**7.1 Explain the following ITIL practices in detail, excluding how they fit within the service value chain:**

1. **5.2.8 Problem management**

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| Every service has errors, flaws, or vulnerabilities that may cause incidents. They may include errors in any of the four dimensions of service management. Many errors are identified and resolved before a service goes live. However, some remain unidentified or unresolved, and may be a risk to live services. In ITIL, these errors are called problems and they are addressed by the problem management practice.  **PROBLEMS**  Problems are related to incidents, but should be distinguished as they are managed in different ways:   * Incidents have an impact on users or business processes and must be resolved so that normal business activity can take place. * Problems are the causes of incidents. They require investigation and analysis to identify the causes, develop workarounds, and recommend longer-term resolution. This reduces the number and impact of future incidents. * Problem management involves three distinct phases, as shown in Figure 5.23. * Problem identification activities identify and log problems. These include: * performing trend analysis of incident records detection of duplicate and recurring issues by users, service desk, and technical support staff during major incident management, identifying a risk that an incident could recur analysing information received from suppliers and partners analysing information received from internal software developers, test teams, and project teams.   Other sources of information can also lead to problems being identified.  **Problem control activities include problem analysis, and documenting workarounds and known errors.**  Problems are prioritized for analysis based on the risk that they pose and are managed as risks based on their potential impact and probability. It is not essential to analyse every problem; it is more valuable to make significant progress on the highest-priority problems than to investigate every minor problem that the organization is aware of.  Incidents typically have many interrelated causes, and the relationships between them can be complex. Problem control should consider all contributory causes, including causes that contributed to the duration and impact of incidents, as well as those that led to the incidents happening. It is important to analyse problems from the perspective of all four dimensions of service management.  For example, an incident that was caused by inaccurate documentation may require not only a correction to that documentation but also training and awareness for support personnel, suppliers, and users.  When a problem cannot be resolved quickly, it is often useful to find and document a workaround for future incidents, based on an understanding of the problem.  **WORKAROUND**  Workarounds are documented in problem records. This can be done at any stage; it doesn’t need to wait for analysis to be complete. If a workaround has been documented early in problem control, then this should be reviewed and improved after problem analysis has been completed. |
| An effective incident workaround can become a permanent way of dealing with some problems when resolving the problem is not viable or cost-effective. In this case, the problem remains in the known error status, and the documented workaround is applied should related incidents occur. Every documented workaround should include a clear definition of the symptoms to which it applies. In some cases, workaround application can be automated.  For other problems, a way to fix the error should be found. This is a part of error control.  **ERROR CONTROL**  Error control activities manage known errors, which are problems where initial analysis has been completed; it usually means that faulty components have been identified. Error control also includes identification of potential permanent solutions which may result in a change request for implementation of a solution, but only if this can be justified in terms of cost, risks, and benefits.  Error control regularly re-assesses the status of known errors that have not been resolved, including overall impact on customers, availability and cost of permanent resolutions, and effectiveness of workarounds. The effectiveness of workarounds should be evaluated each time a workaround is used, as the workaround may be improved based on the assessment.  Problem management activities are very closely related to incident management. The practices need to be designed to work together within the value chain. Activities from these two practices may complement each other.  For example: Identifying the causes of an incident is a problem management activity that may lead to incident resolution), but they may also conflict (for example, investigating the cause of an incident may delay actions needed to restore service).  Examples of interfaces between problem management, risk management, change control, knowledge management, and continual improvement are as follows:  • Problem management activities can be organized as a specific case of risk management: they aim to identify, assess, and control risks in any of the four dimensions of service management. It is useful to adopt risk management tools and techniques for problem management.  • Implementation of problem resolution is often outside the scope of problem management. Problem management typically initiates resolution via change control and participates in the post-implementation review; however, approving and implementing changes is out of scope for the problem management practice.  • Output from the problem management practice includes information and documentation concerning workarounds and known errors. In addition, problem management may utilize information in a knowledge management system to investigate, diagnose, and resolve problems.  • Problem management activities can identify improvement opportunities in all four dimensions of service management. Solutions can in some cases be treated as improvement opportunities, so they are included in a continual improvement register (CIR), and continual improvement techniques are used to prioritize and manage them, sometimes as part of a product backlog.  Many problem management activities rely on the knowledge and experience of staff, rather than on following detailed procedures. People responsible for diagnosing problems often need the ability to understand complex systems, and to think about how different failures might have occurred. Developing this combination of analytical and creative ability requires mentoring and time, as well as suitable training |
| Problem management is usually focused on errors in operational environments.  Figure 5.24 shows the contribution of problem management to the service value chain, with the practice being applied mainly to the improve, and deliver and support value chain activities:  • Improve This is the main focus area for problem management. Effective problem management provides the understanding needed to reduce the number of incidents and the impact of incidents that can’t be prevented.  • Engage Problems that have a significant impact on services will be visible to customers and users. In some cases, customers may wish to be involved in problem prioritization, and the status and plans for managing problems should be communicated. Workarounds are often presented to users via a service portal.  • Design and transition Problem management provides information that helps to improve testing and knowledge transfer.  • Obtain/build Product defects may be identified by problem management; these are then managed as part of this value chain activity.  • Deliver and support Problem management makes a significant contribution by preventing incident repetition and supporting timely incident resolution |