

MTH202

QUIZ 1 UPDATED 21 MAY 2023

1. Which of the following is a biconditional statement?

- a) He is neither playing nor reading
- b) If you get good grades then I will buy you a gift
- c) $1+1 = 3$ if and only if earth is flat
- d) 33 is not divisible by 4

Correct answer: c) $1+1 = 3$ if and only if earth is flat

2. An argument is _____ if the conclusion is false when all the premises are true.

- a) Invalid
- b) None of the above
- c) True
- d) Valid

Correct answer: a) Invalid

3. $\sim(p \wedge q)$ is logically equivalent to _____.

- a) $\sim p \vee \sim q$
- b) $\sim p \wedge \sim q$
- c) $\sim p$ biconditional $\sim q$
- d) $\sim p$ implies $\sim q$

Correct answer: a) $\sim p \vee \sim q$

4. Let p be True and q be True, then $(\sim p \text{ AND } q)$ is _____.

- a) True
- b) Contradiction

c) Tautology

d) False

Correct answer: d) False

5. 'p is equivalent to q' means _____.

a) p is not necessary but p is sufficient for q.

b) p is necessary and sufficient for q.

c) p is necessary but not sufficient for q.

d) p is neither necessary nor sufficient for q.

Correct answer: b) p is necessary and sufficient for q.

6. The statement 'Beijing is the capital of China AND Cairo is the capital of Egypt' is a _____.

a) Negation

b) Conjunction

c) Disjunction

d) Conditional

Correct answer: b) Conjunction

7. If A = set of prime numbers less than 2 and B = set of whole numbers between 0 and 1, then _____.

a) $A = B$

b) All of the above

c) A is the subset of B

d) B is the subset of A

Correct answer: d) B is the subset of A

8. Which of the following is the comprehensive answer of the sentence $x+2 = 4$?

a) It is not a proposition/statement.

b) It is a true proposition/statement.

c) It is a false proposition/statement.

d) It is a proposition/statement.

Correct answer: c) It is a false proposition/statement.

9. $\sim(P \rightarrow q)$ is logically equivalent to _____.

a) $p \text{ OR } \sim q$

b) $\sim p \text{ AND } q$

c) $p \text{ AND } \sim q$

d) $\sim p \text{ OR } q$

Correct answer: c) $p \text{ AND } \sim q$

10. If $S = \{x | x \text{ is a positive integer, } 2x-2=0\}$, then its tabular form is _____.

a) $S = \{0\}$

b) Empty set

c) $S = \{1/2\}$

d) $S = \{1\}$

Correct answer: d) $S = \{1\}$

11. If $p = T$ and $q = T$, then $\sim p \rightarrow \sim q =$ _____.

a) True

b) False

Correct answer: a) True

12. The truth value of $(3+1=4) \wedge (5 \text{ is an odd number})$ is _____.

a)

True

b) False

Correct answer: b) False

13. Negation of $2 < x < 3$ is _____.

- a) $2 < x$ OR $x > 3$
- b) $2 \geq x$ OR $x \geq 3$
- c) $2 > x$ OR $x < 3$
- d) $2 > x$ AND $x > 3$

Correct answer: b) $2 \geq x$ OR $x \geq 3$

14. Generally, $(p \vee t)$ is _____.

- a) p
- b) t (where t is a tautology)

Correct answer: b) t (where t is a tautology)

15. $\sim(p \wedge q) =$ _____.

- a) $\sim p$ biconditional $\sim q$
- b) $\sim p \wedge \sim q$
- c) $\sim p \vee \sim q$
- d) $\sim p$ implies $\sim q$

Correct answer: c) $\sim p \vee \sim q$

16. The set of Natural numbers is the discrete set.

- a) False
- b) True

Correct answer: b) True

17. Let $(p \text{ AND } q)$ be True, then $(\sim p \text{ OR } \sim q)$ is _____.

- a) T (where T is a tautology)
- b) True
- c) C (where C is a contradiction)
- d) False

Correct answer: b) True

18. The statement 'Islamabad is the capital of Pakistan AND Abu Dhabi is the capital of U.A.E.' is a _____.

- a) Disjunction
- b) Conditional
- c) Conjunction
- d) Negation

Correct answer: c) Conjunction

19. Let $p =$ "I am a student" and $q =$ "I love to study mathematics", then the symbolic form for the statement "I am not a student but I love to study mathematics" is _____.

- a) $p \wedge \neg q$
- b) $p \wedge q$
- c) $\neg p \wedge q$
- d) $\neg p \vee q$

Correct answer: c) $\neg p \wedge q$

20. Let $p \rightarrow q$ be a conditional statement, then the statement $q \rightarrow p$ is called _____.

- a) Contrapositive
- b) Double conditional
- c) Converse
- d) Inverse

Correct answer: c) Converse

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