

Unit-1

Discrete Mathematics- Objective questions

Choose the Correct Answer

1. Which of the following is a statement?

- A) What is your name?
- B) Close the door.
- C) $5 + 3 = 8$
- D) Please sit down.

Answer: C) $5 + 3 = 8$

2. What does $\neg p$ represent?

- A) AND
- B) OR
- C) NOT
- D) IF

Answer: C) NOT

3. Which symbol represents AND?

- A) $\vee$
- B) $\wedge$
- C) $\neg$
- D) $\rightarrow$

Answer: B) $\wedge$

4. Which symbol represents OR?

- A) $\vee$
- B) $\wedge$
- C) $\neg$
- D) $\leftrightarrow$

Answer: A) $\vee$

5. The expression $p \rightarrow q$ represents:

- A) Conjunction
- B) Disjunction
- C) Implication
- D) Negation

Answer: C) Implication

6. Which of the following is DNF?

- A) $p \wedge (q \vee r)$
- B) $(p \wedge q) \vee r$
- C) $p \rightarrow q$
- D) $\neg p$

Answer: B) $(p \wedge q) \vee r$

7. CNF means:

- A) Conditional Normal Form
- B) Conjunctive Normal Form
- C) Complete Normal Formula
- D) Combined Normal Form

Answer: B) Conjunctive Normal Form

8. Which rule is represented by $p \rightarrow q, p \therefore q$?

- A) Modus Tollens
- B) Modus Ponens
- C) Disjunctive Syllogism
- D) Hypothetical Syllogism

Answer: B) Modus Ponens

9. Which symbol represents the universal quantifier?

- A) $\exists$
- B) $\forall$
- C) $\neg$
- D) $\rightarrow$

Answer: B) $\forall$

10. Which symbol represents the existential quantifier?

- A) $\forall$
- B) $\wedge$
- C) $\exists$
- D) $\vee$

Answer: C) $\exists$

11. The universal quantifier means:

- A) There exists
- B) For all
- C) Not
- D) Only one

Answer: B) For all

12. The existential quantifier means:

- A) For all
- B) None
- C) There exists
- D) Always false

Answer: C) There exists

13. Which of the following is a predicate?

- A) $5 + 3 = 8$
- B) $P(x): x > 5$
- C) 10 is even
- D) $p \wedge q$

Answer: B) $P(x): x > 5$

14. De Morgan's law states:

A) $\neg(p \wedge q) = \neg p \vee \neg q$

B) $p \wedge q = p \vee q$

C) $p \rightarrow q = q \rightarrow p$

D) $p = p \vee q$

Answer: A) $\neg(p \wedge q) = \neg p \vee \neg q$

15. Predicate calculus mainly deals with:

A) Numbers only

B) Predicates and quantifiers

C) Geometry

D) Algebraic equations

Answer: B) Predicates and quantifiers

Fill in the Blanks

1. A statement that is either true or false is called a _____.

2. The symbol used for NOT is _____.

3. The logical connective AND is represented by _____.

4. The logical connective OR is represented by _____.

5. The symbol $\rightarrow$ represents _____.

6. The symbol $\leftrightarrow$ represents _____.

7. DNF stands for _____.

8. CNF stands for _____.

9. The rule $p \rightarrow q, p \therefore q$ is called _____.

10. A predicate contains _____ or objects.

11. The symbol $\forall$ is called the _____ quantifier.

12. The symbol $\exists$ is called the _____ quantifier.

13. $\neg(p \wedge q) = \neg p \vee \neg q$ is one of _____ laws.

14. Deriving a conclusion from given premises is called _____.

15. Predicate calculus uses predicates and _____.

Answers

1. Proposition
2. $\neg$
3. $\wedge$
4. $\vee$
5. Implication
6. Biconditional
7. Disjunctive Normal Form
8. Conjunctive Normal Form
9. Modus Ponens
10. Variables
11. Universal
12. Existential
13. De Morgan's
14. Inference
15. Quantifiers