

4. (20 pts)

- a) Explain why testing can only detect the presence of errors, not their absence.
- b) In a progressive tax system, an employee's taxable income is determined after a tax-free allowance, which varies based on their family status.

Allowance: A single employee has £6,600 of salary tax-free. If the employee has any dependents, the tax-free allowance is increased to £8,000.

Tax Bands:

The next £1,600 of income is taxed at 10%.

The next £18,000 after that is taxed at 16%.

Như 2025 nhưng câu 4 thay đổi nhẹ.

Any further amount is taxed at 30%.

Identify testing partitions for a method *taxCalculate(double salary, boolean hasDependents)* that takes the employee's salary and dependent status as input, then design:

A test dataset containing 3 input combinations that belong to different valid partitions for validation testing.

A test dataset containing 4 input combinations focusing on defect detection, based on the guidelines for boundary value selection.