Question No : 1 of 26 **Marks: 1 (Budgeted Time 1 Min)**

Rephrase the following statement in bi-conditional form
"If you get up early in the morning, you will be healthy"

Answer (Please select your correct option)

- You will be healthy if and only if you get up early in the morning

  correct
- If you will be healthy then you will get up early in the morning
- If you will get up early in the morning then you will be healthy
- None of these

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Question No : 2 of 26 **Marks: 1 (Budgeted Time 1 Min)**

Reductio ad absurdum law is symbolically denoted as

Answer (Please select your correct option)

- $(p \wedge q) \rightarrow r \equiv p \rightarrow (q \rightarrow r)$
- $p \leftrightarrow q \equiv (p \rightarrow q) \wedge (q \rightarrow p)$
- $p \rightarrow q \equiv \sim p \vee q$
- $p \rightarrow q \equiv (p \wedge \sim q) \rightarrow c$

correct

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Question No : 3 of 26 Marks: 1 (Budgeted Time 1 Min)

A critical row is that in which _____ premises have truth value T.

Answer (Please select your correct option)

- at least one
- exactly one
- all

correct

- at least two

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Question No : 4 of 26 Marks: 1 (Budgeted Time 1 Min)

What will be the output of an OR-gate if it has inputs 0 and 1?

Answer (Please select your correct option)

- 0
- 1

correct

- 2
- 3

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Question No : 5 of 26 Marks: 1 (Budgeted Time 1 Min)

Let U be the universal set and A is its subset then $A \cup A^c$ is equal to

Answer (Please select your correct option)

- A correct
- A^c
- ϕ
- U

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Question No : 6 of 26 **Marks: 1 (Budgeted Time 1 Min)**

Identify the false statement

Answer (Please select your correct option)

- $0 \in \phi$ correct
- $\{\phi\} \subseteq \{\phi\}$
- If A and B are two sets $A \subseteq B$ and $B \subseteq A$ then $A = B$
- Two sets are disjoint if their intersection is empty set

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Question No : 7 of 26 **Marks: 1 (Budgeted Time 1 Min)**

If A and S are two reflexive relations then $A \cap S$ will be

Answer (Please select your correct option)

- Symmetric
- Reflexive

correct

- Transitive

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Question No : 8 of 26 Marks: 1 (Budgeted Time 1 Min)

Symmetric and Anti-symmetric relations are

Answer (Please select your correct option)

- negative of each other.
- same.
- not negative of each other.

correct

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Question No : 9 of 26 **Marks: 1 (Budgeted Time 1 Min)**

If two relations are reflexive then their composition is

Answer (Please select your correct option)

- Anti-symmetric
- Reflexive

correct

- Irreflexive
- Symmetric

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Question No : 10 of 26 Marks: 1 (Budgeted Time 1 Min)

Inverse of relation can be obtained by

Answer (Please select your correct option)

- changing signs of elements in order pairs.
- changing position of elements in order pairs.

correct

- taking multiplicative inverse of elements in order pairs.

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Question No : 11 of 26 **Marks: 1 (Budgeted Time 1 Min)**

Let $A \times A = \{(1,1),(1,2),(1,3),(2,1),(2,2),(2,3),(3,1),(3,2),(3,3)\}$, find which one of the given relations is a function.

Answer (Please select your correct option)

- $R_1 = \{(1,3),(2,2),(3,1)\}$
- $R_2 = \{(1,1),(1,2),(2,1)\}$
- $R_3 = \{(2,2),(2,3),(3,1)\}$

Question No : 12 of 26 **Marks: 1 (Budgeted Time 1 Min)**

If $f(x) = 2x + 1$ and $g(x) = x^2 - 1$ then $f \circ f(x) =$

Answer (Please select your correct option)

- $4x - 3$
- $4x^2+1$
- $4x + 3$

correct

- $4x^2 - 1$

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Question No : 13 of 26 **Marks: 1 (Budgeted Time 1 Min)**

Let f and g be the functions defined by $f(x) = 2x + 3$ and $g(x) = 3x + 2$ then composition of f and g is

Answer (Please select your correct option)

- $6x + 6$ — correct
- $5x + 5$
- $6x + 7$

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Question No : 14 of 26 **Marks: 1 (Budgeted Time 1 Min)**

The negation of $1 < x < 10$ is $x \leq 1$ or $x \geq 10$ by using:

Answer (Please select your correct option)

- Distributive Law
- Inequality Law
- De-Morgan's Law
- None of these

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Question No : 15 of 26 Marks: 1 (Budgeted Time 1 Min)

If the nth term of a sequence is $a_n = 2(-3)^n + 5^n$ then the term a_1 is

Answer (Please select your correct option)

- -1
- 0
- 1
- 2

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Question No : 16 of 26 Marks: 1 (Budgeted Time 1 Min)

The part of definition which can be expressed in terms of smaller versions of itself is called

Answer (Please select your correct option)

- Recursion

correct

- Conclusion
- Base
- Restriction

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Question No : 17 of 26 Marks: 1 (Budgeted Time 1 Min)

The tower of Hanoi is a puzzle consisting of

Answer (Please select your correct option)

- 2 people
- 3 people

correct

- 4 people

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Question No : 18 of 26 Marks: 1 (Budgeted Time 1 Min)

The same element can never appear --------- in a set.

Answer (Please select your correct option)

- twice

correct

- once
- thrice

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Question No : 19 of 26 Marks: 1 (Budgeted Time 1 Min)

If $(A \cup B) = A$ then

Answer (Please select your correct option)

- $(A \cap B) = B^c$
- $(A \cap B) = A$
- $(A \cap B) = B$

correct

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Question No : 20 of 26 **Marks: 1 (Budgeted Time 1 Min)**

If p = It is raining
q = She will go to college
"It is raining and she will not go to college" will be denoted by

Answer (Please select your correct option)

- $p \wedge : q$

correct

- $p \wedge q$
- $: (p \wedge q)$
- $: p \wedge q$

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Question No : 21 of 26 **Marks: 2 (Budgeted Time 4 Min)**

Determine whether the function $f(x) = x + 1$ is one-to-one?

Answer (Please click here to Add Answer)

Question No : 22 of 26 **Marks: 2 (Budgeted Time 4 Min)**

Compute the first four terms of the sequence defined by the formula $a_n = 3n - 5$.

Answer (Please click here to Add Answer)

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Question No : 23 of 26 **Marks: 3 (Budgeted Time 6 Min)**

Show that $f(x) = x^3 + 1$ is onto function.

Answer (Please click here to Add Answer)

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Question No : 24 of 26 Marks: 3 (Budgeted Time 6 Min)

Find the sum of the infinite G.P $2, \sqrt{2}, 1, \ldots$

Answer (Please click here to Add Answer)

Question No : 25 of 26 **Marks: 5 (Budgeted Time 10 Min)**

Let $A = \{a,b,c,d\}$ be a set and consider the relation $R = \{(a,a),(a,b),(a,c),(a,d),(b,b),(b,d),(c,c),(c,d),(d,d)\}$ on A. Show that R is a partial ordering.

Answer (Please click here to Add Answer)

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Question No : 26 of 26 **Marks: 5 (Budgeted Time 10 Min)**

Let $f(x) = ax + b$ and $g(x) = cx + d$, where a,b,c and d are constants. Under what condition $f \circ g(x) = g \circ f(x)$.

Answer (Please click here to Add Answer)