1. Show that the implication and its contrapositive are logically equivalent.
asked in 2073

2. Given propositions p and q, define conjunction and disjunction of them.
asked in 2065

3. Define proposition and its negation with an example.
asked in 2066

4. What do you mean by proposition? Give example to justify your answer.
asked in 2067

5. Given propositions p and q, define conjunction and disjunction of p and q.
asked in 2069

6. What is compound proposition? Discuss implication with suitable example.
asked in 2070

7. What is negation? Discuss with suitable example and truth table.
asked in 2071

8. What is conjunction? Discuss with suitable example and truth table.
asked in 2072

9. Which rule of inference is used in the following argument?
If I work all night on this homework, then I can answer all the exercise. IF answer all the exercise, I will understand all the material. Therefore, if I work all night on this homework, then I will understand the material.
asked in 2073

10. Define the term converse, contropositive and inverse.
asked in 2074

11. Define existential quantifications with suitable examples.
asked in 2065

12. Show that $\neg (p \vee q)$ and $\neg p \wedge \neg q$ are logically equivalent.
asked in 2066

13. How do you define logically equivalent propositions?
asked in 2067

14. Is the following argument valid?
Smoking is healthy.
If smoking is healthy, then cigarettes are prescribed by physicians.
∴Cigarettes are prescribed by physicians
asked in 2068

15. Is the following argument valid?
If taxes are lowered, then income rises.

Income rises.
∴ Taxes are lowered

asked in 2069

16. Which rule of inference is used in the following argument?
Ram is hard working. If Ram is hard working, then he is intelligent. Therefore Ram is intelligent.
asked in 2070

17. Discuss universal quantifier with example.
asked in 2071

18. Show that $(p \wedge q) \rightarrow p$ is a tautology by using truth table.
asked in 2072

19. Is the following argument valid? If Socrates is human, then Socrates is mortal Socrates is human.
∴ Socrates is mortal.
asked in 2074

20. State which rule of inference is basis of the following argument: “It is below freezing and raining now, therefore, it is below freezing now.”
asked in 2065

21. State which rule of inference is the basis of the following argument; “It is below freezing now. Therefore, it is either below freezing or raining now.”
asked in 2066

22. Give examples of addition rule and simplification rule of inference.
asked in 2067

23. State the rules for the strong form of mathematical induction with propositions.
asked in 2068

24. Define universal instantiation.
asked in 2071

25. What is valid argument?
asked in 2072

26. All over smart people are stupid. Children of stupid people are naughty. John is a children of Jane. Jane is over smart. Represent these statements in FOPL and prove that John is naughty.
asked in 2076

27. Let A = "Aldo is Italian" and B = "Bob is English". Formalize the following sentences in proposition.
a. Aldo isn't Italian.
b. Aldo is Italian while Bob is English.
c. If Aldo is Italian then Bob Bob is not English.
d. Aldo is Italian or if Aldo isn't Italian then Bob is English.
e. Either Aldo is Italian and Bob is English, or neither Aldo is Italian nor Bob is English.
asked in 2075

28. Express the statement " Everyone has exactly one best friend " as a logical expression involving predicates, quantifiers with a domain consisiting of all people and logical connectives.
asked in 2074

29. Explain the 4 rules of inference for quantified statements.
asked in 2065

30. Differentiate between existential and universal quantifiers with suitable examples.
asked in 2066

31. Explain the 2 rules of inference for quantified statements and give suitable examples.
OR
Show that the propositions pV(p ∧ r) and (rV q) ∧ (p V r) are logically equivalent.
asked in 2067

32. Explain the rules of inference for quantified statements.
asked in 2068

11. What is logical equivalence? Show that p→q and ¬q → ¬q are logically equivalent.
OR
Discuss Modus Ponens with suitable example.
asked in 2072

33. Explain the rules of inference for quantified statements.
asked in 2069

34. Prove that the product xy is odd if and only if both x and y are odd integers .
asked in 2075

35. Discuss direct =, indirect and vacuous proof with suitable example.
asked in 2073

36. Construct truth tables to determine whether the given statement is a tautology a contingency or an absurdity.
a) $p \Rightarrow (q \Rightarrow p)$
b) $q \Rightarrow (q \Rightarrow p)$
c) $p \wedge \sim p$
OR
Explain the method of proving theorems by direct indirect, controdiction and by cases.
asked in 2074

37. Explain Tautologies, contradiction and contingencies with suitable examples.
OR
Explain the method of proving theorems by direct, indirect, contradiction and by cases.
asked in 2065

38. Discuss the techniques of proofs by contradiction and by cases with suitable examples.
asked in 2066

39. Discuss the techniques of direct proof indirect proof and vacuous proof for proving implications with suitable examples.
asked in 2067

40. Discuss direct proof, indirect proof, and proof by contradiction with suitable example.
asked in 2071

41. Discuss the different rules of inference for quantified statements along with suitable example of each.
asked in 2072

42. Construct truth tables to determine whether the given statement is a tautology, a contingency, or an absurdity:
a) $p \Rightarrow (q \Rightarrow p)$
b) $q \Rightarrow (q \Rightarrow p)$
c) $p \wedge \sim p$
asked in 2069