

Mark true or false and justify your answer:

1. All constant functions are not continuous. 1.5

2. Let $f: X \rightarrow Y$ and $g: Y \rightarrow Z$ be given functions. If gf is closed and f is continuous and onto, then g is closed. 2

3. A space (X, τ) is a T_0 -space if and only if each pair of distinct points $x, y \in X, \overline{\{x\}} \neq \overline{\{y\}}$. 4

4. The property of being a T_4 -space is a topological property. 4

5. A space (X, τ) is second countable if and only if it is separable. 5

6. If $f: X \rightarrow Y$ is continuous from the separable space X to the space Y , then Y is separable. 3.5