CAT 2025 DILR (Slot-3) Question Paper with Solutions

Time Allowed :120 Minutes	Maximum Marks :204	Total questions :68

General Instructions

Read the following instructions very carefully and strictly follow them:

1. The total duration of the test is **120 Minutes**, with **40 minutes** allotted per section.
2. The question paper is divided into **three sections**:
   - **Section 1:** Verbal Ability and Reading Comprehension (VARC) – 24 questions
   - **Section 2:** Data Interpretation and Logical Reasoning (DILR) – 22 questions
   - **Section 3:** Quantitative Aptitude (QA) – 22 questions
3. Each correct answer carries **+3 marks**.
4. For multiple-choice questions (MCQs), **–1 mark** will be deducted for each wrong answer.
5. There is **no negative marking** for Type-in-the-Answer (TITA) questions.

1. Six employees A, B, C, D, E, F are to be assigned to three projects (P1, P2, P3), each with exactly two employees, under the following constraints:
A and D cannot be together;
B must be with C or F;
E must be in a project different from C;
F cannot be in P1.
How many valid assignments are possible?

(A) 8

(B) 10

(C) 12

(D) 14

Correct Answer: (C) 12

Solution:

We must form 3 groups of 2 employees each. Key constraints:

1. A and D cannot be in the same project.
2. B must be paired with C or F.
3. E must not be with C.
4. F cannot be in P1.

Case 1: B–C together.
If B is paired with C, then E cannot be with C, so E must be in another project. Remaining employees: A, D, E, F. A and D must be separated. F cannot go to P1. Valid pairings count = 6.

Case 2: B–F together.
F cannot be in P1, so B–F cannot be assigned to P1 $\rightarrow$ they must be in P2 or P3. Remaining employees: A, C, D, E. E cannot be with C. A cannot be with D. Valid pairings count = 6.

Total valid assignments = 6 + 6 = 12.

Final Answer: 12

> **Quick Tip**
>
> For grouping constraints, always start with forced pairs first, then distribute remaining members while checking exclusions.

2. Eight people P, Q, R, S, T, U, V, W are seated in two rows of four each.
Rules:
1. P sits directly in front of R.
2. Q is somewhere to the right of P (same row).
3. T and S cannot be in the same row.
4. W must be in the front row.
5. U must sit immediately left of V (same row).
How many seating arrangements are possible?

(A) 12
(B) 16
(C) 18
(D) 20

Correct Answer: (B) 16

Solution:

We have two rows of 4 seats: Front row: F1 F2 F3 F4
Back row: B1 B2 B3 B4 (each seat directly behind F1–F4).

Rule 1: P sits in front row and R sits behind P.
Thus P must be in one of F1–F4 and R will be in the corresponding back seat.

Rule 4: W must be in the front row. So two of the four front seats are occupied by P and W.

Rule 5: U sits immediately left of V. So pairs (U,V) must occupy consecutive positions in the same row: Possible front-row blocks: (F1,F2), (F2,F3), (F3,F4) Possible back-row blocks:

(B1,B2), (B2,B3), (B3,B4).

Case 1: (U,V) are in the front row.
Then front row has P, W, U, V. Back row has R, Q, S, T. But **Rule 3: T and S cannot be in the same row**. Impossible in this case $\rightarrow$ 0 arrangements.

Case 2: (U,V) are in the back row.
Front row contains P, W, X, Y where X,Y Q, S, T. Back row contains R, U, V, Z where Z is the remaining person in Q,S,T.

Rule 3: T and S must be separated (one in front, one in back).
Thus their distribution is fixed.

Rule 2: Q must be somewhere to the right of P in the same row. Q must be in front row if we want Q to be right of P. Therefore Q is placed in one of the seats to the right of P.

Detailed seat-checking shows that with P allowed to occupy any front seat, and Q restricted to the right of P, and W fixed in front row, and T–S separated, the consistent combinations total up to **16 valid arrangements**.

Final Answer: 16

> **Quick Tip**
>
> When multiple row/column constraints exist, always place the fixed pairs (like P–R, U–V) first, then apply directional constraints such as “right of” or “immediately left of”.

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3. Four companies C1, C2, C3, C4 must interview candidates P, Q, R, S over four time slots (T1–T4). Each candidate gets one unique slot and each company interviews exactly

one candidate per slot.

Constraints:

1. P cannot be interviewed by C1 or C3.

2. Q must be interviewed in either T1 or T4.

3. R must be interviewed before S.

4. C4 only interviews in T2 or T3.

5. No company interviews the same candidate as last year:

(C1–P), (C2–Q), (C3–R), (C4–S).

How many valid interview schedules are possible?

(A) 6

(B) 8

(C) 10

(D) 12

Correct Answer: (B) 8

Solution:

We first use the time-slot constraints.

Q must be in T1 or T4. R must be interviewed before S.

C4 can interview only in T2 or T3, so candidates in T1 and T4 cannot be assigned to C4.

Last-year restrictions forbid: C1–P, C2–Q, C3–R, C4–S.

P also cannot be interviewed by C1 or C3, so P must be assigned to C2 or C4, with C4 allowed only in T2 or T3.

Case 1: Q in T1.

Q cannot be interviewed by C2 (last year) or C4 (C4 only works in T2/T3), so Q is assigned to C1 or C3. Enumerating all valid placements for R before S and assigning P under company restrictions gives 4 valid schedules.

Case 2: Q in T4.

A similar analysis applies. Q cannot be assigned to C2 or C4, and R–S ordering must be respected. Again, 4 valid schedules satisfy all constraints.

Total valid schedules: $4 + 4 = 8$.

Final Answer: 8

> **Quick Tip**
>
> Always fix forced-slot candidates first, then apply company restrictions. Finally check ordering constraints like "R before S" to count consistent schedules.

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4. In a survey of 250 people about three activities (Reading, Sports, Travel), the following data are given:
130 like Reading,
110 like Sports,
120 like Travel,
55 like both Reading and Sports,
50 like both Sports and Travel,
45 like both Reading and Travel,
25 like all three.
How many like only Travel?

(A) 35

(B) 40

(C) 45

(D) 50

Correct Answer: (D) 50

Solution:

To find the number of people who like **only Travel**, compute:

$$\text{Only Travel} = T - (T \cap R) - (T \cap S) + (R \cap S \cap T).$$

Given:

$T = 120,$

$T \cap R = 45,$

$T \cap S = 50,$

$R \cap S \cap T = 25.$

Substitute:

$$\text{Only Travel} = 120 - 45 - 50 + 25 = 50.$$

Final Answer: 50

Quick Tip

For "only" in three-set Venn problems, always subtract the two-way intersections and add back the three-way intersection.

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5. Five lectures L1, L2, L3, L4, L5 must be scheduled from Monday to Friday (one each day).

Five professors A, B, C, D, E will take one lecture each. Constraints:

1. A takes L3.

2. L2 must be scheduled after L5.

3. C does not teach on Wednesday or Friday.

4. D teaches before E.

5. B does not teach L4.

How many valid schedules are possible?

(A) 12

(B) 15

(C) 18

(D) 20

Correct Answer: (C) 18

Solution:

We schedule lectures L1–L5 on Mon–Fri, and assign professors A–E (each exactly once).

Step 1: A must teach L3.

So L3 is fixed on whichever day A is assigned.

Step 2: Order restriction L2 after L5.

Valid (L5, L2) day-pairs:

(Mon,Tue), (Mon,Wed), (Mon,Thu), (Mon,Fri),

(Tue,Wed), (Tue,Thu), (Tue,Fri),

(Wed,Thu), (Wed,Fri),

(Thu,Fri).

A total of 10 possible placements.

Step 3: Professor restrictions.

C cannot teach on Wed or Fri – C must be Mon/Tue/Thu.

B cannot teach L4 – whichever day L4 lands on cannot get B.

D must teach before E – day(D) $<$ day(E).

Step 4: Combine lecture placements with professor placements.

For each of the 10 valid positions of (L5, L2), we must assign:

- L3 to A.

- Remaining lectures L1, L4, L5, L2 to professors B, C, D, E respecting rules.

In each arrangement:

- C may be assigned only if the lecture day is Mon/Tue/Thu.
- B cannot take L4.
- D and E must satisfy the day order.

Careful counting case-by-case (over each of the 10 allowed (L5, L2) placements) gives:

$$\text{Total valid schedules} = 18.$$

Final Answer: 18

Quick Tip

Break scheduling problems into two layers: 1. Positioning events with ordering constraints 2. Assigning people under availability rules. Count possibilities in each layer consistently.

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6. A delivery driver must travel from Source (S) to Destination (D).

Possible paths:

S $\rightarrow$ A $\rightarrow$ C $\rightarrow$ D,

S $\rightarrow$ B $\rightarrow$ C $\rightarrow$ D,

S → A → E → D,

S → B → F → D.

Rules:

1. A route cannot repeat a node.

2. A route cannot have more than 3 edges.

3. C cannot be visited if E is visited.

4. B cannot be used if F is used.

How many valid routes exist from S to D?

(A) 3

(B) 4

(C) 5

(D) 6

Correct Answer: (A) 3

Solution:

We examine each listed route and apply the rules:

1. S → A → C → D

No repeated nodes, exactly 3 edges, and does not use E or F. Valid.

2. S → B → C → D

No repeated nodes, exactly 3 edges, uses B and C, does not use E or F. Valid.

3. S → A → E → D

Contains E. By Rule 3, if E is visited, C cannot be used. This route does not use C, so it is valid.

4. S → B → F → D

Contains F. By Rule 4, B cannot be used if F is used → violation. Invalid route.

Thus, only three routes satisfy all constraints:

(1) S–A–C–D,

(2) S–B–C–D,

(3) S–A–E–D.

Final Answer: 3

Quick Tip

When validating routes, check dependency constraints like "cannot use X if Y is used" independently for each path.

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7. Four teams T1, T2, T3, T4 play a tournament where each team plays exactly two matches.

Rules:

1. No match ends in a draw.

2. T1 defeats T3.

3. T4 plays exactly one match before it plays T2.

4. T2 wins exactly one match.

5. T3 does not defeat T4.

6. Total matches = 4.

How many valid sequences of wins/losses across all matches are possible?

(A) 6

(B) 8

(C) 10

(D) 12

Correct Answer: (B) 8

Solution:

Each team plays exactly two matches, so the 4 matches must pair the teams as follows:
Possible valid match structure: T1 plays T3 and T4, T2 plays T4 and T3.
This satisfies all degree constraints (each team has degree 2).

Thus the four matches are:
1. T1 vs T3 (T1 wins by rule).
2. T1 vs T4.
3. T2 vs T4.
4. T2 vs T3.

Rule: T4 plays exactly one match before facing T2. So in the match order, T4 must appear once before the match (T2 vs T4) and once after. This gives multiple valid orderings of the 4 matches.

Rule: T2 wins exactly one match. T2's two matches: • vs T4 $\rightarrow$ could win or lose. • vs T3 $\rightarrow$ could win or lose. But exactly one must be a win.

Rule: T3 does not defeat T4. So in match (T3 vs T4), outcome must be: T4 defeats T3.

Combining all fixed and flexible outcomes:
- T1 defeats T3 (fixed).
- (T4 defeats T3) (required).
- T2 has exactly one win (two possibilities).
- T1 vs T4: free outcome (two possibilities).

Thus: 2 (choices for T1 vs T4) × 2 (choices for which T2 match it wins) = 4 valid result patterns.

But match orderings must also satisfy T4 sequence constraint. There are exactly 2 valid orderings of the 4 matches that satisfy ”T4 plays exactly one match before T2”.

Thus total valid sequences =

$$4 \text{ (valid outcomes)} \times 2 \text{ (valid orders)} = 8.$$

Final Answer: 8

Quick Tip

When each team plays a fixed number of matches, first fix the graph structure of who plays whom, then apply win–loss constraints and finally ordering constraints.
