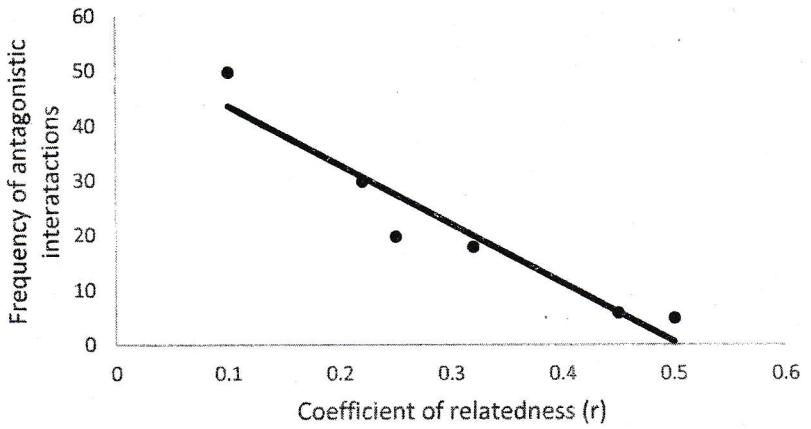
B.Sc. in Applied Sciences
Second Year- Semester II Examination-June 2022

ZOO 2203– ANIMAL BEHAVIOUR

Time: Two (02) hours

Answer FOUR (04) questions only.

1. An investigator carried out a behavioral study on *Semnopithecus vetulus*, with specific focus on antagonistic interactions (aggression) between a female of interest (subject) and other females in the group. The group has been studied for many years and hence, genealogy (pedigree/relatedness) of females is well established. The plot between the frequency of antagonistic interactions between the females of interest and other females and the coefficient of relatedness (*r*) between them is given below.

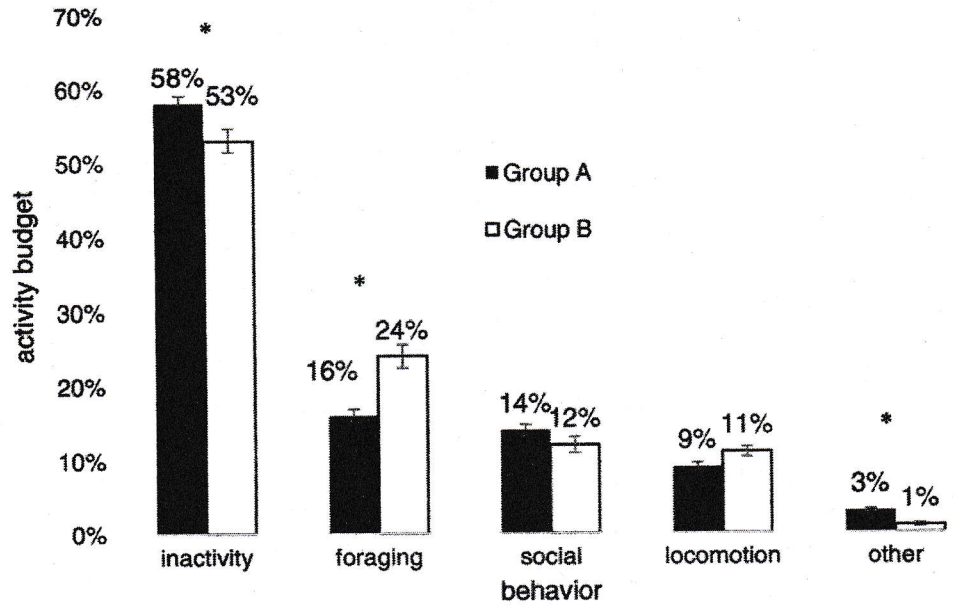


a) Comment on the trend shown by the graph **(30 marks)**

b) Provide an exaplanation for your answer to part (a) **(50 marks)**

c) For antagonistic behavior to be distributed as shown above, it is necessary for the subject to be able to differentiate between females. Briefly state how this may be accomplished by the subject of the study. **(20 marks)**

2. The chart below summarizes the output of a behavioral study on a group of *Trachypithecus poliocephalus* (Hendershott *et al.* (2016) International Journal of Primatology 37:586-604).



a) State the technical term used to describe the chart shown above. **(10 marks)**

b) Briefly describe the behaviour sampling method and the computation that the investigator may have carried out to generate the data shown above and comment on its appropriateness. **(45 marks)**

c) The investigators now wish to study allomothering by females of the group. Propose a suitable behavioral sampling method and justify your answer. **(45 marks)**

3. Briefly discuss the different types of play behavior, including their potential costs and benefits. **(100 marks)**

4. Write short notes (maximum of 250 words) on the following.

a) Haplodiploidy and super relatives
b) Adaptive function of oestrus synchrony in African lions
c) Marginal value theorem
d) Preparing for the unexpected and surplus resource hypothesis
e) Hoarding behaviour

(20x5 marks)

5. Ant-like appearance (myrmecomorphy) has evolved over 70 times in insects and spiders. Palatable spiders will often avoid predation through resemblance to an unpalatable ant. However, this presumption has only been tested in relatively few cases. An experiment was carried out to investigate if *Peckhamia picata* (Salticidae) (Figure 1), a North American myrmecomorphic jumping spider, is protected from jumping spider predators (Durkee *et al*. (2011) Environmental Entomology, 40:1223-1231). Experiments were conducted where, *Peckhamia picata,* a non-ant-like spider and an ant species were exposed to a spider predator. The outcome of the experiment is given below (Figure 2).

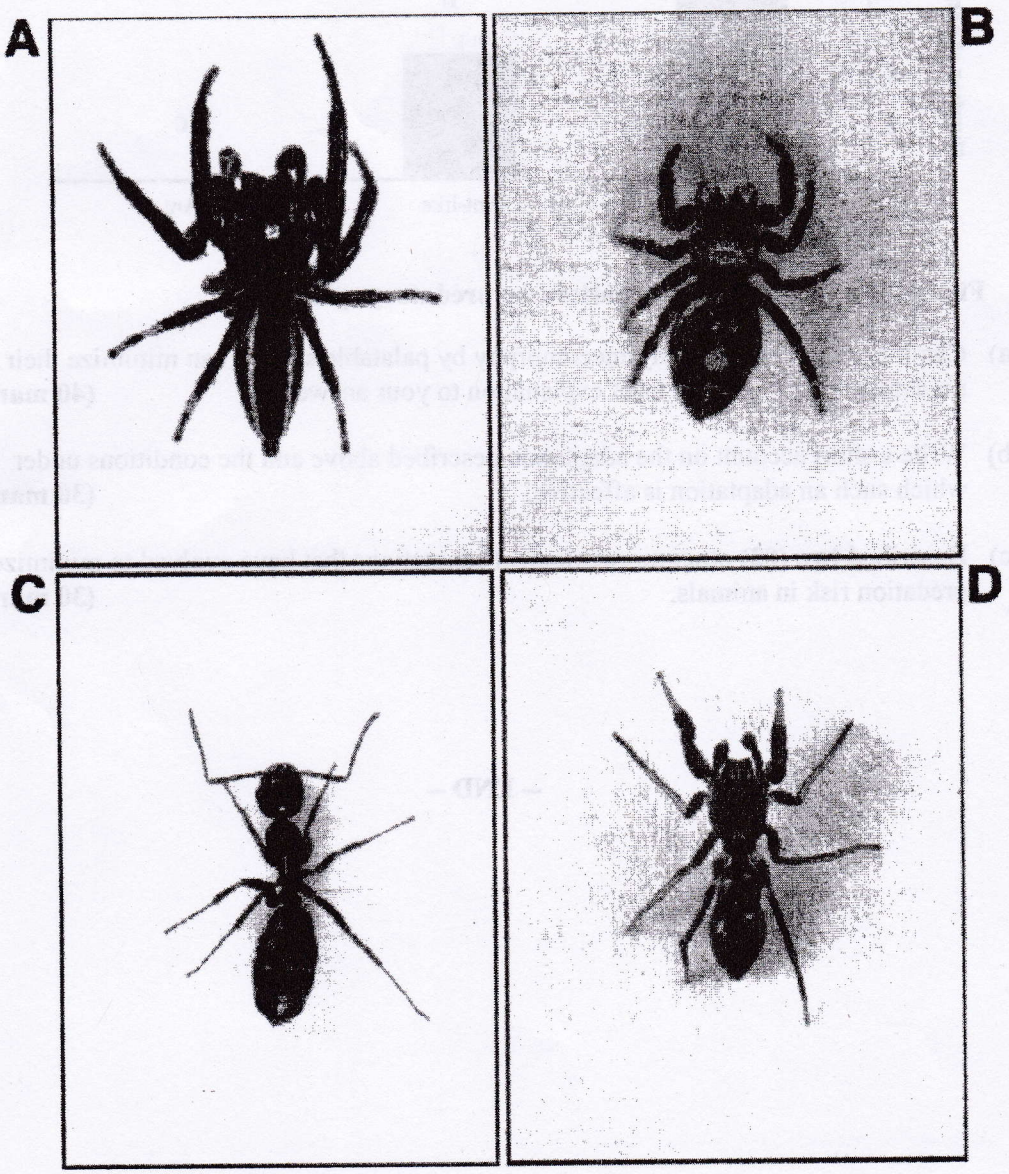


Figure 1. A- Predator of spider, B- non-ant-like spider prey, C- ant model, D- myrmecomorphic spider (*Peckhamia picata*)

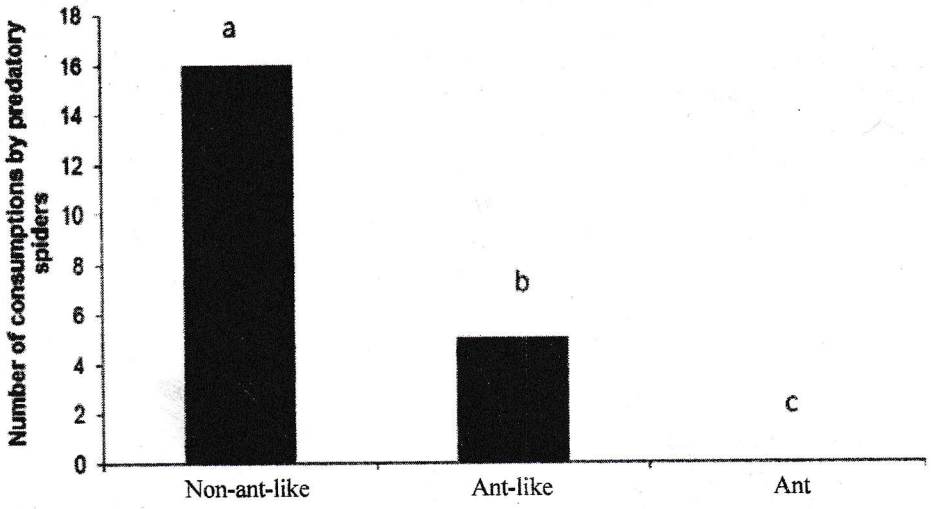


Figure 2. Prey consumption pattern by predatory spider

a) Can it be concluded that myrmecomorphy by palatable spiders can minimize their predation risk? Provide a brief explanation to your answer. **(40 marks)**

b) Write a short account on the adaptation described above and the conditions under which such an adaptation is affective. **(30 marks)**

c) Described **two (02)** other morphological adaptations that have evolved to minimize predation risk in animals. **(30 marks)**

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