## Question 2

(25 marks)
A survey of 100 shoppers, randomly selected from a large number of Saturday supermarket shoppers, showed that the mean shopping spend was $€ 90 \cdot 45$. The standard deviation of this sample was $€ 20 \cdot 73$.
(a) Find a $95 \%$ confidence interval for the mean amount spent in a supermarket on that Saturday.

(b) A supermarket has claimed that the mean amount spent by shoppers on a Saturday is $€ 94$. Based on the survey, test the supermarket's claim using a $5 \%$ level of significance. Clearly state your null hypothesis, your alternative hypothesis, and your conclusion.

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(c) Find the $p$-value of the test you performed in part (b) above and explain what this value represents in the context of the question.

| $p$-value: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Explanation: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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