UNIT–5 : Implementation of BI (PYQ Solution)

AKTU · Business Intelligence and Analytics (BCDS051) · Solutions by **Chirag Jain**, Ycotes

SECTION A Answers (≈70 Words Each)

Q1. When should a formal root cause analysis be conducted? (Jan 2023)

A formal root cause analysis (RCA) should be done when a problem is serious, recurring or costly, for example major failures, safety incidents, repeated defects, large financial or customer impact, regulatory breaches, or when a quick fix has failed. It finds the underlying cause so the problem can be permanently prevented, not just treated. Tools: 5 Whys, fishbone diagram, Pareto chart.



SECTION B Answers (≈250 Words Each)

Q1. When should a company adopt Complex Event Processing (CEP) and when Business Activity Monitoring (BAM)? (Jan 2023)

Complex Event Processing (CEP) analyses **streams of low-level events** in real time, detects patterns, correlations and sequences across sources, and triggers an automatic response. **Business Activity Monitoring (BAM)** gives managers a **real-time view (dashboards, alerts) of key business processes and KPIs** so they can monitor and react.

Adopt CEP when:

- Huge volumes of events arrive from many sources (sensors, transactions, logs, market feeds).
- Decisions are needed in milliseconds or seconds and must be automated, e.g. fraud detection, algorithmic trading, network intrusion.
- Meaning lies in **combinations or sequences of events**, not a single event.

Adopt BAM when:

- Managers need visibility of process status and KPIs (order cycle time, SLA breaches, backlog).
- Business processes span several systems and users need alerts on exceptions.
- Response is mostly human decision, with dashboard-based monitoring.

Basis	CEP	BAM
Focus	Event pattern detection	Process and KPI monitoring
Users	Systems and technical teams	Business managers
Speed	Very high (real time)	Near real time
Output	Automated action, derived event	Dashboards, alerts
Example	Card fraud detection	Order fulfilment monitoring

Conclusion: companies often use both: CEP detects the events, BAM presents their business impact.

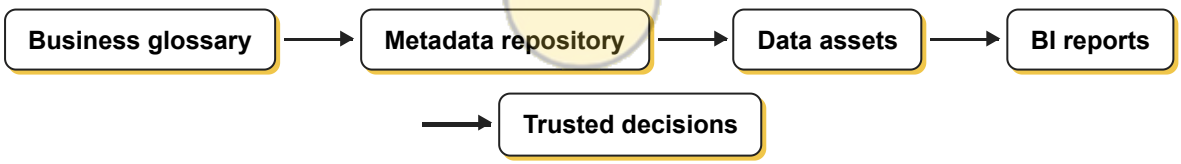
SECTION C Answers (≈500 Words Each)

Q1. How is a business glossary related to metadata management? (Jan 2023)

A **business glossary** is an agreed list of **business terms and definitions** (for example "active customer", "net sales") with owners, rules and relations, written in business language. **Metadata management** is the discipline of capturing, storing and governing **data about data**: technical metadata (tables, columns, types, lineage), business metadata (meanings, rules) and operational metadata (load times, usage).

Relationship:

- The glossary is the **business metadata** component of metadata management.
- It **links each business term to technical assets** (tables, columns, reports), so users know which field means what.
- It supports **data lineage and impact analysis**: tracing a KPI back to source systems.
- It provides a **common vocabulary**, removing confusion between departments and ensuring one version of truth.
- It supports **data governance**: stewards, ownership, approval workflow and data quality rules attach to terms.
- Metadata tools (data catalogues) store the glossary and make it searchable for BI users.



Glossary and metadata management

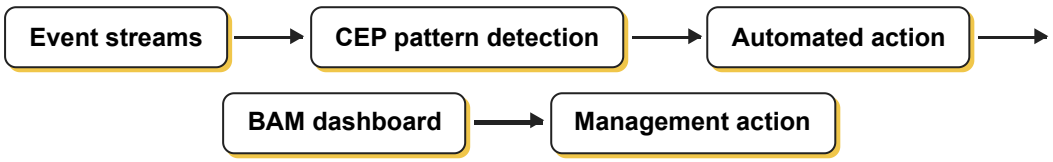
Conclusion: the glossary gives business meaning to metadata, making BI consistent, understandable and governable.

Q2. With a suitable example, explain how Complex Event Processing and Business Activity Monitoring can benefit a company. (Jan 2023)

Example: an online bank / e-commerce company.

CEP benefit: the system receives a stream of card transactions. A rule detects the pattern: *three transactions from different countries within 10 minutes, followed by a high-value purchase*. CEP correlates these events in milliseconds and blocks the card automatically, preventing fraud loss before the customer is harmed.

BAM benefit: a dashboard tracks order processing KPIs: orders received, payment success rate, average delivery time and SLA breaches. When delay exceeds a threshold, BAM raises an alert to the operations manager, who adds staff or reroutes shipments; bottlenecks are seen early.



CEP and BAM working together

Benefits to the company:

- Real-time detection of threats and opportunities.
- Faster, better decisions with less manual effort.
- Reduced losses (fraud, downtime) and improved customer service.
- Improved process efficiency and compliance monitoring.
- Better visibility of KPIs for managers.

Conclusion: CEP provides the intelligence to detect and act on events instantly, while BAM gives continuous visibility; together they make the business more responsive.
