



2ND YEAR COMPUTER SCIENCE SOLVED EXERCISE

UNIT #02 - Computational Thinking & Algorithms

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Multiple Choice Questions (UNIT #02)

1. Computational thinking is mainly used for:

- (a) Playing computer games
- (b) Solving problems in a logical way
- (c) Writing essays
- (d) Drawing pictures

2. The first step in problem solving is:

- (a) Writing code
- (b) Evaluating the solution
- (c) Identifying the problem
- (d) Breaking the problem

3. Breaking a large problem into smaller parts is called:

- (a) Abstraction
- (b) Decomposition
- (c) Evaluation
- (d) Automation

4. A step-by-step solution to a problem is known as an:

- (a) Program
- (b) Flowchart
- (c) Algorithm
- (d) Function

5. The logic that uses only true or false values is:

- (a) Predicate logic
- (b) Fuzzy logic
- (c) Propositional logic
- (d) Natural logic

6. A compound proposition is:

- (a) (P)
- (b) (Q)
- (c) $(P \wedge Q)$
- (d) true

7. The purpose of a truth table is to:

- (a) Write programs
- (b) Store data
- (c) Evaluate logical expressions
- (d) Design algorithms

8. A proposition that is true for at least one case is called:

(a) Unsatisfiable

(b) Invalid

(c) Satisfiable

(d) Equivalent

9. The symbol for the universal quantifier is:(a) $\exists$ (b) $\rightarrow$ (c) $\forall$ (d) $\in$ **10. Predicate logic is mainly used to:**

(a) Draw diagrams

(b) Represent relationships using variables

(c) Store numbers

(d) Design networks

MCQ'S Answer Key (UNIT #02):

Q. No	1	2	3	4	5	6	7	8	9	10
Answer	B	C	B	C	C	C	C	C	D	B

Short Questions (UNIT #02)

1.What is meant by computational thinking?

Answer: Computational thinking is a way of thinking to solve problems clearly and logically. It focuses on understanding a problem step by step.

It involves:

- Break big problems into smaller and simpler parts (Decomposition).
- Remove unnecessary detail and focus on important points (Abstraction).
- Look for pattern (Pattern Recognition).

2.Why is computational thinking important in problem solving?

Answer: Computational thinking helps us think logically and clearly. It puts steps in the correct order and prevents errors during problem solving. Anyone can understand and use the steps easily. Computers also follow step-by-step instructions. Good planning leads to correct results.

3.What is decomposition in problem solving?

Answer: Decomposition is the process of breaking a big problem into smaller and simpler parts. It makes the problem easier to understand and solve.

Key points:

- Break a big problem into smaller and simpler parts.
- Understand the problem step by step.
- Make a complex problem easier to manage.

4.What is an algorithm?

Answer: An algorithm is a step-by-step set of instructions used to solve a problem. It provides a clear and logical sequence of steps to achieve a desired result.

Key points:

- It consists of a set of steps or instructions.
- The steps are arranged in a correct order.
- It helps solve a problem systematically.
- Each step should be clear and easy to understand.
- It leads to a correct result or solution.

5.What is logic in computer science?

Answer: In computer science, logic means using rules to make correct decisions. It helps computers understand true and false conditions and process information correctly.

Logical statements are used in programs and algorithms to control the flow of programs. Logic is the basis of many computer operations and helps computers think in a structured way.

6.What is a proposition?

Answer: A proposition is a statement that is either true or false. It cannot be both true and false at the same time. A proposition must have a clear meaning and should not be confusing. Questions and commands are not propositions.

Example:

“The sun rises in the east” is a proposition.

A proposition is usually represented by a capital letter such as P, Q, or R.

7.What are truth values?

Answer: A truth value is the value that shows whether a proposition is True (T) or False (F). Each proposition can have one of two truth values: **True (T)** or **False (F)**.

In a truth table, all possible combinations of truth values are listed for the given propositions.

8.What is a truth table?

Answer: A truth table is a table that shows the truth value of a logical expression for all possible combinations of truth values of its propositions.

It helps us understand how a logical expression behaves and determine when a statement is true or false.

Truth tables help in checking the correctness of logical expressions and remove confusion in logical reasoning.

9.What is propositional satisfiability?

Answer: Propositional satisfiability is a concept in logic that checks whether a logical expression can be true. An expression is satisfiable if there is at least one combination of truth values that makes it true. If all possible combinations make it false, the expression is unsatisfiable.

Example:

P OR Q is satisfiable because it is true when either P or Q is true.

P AND NOT P is unsatisfiable because it can never be true.

10.What is a predicate in predicate logic?

Answer: A predicate in predicate logic is a statement that contains a variable and can be true or false depending on the value of its variable. It is used to describe a property or relationship of an object.

Example: $x > 5$ is a predicate.

Its truth depends on the value assigned to x. Where x is a variable.

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