
SECTION II

Part A

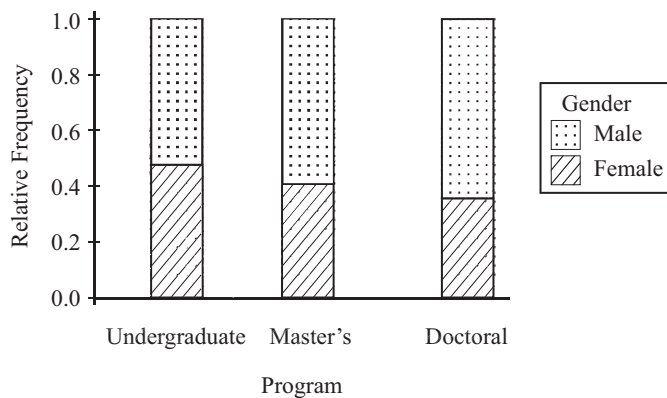
Questions 1–5

Spend about 65 minutes on this part of the exam.

Percent of Section II grade—75

Directions: Show all your work. Indicate clearly the methods you use, because you will be graded on the correctness of your method as well as on the accuracy and completeness of your results and explanations.

1. The graphical display below shows the proportions of male and female students in the undergraduate, master's, and doctoral programs at a particular university. These are the only three programs available at this university.



- (a) What does the display reveal about the way the gender balance varies between the three programs?

- (b) Does the information in the display imply that the number of males in the doctoral program is greater than the number of males in the masters program? Explain.
- (c) When selecting a student at random from the university, are the events “is enrolled in the doctoral program” and “is female” mutually exclusive? Justify your answer.
- (d) When selecting a student at random from the university, are the events “is enrolled in the doctoral program” and “is female” independent? Justify your answer.