

1	<p>Define the following</p> <ul style="list-style-type: none"> a) Well Formed Formula b) Halting Problem c) Sum of products canonical form d) Floyd's Theorem for proving the termination of a program e) Differentiate forward chaining and backward chaining
2	<ul style="list-style-type: none"> a) Which are two popular fallacies people make while using propositional logic? b) Define Prenex Normal Form. c) Prove whether following argument is valid or not using the rules of propositional logic. Explain each step properly. If today is Tuesday, Then I have a test in computer science or a test in economics. If my economic professor is sick, then I will not have a test in economics. Today is Tuesday and my economic professor is sick. Therefore I have a test in computer science.
3	<ul style="list-style-type: none"> a) Prove the validity of the following argument using inference rules using quantifiers. Every living thing is a plant or an animal. David's dog is alive and it is not a plant. All animals have hearts. Hence David's dog has a heart. b) Explain Resolution principle and take an example to show its working. c) Explain Modus Tollen and Hypothetical Syllogism.
4	<ul style="list-style-type: none"> a) What are various methods of proof? Take one example for each of them. b) $\sqrt{2}$ is a rational number using proof by contradiction.