

1) $\pi_{\text{itemName}} (\delta_{-\text{isAvailable}} = 0 \wedge \text{price} > 500) (\text{MenuItem})$

2) $\pi_{\text{itemName}} (\delta_{-\text{category}} = \text{"Beverge"} \wedge \text{price} > 300) \vee \text{category} = \text{"Desert"} (\text{MenuItem})$

3) $\pi_{\text{itemName}, \text{price}} (\delta_{-\text{category}} = \text{"Snack"} \wedge \text{isAvailable} = 1) (\text{MenuItem})$

4) $\pi_{\text{itemName}, \text{price} / 100} (\delta_{-\text{category}} = \text{"Snack"} \wedge \text{isAvailable} = 1) (\text{MenuItem})$

5) $\pi_{-\text{supplierID}} (\text{supplies} \bowtie \text{MenuItem} \delta_{-\text{itemName}} = \text{"Cappuccino"}) (\text{MenuItem})$

6) $\pi_{-\text{supplierID}} (\text{supplies} \bowtie \text{MenuItem} \delta_{-\text{itemName}}$

6) $\pi_{\text{Employee.name}, \text{Cafe.cafeName}} (\delta_{-\text{Employee.cafeID}} = \text{Cafe.cafeID} \wedge \text{Employee.address} = \text{Cafe.address} \bowtie (\text{Employee} \bowtie \text{Cafe}))$

No. 5 -

2312360

200 - 300

- 7) $\pi_{-}empID \text{ } (\& salary \neq 50000 \text{ (replace)})$
- 8) $\pi_{supplID} \text{ } (\& city = 'Karachi' \text{ (Suppl)})$
 $\cap \pi_{supplID} \text{ } (\& city = 'Lahore' \text{ (Suppl)})$
- 9) $\pi_{itemID} \text{ } Name(MenuItem) \times \pi_{itemID} \text{ } Name$
(MenuItem \bowtie Supply)

Q1 :-

1) $\pi_{\text{country-name}} (6 \text{ severity-level} = \text{"critical"})$
 $\wedge \text{Date_Reported} \geq "2025-01-01" \wedge$
 $\wedge \text{Date_Reported} \leq "2025-12-31"$
(COUNTRY \bowtie INCIDENT \bowtie THREAT)

"To select countries where
severity level is "critical" and the
incident was reported in 2025"

Q2 :-

$\pi_{\text{Team-Name}} (6 \text{ Threat-Name} = \text{"Ransomware"}, \text{Resolution-status} = \text{"Resolved"})$
(RESPONSE-TEAM \bowtie ACTION-TAKEN \bowtie
INCIDENT \bowtie THREAT)

"To find the teams that took action on
ransomware incidents and marked
them as resolved."

Q3:-

π COUNTRY-NAME (COUNTRY- π)
COUNTRY-NAME (COUNTRY)
COUNTRY-NAME RESPONSE-
TEAM (RESPONSE-
TEAM)

* Go visit the countries that don't appear
for the RESPONSE-TEAM relation.

Q4:-

π THREAT-NAME (6
Count (country-#0) > 1)
Threat-name
Count (Country)
(THREAT \bowtie INCIDENT).

* So group threats by name & count distinct
countries, then keep only those with
count > 1.

Q5:-

π

Threat-name, country-name, Impact-score

(6 category = AI ATTACK & Impact-score > 80
(THREAT \bowtie INCIDENT)
COUNTRY)

* Joins THREAT, INCIDENT and COUNTRY to get threat
name, country name, and impact score for AI
attack with impact score > 80 %