✓LONG ANSWER QUESTIONS FROM UNIT I

Q1.

Explain the difference between **primary data** and **secondary data**. Give examples of each and explain the major sources of secondary data.

Q2.

Define **Permutation** and **Combination**. Solve the following:
A committee of 3 members is to be formed from a group of 5 men and 4 women.
(a) How many different committees can be formed?
(b) How many committees can be formed with at least 1 woman?

Q3.

What is a **function** in mathematics? Explain with suitable examples. Also define domain, co-domain and range of a function.

Q4.

In a group of 1000 people, 600 like tea, 700 like coffee, and 400 like both.
Find:
(a) The number of people who like only tea
(b) The number of people who like only coffee
(c) The number of people who like neither

Q5.

Define **Set Theory**. Write and explain the following types of sets with examples:
(i) Null set (ii) Finite set (iii) Universal set (iv) Power set

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Q6.

Define **linear equations**. Solve the following system using the substitution or elimination method:

3x+4y=103x + 4y = 10 3x+4y=10 5x−2y=45x - 2y = 45x−2y=4

Q7.

A train covers a distance of 240 km in 4 hours. Another train travels 180 km in 3 hours. Find the speeds of both trains and determine which one is faster. Also calculate the difference in their speeds.

Q8.

Write short notes on the following:
(a) LCM and HCF (with examples)
(b) Difference between even and odd functions
(c) Importance of understanding percentages in real life

✅LONG ANSWER QUESTIONS FROM UNIT II: Logical Reasoning – I

Q9.

Solve the following **seating arrangement** problem:
Six persons A, B, C, D, E, and F are sitting in a straight line. B is to the immediate right of A. C is at one of the ends. D is between E and F. E is not at any end.
Draw the arrangement and answer the following:
(a) Who is sitting in the middle?
(b) Who is to the left of B?

Q10.

Define **Venn Diagrams**. Use a Venn diagram to solve the following:
In a class of 60 students, 25 like Mathematics, 30 like English, and 10 like both.
Find:
(a) The number of students who like only Mathematics
(b) The number of students who like only English
(c) The number of students who like neither

Q11.

What is **binary logic**? Construct a truth table for the following logical expression:

(P∧Q)∨(¬P)(P \land Q) \lor (\lnot P)(P∧Q)∨(¬P)

Q12.

Define the following terms in context of reasoning:
(a) Syllogism
(b) Logical connectives
(c) Logical matching
Explain each with one example.

Q13.

Explain the concept of **calendar-based reasoning**. How do you determine the day of the week for a given date? Solve for:
What day of the week was 15th August 1947?

Q14.

A cube is painted on all its faces. It is then cut into 64 equal cubes.
(a) How many cubes will have only one face painted?
(b) How many will have no face painted?
(c) How many will have two faces painted?

Q15.

Define **blood relation problems** in logical reasoning.
Solve the following:
A is the brother of B. C is the mother of A. D is the sister of C. E is the daughter of D.
How is B related to E?