

THIS E-BOOK IS BASED ON PERSONAL EXPERIENCES

INTERVIEW QUESTIONS PLANNING ENGINEER



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PLANNERS

Making Difference



"Hey, when you wanted to leave," my Contracts Manager asked me at the closure stage of my previous project. "One month!" I replied. Now, I have to find a new job. I updated my CV & submitted in different portals online.

Got calls and interviews were started Face to face, telephonic, Skype and even on IMO :)

I may have attended a minimum of fifteen interviews and was selected in a few and got some rejections on the spot as well. Soon after releasing from the previous job, I joined the right one offered. Some joining letters/emails I received later.

Anyways, it was the time most of the professionals have gone through. Here, I have compiled most of the question were asked to me. Of course, I am not going to list here the irrelevant irritating ones that some HR still ask for no reason.

These questions are mainly for a Construction planner and Primavera P6 & MS user. Answers are as per my best knowledge, and your opinion may differ although I took help from different resources later on while writing this article.

Interview Questions for a Planning Engineer contain versatility of information regarding all the project management fields.

The planning engineer is one of the most critical people in any project. All the project related information is on his/her fingertips all the time, and you call it the right hand of any project manager.

Let's see what kind of questions a planning engineer have to face in an interview.



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Question-1: What is a Base Project Schedule?

Answer: A baseline is an approved program by both parties which is used as a benchmark to measure the progress of a project.

Question-2: What is the Main Driver of a Project and how you will get it?

Answer: The main driver consists of the significant activities that are driving the project at the critical path. To get it just go to last activity and check its driving activity, then go to that driving activity and mark its driving also, same goes until you reach the first activity. This is typically done through scheduling software like Primavera P6, Microsoft Project, etc.

Question-3: How many baselines are allowed in any project and which baseline decides the success or failure of the project?

Answer: A project must have a minimum one project baseline & that number can go to unlimited. But if you find a number of baselines that means the planning team is quite inefficient – Avoid it! The latest baseline defines the success or failure of any project.

Question-4: What are the Key Performance Indicators – KPI's?

Answer: A KPI is type performance measurement on a particular activity where engaged. KPI's are defined by keeping a factor “What matters the most”. A careful study and analysis are required to define because it differs from organization to organization like a critical KPI for you may not be of any interest of other same type organization. It is really a diverse area. Examples Rubber lining, Concrete Work, Machine Failures in a Specific Duration, Plantation, Number of hiring/firings, Training, etc. etc.

Question-5: What you normally need to develop a plan?

Answer: I need the Contract documents to understand the scope, the schedule drawings to know about areas, Bill of Quantity-BOQ including cost, scheduling software access. Yes, I need to meet my project team to know about a little productivity rate if I don't know in case of any specific activity.

Question-6: How do you define a critical path?

Answer: The longest path & the minimum time required to complete a project. A combination of activities with the total float as zero are included all.



Question-7: How much duration a milestone activity normally has?

Answer: Well, there are different types of milestones are there like start milestone, finish milestone, etc. but all have ZERO duration.

Question-8: What is the difference between Free Float & Total Float?

Answer: Free Float - the amount of time we can delay an activity without affecting the early start date of its successor activity. Total Float - the amount of time we can delay an activity from its early start date without delaying the whole project finish.

The free float may affect the start of any activity but total float may affect the duration of the overall project.

Question-9: What is the difference between Change order & Variation order Request?

Answer: Technically there is no such difference. Change order or Variation request is a change in scope from the contract but as per contract. If you are much curious which term should be used the better refer your contract documents. Personally, I have heard the term Variation Order but never seen any documentation for. Everywhere they write a Change Order Request.

Question-10: How to measure the progress of a project?

Answer: Normally there are three ways to measure the progress 1)-Man-hours, 2)-Cost & 3)-Quantity

My preferred method is through Man-hours as It is more logical but I have to comply as per contractual obligations as most of the companies prefer through Cost.

By the way, sometimes we have to use all three methods on a single project to get more intensive project updated status.

Question-11: Have you heard about the Kick of Meeting?

Answer: Yes, I have handled a number of Kick of Meetings on different projects & companies. the kick-off meeting is normally the first meeting of all major Stakeholders including the Project Manager with his team and Owner's representatives. Here, we discuss high-level overall plans, things like how we are going to execute and once things get clearer as project go forward then we do rolling wave planning.

These meetings can be conducted at the new phase starts during the execution of the project also.

You can read more about the Project Kick-Off Meeting



Question-12: What certification & qualification you have?

Answer: I am a Project Management Professional- PMP certified from Project Management Institute – PMI. I am a Graduate Engineer & perusing Master in Project Management.

Question-13: Do you know about CPI?

Answer: Yes, it's a Cost Performance Indicator and it evaluates the performance in the sense if the project is under-budget, over-budgeted or on track. The formula is for CPI is the ratio of earned value - EV over actual costs – AC that is $CPI = EV/AC$

Question-14: What do you know about SPI?

Answer: It is the Schedule Performance Indicator and indicates the performance of project work is completed to the baseline schedule. It is calculated by dividing the earned value by the planned value that is $SPI = EV/PV$

Question-15: What you know about Triple Constraints?

Answer: Cost, Time and Scope with quality as the fundamental theme.

Question-16: What are undesirable in any plan?

Answer: Constraints, SF (Start to Finish) relationship, Lag lags or leads, Negative Float, etc.

Question-17: How to avoid Negative Float in a Baseline Schedule?

Answer: Negative float indicates that the activity is already delayed. Normally, a constraint is the culprit of it. Remove all the constraints or use proper logic -relationships to deal with it. Also, check dangling or out of sequence activities.

During updating a schedule, a negative float for some activities is very common. You cannot avoid unless is going as planned.

Question-18: If you are reported 5 SPI, what it means? – Real Question was Asked to me!

Answer: They planner has made a blunder during calculations.

Question-19: What is an S Curve?

Answer: Graphical representation of 'anything' like Manhours, Cost, etc. plotted against time.

Question-20: What do you know about Reflection Schedule?

Answer: Reflection function is always underestimated but it is a really great feature in Primavera P6 Professional. A Reflection program is just a copy of the program to have a look at different scenarios after making desirable changes. Once satisfied just merge in the native program.



Question-21: What is ACWP, BCWP & BCWS?

Answer: ACWP is Actual Cost of Work Performed, BCWP is Budgeted Cost of Work Performed & BCWS is Budgeted Cost of Work Scheduled.

Question-22: How you will make a comparison of different updates for the same schedule?

Answer: I will use Claim Digger function that is available in Primavera P6.

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Question-24: Do you know any about Retained & Over-Ride Logic in Scheduling?

Answer: This only matters if the schedule is not going at it was planned, means a difference in activities progress. The Progress Over-ride will not respect the logic anymore if there is any variance and hence will shorten the critical path but with mostly illogical out of sequence activities. In other sense, the activities will do as it is an open-end activity. The Retained logic is completely otherwise.

Question-25: What do you know about DCMA Scoring?

Answer: DCMA is 14-Point Assessment Metrics to evaluate any baseline schedule. It includes; 1. Logic 2. Leads 3. Lags 4. Relationship Types 5. Hard Constraints 6. High Float 7. Negative Float 8. High Duration 9. Invalid Dates 10. Resources 11. Missed Tasks 12. Critical Path Test 13. Critical Path Length Index (CPLI) 14. Baseline Execution Index (BEI)

Question-26: What do you know about Delay Analysis Techniques?

Answer: Normally it is defined in the Contract documents that how we are going to calculate extension of time but if not then there must be a consensus for using any available technique from both of the parties like 1) Impacted as planned 2) Windows Analysis 3) Time Impact or 4) As-Built But-For.

Question-27: What is the difference between Float & Slack?

Answer: Nothing, just synonyms.



Question-28: What is the difference between Planner & a Scheduler?

Answer: Both are quite different but linked to each other tightly.

Somewhere these are just synonym to each other.

Planner or Planning Engineer reads the IFC drawings, define the activities, duration & resources according to site construction conditions. He knows better all the phases of work to be done even during the tender stage and also at the construction stage. It should be from an engineering background necessarily.

On the other hands, Scheduler takes-over the work done already by the planner to make a more detailed one. This job does not require to have an engineering background.

I read somewhere on LinkedIn (by Mustafa Ozgoren) that

Planning is What & How?

Scheduling is When & Who?

Both should be well versed in Planning software in any case.

Question-29: What is different % complete type in Primavera P6?

Answer: Physical, Units & Duration.

Question-30: What is different duration type in Primavera P6?

Answer: Fixed Units, Fixed Units/time, Fixed Duration & Units, Fixed Duration & Units/Time.

Question-31: What is Productivity?

Answer: Productivity is the efficiency of any working entity. It is measured as the amount of output for work per hour. Productivity rates define how efficient a team you have. Formula is $\text{Productivity} = \text{Output} / \text{Input}$

Example: Let say you have two masons (call A&B) and let's review their work for last week, A worked for 50 hours and B for 30 hours. A fixed 5000 blocks & B did 3500 blocks. As a planner, you may like A as it is putting more on but let's have a check on productivity for both

Mason A= $5000/50\text{hrs} = 100/\text{hour}$

Mason B= $3500/30\text{hrs} = 116/\text{hour}$

Here, B is much more productive than A and hence you need to raise the skill level of A-type Mason by proper training etc.



Question-32: What are the different levels of a Schedule?

Answer: There are different school of thought to define levels of a program one says its six levels, other says it's five and even one thinks only four levels of a program are there when scheduling.

Here, I will explain the six levels as most of the old school people still think as more logical, there are

LEVEL-1: Overview Schedule

LEVEL-2: Area Wise Schedule

LEVEL-3: Discipline Wise Schedule

LEVEL-4: Major Activities Schedule

LEVEL-5: Detailed Activities Schedule

LEVEL-6: Micro-detail Activities Schedule

Question-33: What is the difference between Project Planner & Project Controller?

Answer: Project planner does the planning phase for the project from WBS identification, identification of project deliverables, milestones, create the baseline, plan the budget, cash flow and KPI's and trackers. The planner is to prepare the program and prepare an acceptable budget for all parties.

Project control provides assistance and ensures that the plan is controlled by providing risk register, analyzing critical path, placing mitigation plans, track project KPI, and ensures that the project is running on time and budget. Its focus is only productivity & reports according to organizational norms.

Question-34: What you normally present in a Weekly Report?

Answer: It depends on the demands of stakeholders on a particular project. Normally, I update the Schedule with a proper backup, do required baseline comparisons, Critical Path that displays activities are important to consider on, three weeks lookahead - 3WLHS, EVM reports are also included in my report. I draw S curves for Man-hours, Cost, Manpower Histogram, Equipment Histogram. Furthermore, I always update the Procurement Schedule separately in MS Excel to track other materials. Long lead items are already being tracked and updated accordingly in my baseline schedule.

Question-35: What are the different types of Primavera P6 activities?

Answer: These include

Task-Dependent: In this type assigned resources are scheduled based on the activity's calendar itself.

Resource Dependent: In this type, the assigned resources are scheduled based on assigned calendars.



Level of Effort: This type of activity goes with dependent activities like administrative issues.

Start Milestone: This is designated for the start of a major phase or stage of a project. A milestone that has zero duration. It is just like a flag.

Finish Milestone: This is designated for the finish of the major phase or stage of a project. A milestone that has zero duration. It is just like a flag.

Question-35: Differentiate between budgeted Cost and Budgeted Units?

Answer: Budgeted Cost for an activity is the total budgeted costs of all resources on that particular activity whereas Budgeted units are budgeted units of work for the resource assignment on any particular activity.

Question-36: When the Planning Phase /Stage is started for a Project?

Answer: Well, they say planning phase should be started before ending the initiation phase but as per my thinking Planning should be started as soon as the project life cycle starts.

Question-37: What is the difference between different Primavera Scheduling Programmes?

Answer: There are few other programmes but we will discuss below three as these are mainly used for scheduling

Primavera P6 Professional

Primavera P6 EPPM (Web Client)

Primavera Contractor

Now, Primavera Contractor is the least costly and hence not have much features like Enterprise and Admin menus are not available. It is limited to 2000 activities only. No Microsoft Project XML file support, No Resource Roles, No Enterprise Project Structure (EPS) and it is installed only as standalone. Still, it is a great and powerful application. The interface is as of Primavera P6 Professional. A person that uses Primavera P6 Professional can handle it with ease.

Now let's compare the other two major giants Primavera P6 Professional & Primavera P6 EPPM

EPPM have some edge over Professional as it has more visual aids, can handle more projects at once, installation is faster, need to be installed at only one machine whereas Professional should be installed on each machine. Professional is a small-scaled as compare to EPPM as it only can handle 100,000 activities. EPPM has more graphs, different dashboards, and pivot tables to help the management to review the status quickly whereas you need to use third party software like MS Excel to get better visualization when using P6 Professional.



Question-38: What is normally you see on a Change Order Form?

Answer: There are five major & must mentions on any Change Order (CO) Form;

1. Change in the Scope – Either additions or reductions. A change is just color can be referred into a change order even no monetary value involves. Better to document this for reference to give credit.
2. Change in Cost – Either plus, negative or even zero.
3. Change in time – Never forget if you are on contractor side & must plan as per resources or add optimum to avoid Liquidated Damages (L.D.). It should have a start & finish date even though not necessary as per Change Order form.
4. Signatures – It should be signed by authorized parties two or more.
5. Date of Change Order – The signature date must be included on the Change Order Form.

Question-39: Difference between MS Project and Primavera P6?

Answer: I have used both of these but in my opinion, Primavera P6 is way more powerful than MS Project. MS project only allows 11 baselines for any particular project but Primavera P6 offers unlimited baselines. That shows that with Primavera P6 we can handle complex projects. In Primavera P6 multi-user can work at the same time, but in MS Project one must close so the other user can open that project.

Web Support is also available in Primavera P6 EPPM that means a user can operate through the internet without installing Primavera P6 software on a machine. That makes it a portable type of product.

MS Project is a user-friendly as most of the people are familiar with Microsoft products like MS Excel but Primavera P6 needs some basic skills/training to operate.

You can read more about these here [MS Project and Primavera P6](#)

Question-40: How you track Progress of a Project?

Answer: There are three ways to track the progress of a project
Man-hours

Cost

Quantities

Every client has his/her preferences to use any of the above methods but I use Man-hours. The reason is it gives me proper control of resources that make tracking quite easy and effective. One can get realistic manpower requirements for a particular project.

Many clients prefer cost but if a Project Manager filters activities with higher cost and get it done first then it will show some kind of fake overall progress. But it is good to have a proper cash flow forecast.



Quantiles are preferred where material management is required mainly and it also helps to track KPI's of a constructions site. But being a planner, I must say tracking is really tough with this method as you need to track most of the materials

Question-41: What is Reflection in Primavera P6?

Answer: It is one of the exclusive features in Primavera P6. Possible changes in a project are done via reflection. Reflection is just like a what-if scenario.

Once changes are reviewed and approved then it can be merged into sources project.

Different possible scenarios are reviewed and the best one is merged after approval.

Scenarios Like: If your actual plan is lagging behind and Project Manager asks if I provide you some extra resources (shift) then how long it will take to catch-up?

Question-42: What is the use of Claim Digger in Primavera P6?

Answer: The handiest function to compare two schedules for any change.

Claim Digger is one more exclusive kind of function in Primavera P6.

Although it is a separate product nowadays it is built-in in Primavera P6.

Claim Digger helps to track any change between two projects in terms of Activity deleted, added, change in relationships, change in duration, change in cost, change in units, change in % age complete mainly.

Reports can be exported in HTML and CSV files or even Text.

Question-43: What you know about Rolling Wave Planning?

Answer: First is very high-level planning is done at project level when you only have a concept because at that time you don't have much resources or team members to coordinate and so you make an expert judgment for estimations.

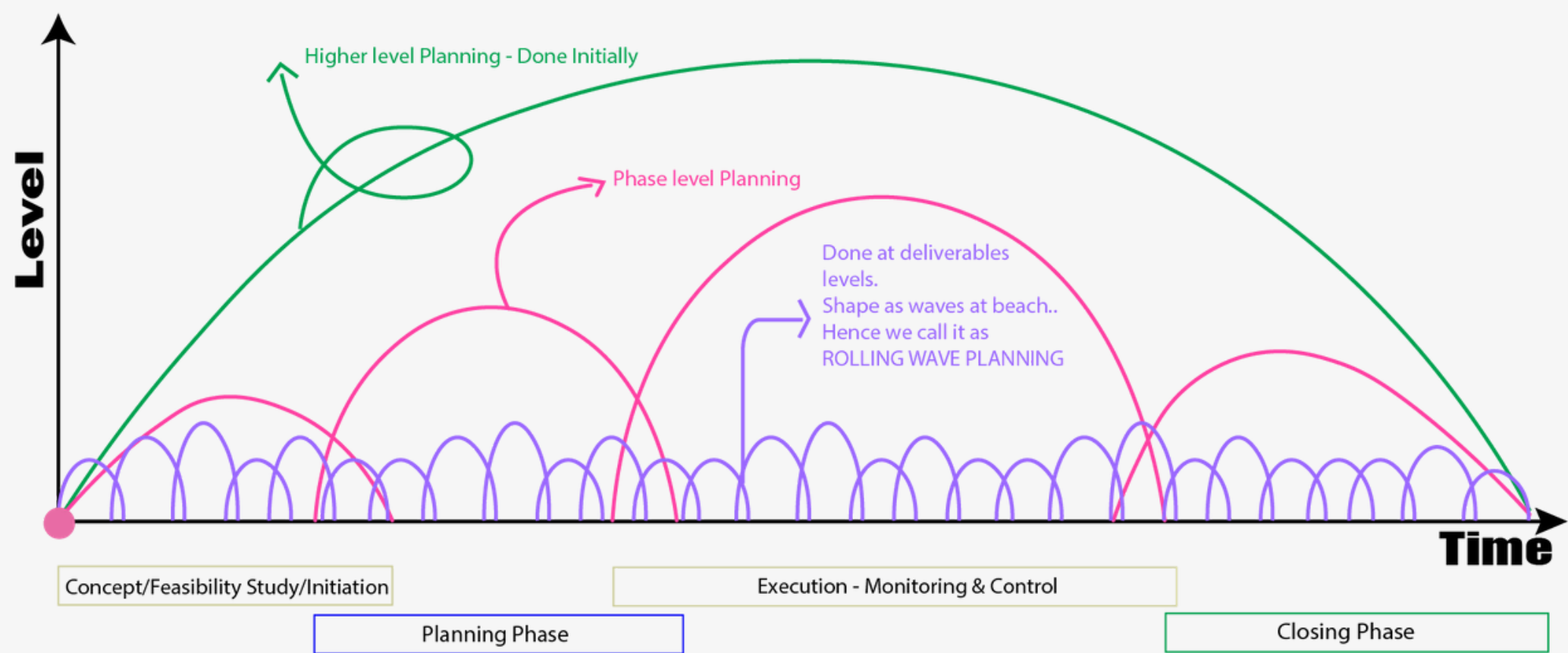
Then you do it on phase level. Phases are as per your organization norms. You may have four phases or less/more.

Rolling wave planning is done at the deliverable level. It can be like lookahead weekly base or even is done daily on foreman levels. It could be monthly as per stakeholders requirements. See the below for pictorial view.

Infographic below -



ROLLING WAVE PLANNING



Project phases/stages as per your organization norms from Concept to closing. Planning is done throughout the project although it is separate phase also.

Question-44: Differentiate among WBS, Work Package and Activity?

Answer: WBS: Work Breakdown Structure- WBS is simply a decomposition of all the works to complete any project. A WBS is arranged in a hierarchy having a clear and logical group. A WBS is a deliverable-oriented.

Work Package: WP is the lowest level of any work breakdown structure from we can manage the cost and duration estimation.

Activity: A discrete, planned portion of work to be performed in a project. Still confusing? Let's understand by an example

Say that we are building a house and flooring is one of the WBS (it depends on the team how they define WBS in a plan). Now, these different floors are different work packages. A team has to perform a series of activities like soil compaction, waterproofing, concrete blending, rebars, etc. to complete the floor.

To understand, activities will complete work packages and that will ultimately complete the WBS. It's like a bottom-up scenario.

Question-45: What is the difference between Open-End activity and a Dangling Activity?

Answer: An activity without predecessor or successor relationship is called Open-End activity.

A Dangling Activity may have both predecessor and successor but is still dangling from one end that leads to fake results for critical path and completion dates.



It behaves the same as of open-end activity but is the more difficult and complex scenario to find it.

It is undesirable in any program and needs to fix always.

Question-46: Is there any difference between a flag and a milestone in Primavera P6?

Answer: A Milestone & A flag are event activities.

You cannot update Flags manually and it will be updated automatically whereas a milestone needs to be updated manually.

By the way, I have never used the flag as it is an obsolete type term in Primavera P6 nowadays.

You can read more about How to Review and Submit a Baseline Plan

Question-47: What are the major different types of drawings you see on a Construction Project?

Answer: There are four types we normally came across 1. Tender Drawings 2. AFC/IFC, 3. Shop Drawings and 4. As-built Drawings

Tender Drawings: Drawings included in the tender documents are released by the Clients for pre-qualified Contractors.

Approved for Construction Drawing: AFC – Approved for Construction or IFC – Issued for Construction both terms are being used for drawings and documents that are approved by authorities after review. IFC/AFC is a stamped or marked document or you can say one of the controlled documents. Even some people are using a term IFC as Information for Construction or Instructions for Construction. Another name is IFR – Issued for Information.

These drawings are issued by Client/Consultant/PMT to EPC, Contractors, Supplier, Vendors, Sub-Contractor, or Manufacture.

Shop Drawings: IFC is What to do & Shop Drawing is How to do? It is a drawing produced by the contractor, supplier, vendor, sub-contractor, or manufacture in a simplified way to be understandable to the hand executers at site or staff.

These are the most detailed drawings on any project. But before going for construction approval is must from the Clients. Any change major/minor should be addressed.

As-Built Drawings: It shows that how actually the final project has turned out. It contains all suggested modifications required later on site. These are mainly used for maintenance teams later on.

Question-48: Have do you apply for Extension of Time or conduct a Delay Analysis?

Answer: First, I will gather delay events as per the contract. Like letters we have sent/received for potential delays before 14 or 28 days of the event to occur (as per contract), e-mails, minutes of meetings or any legal document supporting is collected.



Second, I will use these events with facts and figures to perform delay analysis in Primavera P6 as per terms and conditions mentioned in the contract. Like, there are many Delay Analysis Techniques namely Impact as Planned, Time Impact Analysis, As Planned vs As Built, As-Built For, Windows Analysis, etc.

Once the second step is completed then I will evaluate overhead costs, Recheck Equipment Warrantees, Material Shelf Life, etc. and finally present it to the concerned.

Question-49: What is the difference between Resource Levelling and Resource Smoothing?

Answer: Both Resource Levelling and Resource Smoothing are Resource Optimization Techniques. We use these techniques to get optimum result from our resources.

Every schedule is a resource constraint and during the development, we may find peaks like in one month/week we need 250 men-counts but in others, we only need around 150-200 men-counts only. Hence, we will use resource optimization techniques to be averaged and get a possible smooth graph. The same is applicable to deal with other resources line Material, Equipment, etc.

Resource leveling is a “Parent” technique and may be followed by Resource smoothing, you may call it a “Child” technique.

During Resource Leveling the Project overall duration may be changed as it is Resource Constraint but in Resource Smoothing, we use slack/float for distribution and hence no change in Project Duration.

Question-50: What you know about the Stakeholders on any Project?

Answer: The Stakeholder is any entity that is being or will be affected either positively or negatively by that project.

For example, if a refinery is being installed at a Sea then the Sea-life will be negatively affected but the locals may get a huge rise in quality of daily life. Both Sea-life and locals are included in stakeholder.

We normally classify it as primary & secondary stakeholders. Primary stakeholders are also called Key stakeholders. Though, there are a number of classifications in textbooks.

On a construction project, we normally use the following terms for these key stakeholders

Client – Normally the Sponsor, who provides finance to run a project.

PMC – Project Management Consultant, is hired by Client.

PMT – Project Management Team

EPC – A contractor responsible to carry out Engineering, Procurement & Construction on a project



Contractor – Whoever wins a bid and awarded the contract. Usually a part of a big project

Sub-Contractor – Contractor hires more resources to complete project on-time.

Further, there are Suppliers, Vendors, Project Team that you have to deal on any construction Project.

WHYDOITRAIN.COM

You can read more about these questions at

<https://whydoitrain.com/interview-questions-for-planning-engineer/>

