

1. If in the truth table the answer column has the truth values both TRUE and FALSE then it is said to be _____.

- A. tautology
- B. contradiction
- C. contingency
- D. equivalence relation

2. To prove the statement P tautologically implies the statement Q , it is enough to prove that_____.

- A. P conditional Q is a contradiction
- B. P conditional Q is a tautology
- C. P biconditional is a contradiction
- D. P biconditional Q is a tautology

3. To prove the statement P is tautologically equivalent to the statement Q , it is enough to prove that _____.

- A. P conditional Q is a contradiction
- B. P conditional Q is a tautology
- C. P biconditional Q is a contradiction
- D. P biconditional Q is a tautology

4. Let $R = \{(1,2), (3,4), (2,6)\}$ and $S = \{(4,3), (2,5), (6,6)\}$ be a relation then R composite $S =$ _____.

- A. $\{(1,5), (3,3), (2,6)\}$
- B. $\{(1,5), (3,6), (2,5)\}$
- C. $\{(4,4), (2,5), (3,3)\}$
- D. $\{(1,1), (3,3), (2,2)\}$

5. The binary relation $R = \{(0, 0), (1, a)\}$ on $A = \{0, 1, 2, 3, \}$ is _____.

- A. reflexive, not symmetric, transitive
- B. not reflexive, symmetric, transitive
- C. reflexive, symmetric, not transitive
- D. reflexive, not symmetric, not transitive

6. Every connected graph contains a _____.

- A. tree
- B. sub tree
- C. spanning tree
- D. spanning subtree

7. A minimal non-empty edge cut of G is called a _____.

- A. bond
- B. cycle
- C. path
- D. tour

8. A self complemented distributive lattice is called _____.

- A. boolean algebra
- B. modular lattice
- C. complete lattice
- D. self dual lattice

9. Every finite subset of a lattice has _____.

A. a Least Upper Bound and Greatest Lower Bound

B. many Least Upper Bounds and a Greatest Lower Bound

C. many Least Upper Bounds and many Greatest Lower Bounds

D. either some Least Upper Bounds or some Greatest Lower Bounds

10. The number of letters in a word is called _____.

A. length

B. string

C. syntax

D. alphabet

11. If r is a regular expression then r^* is a _____ expression.

A. regular

B. irregular

C. isomorphic

D. homomorphic

12. An example for regular grammar is _____.

A. $S \rightarrow Ab$

B. $AB \rightarrow SAB$

C. $S \rightarrow aB$

D. $S \rightarrow aBB$

13. A regular grammar contains rules of the form _____.

- A. $A \rightarrow AB$
- B. $AB \rightarrow a$
- C. $A \rightarrow aB$
- D. $AB \rightarrow CD$

14. A type-2 grammar contains the rules of the form is_____.

- A. $a \rightarrow AB$
- B. $AaB \rightarrow a$
- C. $A \rightarrow aBC$
- D. $AB \rightarrow CD$

15. Let $R = \{(1, 3), (4, 2), (2, 2), (3, 3), (1, 1), (4, 4)\}$ be a relation on the set $A = \{1, 2, 3, 4\}$. The relation R is _____.

- A. transitive
- B. reflexive
- C. not symmetric
- D. function

16. The NAND statement is a combination of _____.

- A. NOT and AND
- B. NOT and OR
- C. AND and OR
- D. NOT or OR

17. The NOR statement is a combination of _____.

- A. NOT and AND
- B. NOT and OR
- C. AND and OR
- D. NOT or OR

18. $P \rightarrow Q, Q \rightarrow R$ then _____.

- A. $P \rightarrow R$
- B. $R \rightarrow P$
- C. Q
- D. R

19. If a normal form contains all minterms, then it is _____.

- A. a tautology
- B. a contradiction
- C. a contingency
- D. both a and b

20. A graph in which every vertex has same degree is called _____ graph.

- A. regular
- B. simple
- C. complete
- D. null