23K-0001 DB-A3 BAI-5A

Q1)

1) Π Country_Name (σ SECURITY_LEVEL = "Critical" $\wedge$ YEAR(DATE_REPORTED) = 2025 (COUNTRY $\bowtie$ COUNTRY.Country_ID = INCIDENT.Country_ID (INCIDENT $\bowtie$ INCIDENT.Threat_ID = THREAT.Threat_ID THRGAT)))

2) Π TEAM_Name (σ RESOLUTION_Status = "Success" $\wedge$ Threat_Name = "Ransomware" (RESPONSE_TEAM ~~$\bowtie$ RESPONSE_TEAM.Team_ID = ACTION_TAKEN.Incident_ID~~ $\bowtie$ RESPONSE_TEAM.Team_ID = ACTION_TAKEN.Team_ID (ACTION_TAKEN $\bowtie$ ACTIONTAKEN.Incident_ID = INCIDENT. Incident_ID (INCIDENT $\bowtie$ INCIDENT.Threat_ID = THREAT.Threat_ID THREAT))))

3) Π Country_Name (σ Team_ID = null (COUNTRY $\bowtie$ ~~COUNTRY.Country~~ COUNTRY.Country_ID = RESPONSE-TEAM.Country_ID RESPONSE-TEAM))

4) Π Threat_Name (
σ count $\geq$ 1 (
Y Threat_Name; COUNT (DISTINCT Country_ID)
$\rightarrow$ Count (
THREAT $\bowtie$ THRGAT.Threat_ID = INCIDENT .Threat_ID INCIDENT)
)
)

5) $\Pi_{Threat\_Name,\ Country\_Name,\ Impact\_Score}$ (
$\sigma_{category = \text{"AI Attack"} \wedge Impact\_Score > 80}$
(THREAT $\bowtie$ THREAT.Threat_ID = INCIDENT.Threat_ID
(INCIDENT $\bowtie$ INCIDENT.Country_ID =
COUNTRY.Country_ID COUNTRY
)
)
) ✓

(Q2)

1) (a) List the names of menu items that are not available & have a Price greater than 500.

(b)
```
SELECT itemName
FROM menuItem
WHERE isAvailable = 0 AND Price > 500;
```

2) (a) List the names of menu items that are either beverages with Price greater than 300 OR desserts of any Price.

(b)
```
SELECT itemName
FROM menuItem
WHERE (category = 'Beverage' AND Price > 300)
OR Category = 'Dessert';
```

3) (a) List the names & prices of all available snacks (category = 'Snack' that are currently available).

(b) SELECT itemName, Price
FROM MenuItem
WHERE category = 'Snack' AND isAvailable = 1;

4) (a) List the names & prices (divided by 100) of all available snacks.

(b) SELECT itemName, Price / 100
FROM MenuItem
WHERE category = 'Snack' AND isAvailable = 1;

5) (a) Find the supplier IDs of all suppliers who supply the item named 'Cappuccino'

(b) SELECT s.supplierID
FROM Supplies s
JOIN MenuItem m ON s.itemID = m.itemID
WHERE m.itemName = 'Cappuccino';

6) (a) List all employee names along with their cafe names for employees who live in the same city where their cafe is located.

(b) SELECT e.name, c.cafename
FROM Employee e
JOIN Cafe c ON e.cafeID = c.cafeID
WHERE e.address = city;

7) (a) Find the employee IDs of all employees who do not have a salary of 50000.

(b) SELECT empID
FROM employee
WHERE salary != 50000;

8) (a) Find supplier IDs that are located in both Karachi AND Lahore

(b) SELECT supplierID FROM Supplier ~~where~~
WHERE city = 'Karachi'
INTERSECT
SELECT supplierID FROM Supplier
WHERE city = 'Lahore';

9) (a) Find menu items that are not supplied by any supplier (items that exist in MenuItem but have no entry in Supplies table).

(b) SELECT itemName FROM MenuItem
EXCEPT
SELECT m.itemName
FROM MenuItem m
JOIN Supplies s ON m.itemID = s.itemID