1. Risk
    a. If a risk has materialized , look at the risk register and implement the risk response
    b. If something may/might happen, its considered a risk
    c. If risk is completely eliminated - Risk Avoided, If risk is reduced - Risk Mitigated
    d. Adding Risk - Risk is added to the risk register and not the risk management plan
    e. Risk acceptance is a risk response strategy when the project team decides to acknowledge a risk as low and decides not to do anything about it
    f. Transfer would be to transfer the risk to someone else (eg: purchasing a service contract for a component, if it breaks down, the risk is transferred to the vendor)
    g. If it says "will be implemented soon" , then its not a risk and its happening. Will lead to CR
        i. For regulations, talking to the legal department and creating CR is a solution
    . Avoidance is to avoid the risk, escalation is to push the risk up the ladder
    a. Risk assessment should be done on every project since risk changes per project.

2. Issue
    a. If something has happened, then its an issue
    b. When an issue occurs, review the issue log and update it before taking any further action
    c. Always learn more about an issue before taking action against the issue
3. Issue(between teams/members) Resolution - Facilitate discussion, Don't take sides, Don't tell people they MUST do something and always look to resolve issue, never take a firm stance, Refer to the team charter on how the team members should behave with each other
4. Stakeholder Issues/Conflict Resolution -
    a. When there is a conflict on the project, PM should review the Communications management plan and the stakeholder engagement plan to see how to resolve stakeholder issues on a project
    b. If you need to actively engage a stakeholder, look at the stakeholder engagement plan as it has the plan to interact effectively with the stakeholders
    c. If there is an issue with a stakeholder then you should meet them face to face to understand them better
    d. If a customer is unwilling to accept a project deliverable because its not functioning the way they wanted
        i. Some kind of performance baseline or standard hasn't been setup or defined
        ii. See if the quality metrics have been defined - QM deals with functionality

5. Changes to the Project or Project Management Plan
    a. Change needs to be approved by the change control board
    b. No changes without a CR
    c. Assess how a change affects all aspects of the project before raising a CR

6. Initiating a Project
   a. Charter contains - preliminary scope, preliminary schedule, preliminary budget, and assumptions
   b. Once charter is created it needs to be approved before the project planning can happen
   c. Project charter shows what is the power level or authority of a PM
7. Closing a project
   a. When project is terminated(even if early), you need to follow the closing procedures which are defined in the organizations Project closure guidelines
   b. Steps to close
      i. Stakeholder acceptance
      ii. Lessons learned (need the team for that)
      iii. Release the team
      ·  Answer: C. Once a phase or project is done, the PM should update the OPA's with the organization so it can be used by other projects or phases in that project.

8. Stakeholder
   a. First comes a stakeholder matrix which has details like level of interest of stakeholder
   b. Then comes stakeholder analysis
   c. Stakeholder register is created based on the above analysis
   d. If a stakeholder is upset that they're not included in regular project communications
      i. Review the project management plan that has the communications plan and the stakeholder engagement plan to understand what comms should have taken place before you try to solve the issues
   .  Product owner wants work finished in X amount of time but the PM thinks it may take X+Y amount of time
      i. Work with the self-organizing team to complete the work as fast as possible. Don't hire externals already
   .  When it comes to working with senior management is important to give them the least amount of information for them to make an educated decision. Anything else would have been too much information for senior management to review
   a. If they are dissatisfied that project went on too long and didn't deliver on all promises
      i. Prevention - conducting sprint review meetings through out the project
      ii. Prevention - Allow customers to change the scope as needed as project was progressing
   .  Stakeholders should give inputs on the design of the product especially in an agile project
   a. Ensure all stakeholders understand the main objectives of the project during initiating
   b. If there is a mismatch between their expectations and what is getting done from the project, it would be best to him analyze what the stakeholders are expecting from the project before producing any more work.
   c. The stakeholder engagement plan is updated to reflect any issues that might impact the engagement of a stakeholder.

9. Agile Process/Project
    a. Sprint goals are clear objectives set before the start of the sprint. The product owner and the delivery team collaboratively define this
    b. There is no resource management plan
    c. The job of the servant leader is to shield the team from things that may distract them from completing the sprint goal
    d. If something is implemented wrongly in a sprint and work is rejected, to avoid it in the future, discuss this in the retrospective
    e. Iteration review meeting is for the customers to tell what they didn't like in the product
    f. Iteration planning meeting is for selecting whats going to get delivered in the next iteration
    g. If the agile project is lacking direction and people don't know what the project is really about, a definition of done and agile charter will need to be completed
        i. Definition of done - what to build
        ii. Chaotic project and constant scope being added - look at the agile charter
    . An agile project should have user stories. This way, the team understands what it would take the customers to realize value was produced during the project.
    a. An agile project team should be a self-directed and self-managing team. An agile project manager should encourage the team to make their own decisions while giving them the support they need.
    b. Team should not be prioritizing the backlog. Product owner should be prioritizing backlog for value and account for relationship between different teams that need to be accounted for
    c. During agile projects, risks are continuously monitored and responded to during the daily standup meetings, sprint review meetings and retrospectives.
    d. Agile methodologies require "T" shaped team members. That is, individuals who are cross-functional and can help each other overcome issues.
    e. Daily standup meeting should be short 10-15 mins and to the point. Problem solving discussions should be outside the scope of this meeting
    f. Daily standup meetings are for the team and product owner doesn't need to be there
    g. Sprint review meetings is where the customers are able to voice their concern on the deliverables made by the team
    h. Retrospective is to discuss what went well, what went poorly and what can be improved. Not to discuss how a particular deliverable was not delivered as per the design. That needs to happen in the sprint review
    i. Focus on individuals and interactions over processes and tools
    j. Agile encourages self organizing teams made up of people who created the requirements and had the desired outcome in the first place
    k. Agile team charter has the following
        i. Why are we doing the project
        ii. Who benefits and how
        iii. What does done look like
        iv. How are we going to work together
    . Agile unified process - focusses on iterations across 7 key disciplines

a. Agile includes - scaled agile, large scale scrum, scrum of scrums, dynamic systems dev method, kanban, XP, scrum
b. Agile team is responsible for estimating and refining the work items. PO adjusts the priority of product backlog items
c. Main difference between scrum and kanban is that kanban teams employ a pull system. When an item of work is completed, it triggers someone to pull the next item in queue. There are limits to how much WIP can be in place
d. What can be part of information radiator : team velocity, kanban board, product backlog, burndown chart, test results and issues, results of retrospectives
e. In BDD, acceptance criteria is in the form of Given, when, then
f. Sprint reviews are for product demos
g. Agile project can accept changes even late in development. Some scope may have to change (low priority off the project)
h. In agile, reporting to executives is done via agile core practices and ceremonies and not by sending them reports
i. Visual management is lean principle borrowed into agile where key pieces of info are made as accessible as possible. Example whiteboard, kanban  etc
j. Continuous Integration - daily builds that are tested and help find defects earlier
k. Acceptance tests and criteria are designed before the development of a deliverable and during the elaboration
l. Crystal core values - people, interaction, community - original frameworks that contributed to agile, designed to scale based on people involved, money involved and general comfort level of the project (clear, yellow, orange and red)
m. Product backlog prioritization techniques : moscow, multi-voting with dots, monopoly money, kano analysis, fist of five
n. Frequent touchpoints in agile are to ensure that features are reviewed and meet stakeholder's expectations and risks are addressed
o. Quality is everyones responsibility in an agile team
p. Anyone can join daily stand-ups including stakeholders
q. Disciplined agile : learning oriented, goal-driven, scalable
r. DSDM Dynamic systems delivery method - focusses on business need and delivers on time
s. TDD : Red green refactor = fail, pass and streamline code
t. Agile team reduces risks by working on the high priority risks first
u. Roleplaying the role of scrum master is not part of enterprise scrum
v. Definition of done is an important part of the team charter. Project sponsor doesn't need to sign off on it. It is an agreement amongst the team
w. Gaining consensus regarding the content and flow of a piece of software by developing a wireframe or storyboard will confirm everyone has a complete understanding of the output
x. Agile project team aims to work in a colocated space if possible
y. XP includes real customer involvement, team continuity and working at a sustainable pace, TDD, works with continuous integration, RCA, focus on features that bring the most revenue, daily standups, shrinking teams caused by improvements over time
z. Agilecoach, PM, facilitator adds cards for refactoring the code, then basing the team's velocity off that. Refactoring ensures that the code is clean and correct and that card can be replaced if an emergency comes up

aa. FDD Feature driven development - dev by feature, feature teams, inspections, regular builds, visibility of progress, configuration management, individual class ownership where parts of code are assigned a single owner, domain object modelling - start with an overall model

bb. Agile recommends teams of <12, typically between 3 to 9

cc. Types of project lifecycles
  i. Iterative - analyses, design, builds and tests. Repeats these activities until it is correct and then delivers in one release. Iterative is building successive prototypes until you get it right but still deliver one big bang at the end like waterfall
  ii. Incremental - delivers small increments of value or feature
  iii. Agile is a combination of iterative and incremental
  iv. Predictive does one release with little or no iterative feedback

. A user story is the smallest unit of work in an agile team. - task that can be completed in no more than 3 days. If its takes longer, break it into two or more pieces to deliver within 3 days

a. Estimates for storycard should contain all known activities like testing, refactoring, complexity and risk

b. Product roadmap is a visual display of the product releases , similar to a gantt chart or project schedule but based around agile feature releases. It is high level and reviewed as necessary

c. Planning poker, if no consensus then high and low estimator share their reasons and repeat the process until consensus is achieved

d. A spike is a time boxed task to explore or investigate an issue. It is separate from dev work and is only used if something needs to be figured out or investigated

e. Fail fast or fast failure, it means that the particular feature or proof of concept effort was not successful

f. Safe scaled agile framework focuses on detailing practices, roles and activities at the portfolio, program and project levels and focuses on organizing the enterprise around value streams that provide value to the customer

g. Lean :
  i. Cycle time is the time for shorter tasks - like story cards in agile. Lead time measure the time to complete multiple story cards (a feature) from beg to end
  ii. Lead time is the time for larger items such as feature or the project itself and consists of value added time and non value added time

. Variations/defects in Lean are separated into common cause - caused by normal operationa nd special cause - caused by special or new factors

a. A risk-adjusted backlog is a sprint or release backlog containing risk response tasks for actionable risks. These will be prioritized against normal features also in the backlog to adjust for risk

b. Agile uses fast visual mock-ups or prototypes such as storyboards, wireframes or models to get a quick understanding of the requirements and consensus from all stakeholders.

c. 3 C's of user story creation - creating the card, conversation with the product owner and devs to explain how the s/w or design will be used, and confirming the acceptance criteria and the definition of done

d. Rework can be due to doing too much work at same time, timebox can help focus on one thing at a time

e. You don't want people to have specialized training in cross-functional team, look for required strength's and build a team around that to make the project successful
f. Team meeting without you is not good if you are looking to solve a problem


10. If no historical information is available then look for expert judgement
11. Tools
    a. Focus Groups
        i. You can get SMEs together and get their feedback on a topic
    . Benchmarking
        i. Used to look at performance related to industry standards
    . Value Analysis
        i. How cheap can you do good work
    . Decomposition
        i. Breaking work down into activities from work packages
    . Control Chart
        i. Used to determine whether or not a process is stable or has predictable performance
        ii. Has the rule of 7 to decide whether you need to assess a process
    . Affinity Diagram
        i. Groups problems together
    . Histograms
        i. Show the frequency of defects
0. Scope
    a. Once the scope statement is done-->decompose into work packages to create WBS
    b. WBS
        i. It should have everything to complete the deliverables . If there is missing work, add that to the WBS in order to complete the deliverables
        ii. Work to be done is decomposed in the WBS, if there is work missing then it doesn't get decomposed and thus remains undone
        iii. If decomposed and more info is needed, look at the WBS dictionary to see what more info can you find as it has all the details and then decide what to do
0. Requirements
    a. If project is completed and requirements are missing and the question says "FIX THE ISSUE" - A project is supposed to be completed scope within a given time and budget. In this situation, it would be best to implement the change request to ensure all the features that were originally part of the scope to get completed
        i. If the question says "What will you do next" - Then adding the issue to the issue log is possible
0. Communication
    a. If the Sponsor is replaced by a PMO or other sponsors, modify the communications plan instead of continuing it unless explicitly asked
    b. If the project is behind cost/schedule and needs escalation - refer to the communications management plan that contains details on how to escalate
    c. Updating a stakeholder - Emails are not the best way to communicate, look at a f2f meeting

1. Quality
    a. Review the work on a regular basis
    b. Don't wait for all deliverables to be done to inspect the quality
    c. Working on a pharma project and worried about meeting regulations - make sure to consistently inspect the deliverables to see if compliance is being met
2. Procurement
    a. Deliverable by an external vendor and gets delayed - refer to the procurement management plan to see how to handle conflicts with external vendors
    b. If the deliverable is of poor quality and you need to talk to the vendor, do it f2f
    c. IF PMO/Project decide to outsource the project - revise the procurement management plan as it has project procurement decisions, specifying the approach and identifying potential sellers is captured
    d. Vendor is late with a p[roject deliverable - PM should assess alternatives
3. Resource
    a. If someone wants to leave the project due to a personal or health reason, let them go ahead
    b. Training Resources
        i. Self paced web training is not f2f and might not be the best , be careful
        ii. Sometimes its ok for existing team members to train other team members
        iii. PMs need to be trained on servant leadership concepts so that team doesn't fight with each other and PM can resolve issues and team works efficiently
    . Phases
        i. Forming - form the team, learn each others name
        ii. Storming - members push established boundaries and there are issues, one doesn't agree with the other
        iii. Norming - find solution to the issues
        iv. Performing - work on the solutions
    . How to negotiate with the stakeholders - part of resource management plan
    a. If someone new joins the project and others feel that the new member might not have the right skills - as a PM, assess the new members cause that's what you should do first
    b. If time is limited and you need new skilled resources, best course of action is to hire new ones in your team and not look for vendors or train existing team
    c. The Project Manager should be using negotiation skills to acquire the right resources for the project by following the steps in the project management plan.

18. Project
    a. Look carefully which phase the project is in (IN, PL, EX, MC, CL)
    b. Initiating refers to project charter
    c. If the SPI is consistently trending downwards, it could have been due to unrealistic schedule and thus, issue a CR to update the Project Management plan with a realistic new schedule
    d. The business case needs to be done before the project charter is done

> > > i. Business case : when you have assumptions, restrictions and preliminary scope
> > . Project work is complete but team still being asked to work
> > > i. PM should formally close the project and deliver the product, result or service
> > . Safety issue on the project and may result in injuries : the best course of action would be to stop the project until the situation can be resolved
> > a. Project management plan should never be created before the project gets initiated
> > b. If there is a "claim" that there is a safety issue, assess the claim first. Don't stop the project
> > c. PM should update the lessons learnt register themselves
> > d. Don't stop a project unless its about safety. If not about safety, meet with the team and find a solution or assess
> > e. PM assigned to an ongoing project determines that the project will fail to meet objectives - research and confirm if the assumptions are correct that the project will fail
> > f. Once a new thing is learned, it is best for the PM and team to document it in the lesson learn register.
> > g. If the CPI is high and you want to bring the project back on schedule, crash the deliverables to complete it sooner. This increases cost and risk

19. Servant Leader
    a. Standing up for the team , supporting and motivating the team
20. MBTI - Myers Briggs Type Indicator
21. Estimation Techniques
    a. Three point or triangular estimation technique = x+y+z/3
    b. Beta Estimate = (Optimistic + (4 X Most Likely) + Pessimistic)/6
22. Law has changed
    a. If already changed, then its no longer a risk
    b. If compliance is mandatory and it affects scope, cost, CR needs to be raised
    c. If a new government regulation "requires " you do something, then raise a CR
    d. If a project has completed and then regulation changed
       i. This should have been noted down as a risk. Refer the risk register to see what should the risk response be
0. Review motivational techniques in the resource section of the book
    a. Herzberg's Theory of Motivation → Hygiene agents,  Theory Y → Employees like working so don't micromanage them,  Theory X → (doesn't believe that people like working) Micromanager
1. Team
    a. If demotivated - The best course of action would be to find ways to keep them motivated by finding a system of rewarding them.
    b. If the team is highly distributed, it's a risk
    c. Technical changes should be assessed by the team due to its complex nature. Changes can be implemented post assessment
    d. If a team doesn't understand how to comply with a law or is unable to meet compliance,  - training is a good solution.
2. EVM
    a. CV = EV - AC
    b. SV = EV - PV
    c. CPI = EV/AC

        d. SPI = EV/PV
3. Changes
        a. Once a CR is implemented, follow up to make sure that the results of the change are as expected - this is a strategy to prevent CRs from causing more issues