Surprise Test-1

01 Nov 2021

All questions are mandatory. For objective questions there may be more than one option and no partial marking is allowed. Each question carry one marks.

1. Define $p * q$ to be a true statement when if neither p nor q is true. Then $(p * q) \wedge (q * r)$ is a
   (a) Tautology
   (b) Contradiction
   (c) Contingency
   (d) None of the above.
2. 20 teachers of a school either teach mathematics or physics. 12 of them teach mathematics while 4 teach both the subjects. Then the number of teachers teaching physics only is
   (a) 12
   (b) 8
   (c) 16
   (d) None of the above.
3. Which of the following is/are tautology
   (a) $(p \wedge q) \rightarrow q$
   (b) $q \rightarrow (p \vee q)$
   (c) $(\rightharpoonup q \wedge (p \rightarrow q)) \rightarrow p$
   (d) All of the above.
4. Which of the following statement is the negation of the statement: "2 is even or -3 is negative"?
   (a) 2 is even or -3 is not negative.
   (b) 2 is odd or -3 is not negative.
   (c) 2 is even and -3 is not negative.

(d) 2 is odd and -3 is not negative.

5. If $p \to q$ is false, determine the truth value of $(\rightharpoonup (p \wedge q))q$

   (a) True

   (b) False

6. Consider the following conditional statement
   p: If the flood destroys my house or the fire destroys my house, then my insurance company will pay me. Which of the following is the converse of p.

   (a) If the insurance company pays me, then the flood destroys my house or the fire destroys the house.

   (b) If the insurance company pays me, then the flood destroys my house and the fire destroys the house.

   (c) If the insurance company does not pay me, then the flood does not destroy my house or the fire does not destroy the house.

   (d) If the insurance company does not pay me, then the flood does not destroy my house and the fire does not destroy the house.

7. Which of the following is/are true.

   (a) $p \wedge T \equiv T$

   (b) $p \vee F \equiv p$

   (c) $p \vee T \equiv p$

   (d) $p \wedge F \equiv F$.

8. Two finite sets have m and n elements. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. Then the values of m and n

   - write your final answer only.....

9. Write down De Morgan's law for quantifiers.

10. Write down the rules of inference for quantified statements containing universal quantifier.