

Total Marks of Question no.	Examiner	
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Q1	a	<p>Differentiate between Project and operation</p> <p>Projects are unique and temporary while operations are ongoing and permanent</p> <p>Project have fixed budget, while operations tend to run profit to run the business</p> <p>Projects are created to start a new objective and terminated when its achieved, while operations do not produce anything new.</p> <p>Projects create a unique service or result, while operations produce the same product, aim to produce profit and keep system running</p>
	b	<p>List PM knowledge areas and explain any two</p> <ul style="list-style-type: none"> i) Project integration management ii) Project scope management iii) Project Time management iv) Project Cost management v) Project Quality management vi) Project Human resource management vii) Project communication management viii) Project Risk management ix) Project Procurement management

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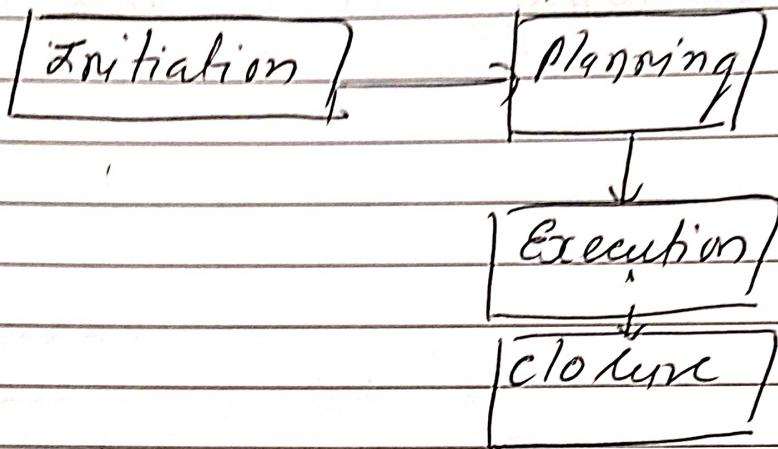
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	x	Project Stakeholder management
		Project Procurement management: It deals with outside procurement. It starts by identifying the actual needs of the project and how to procure them.
		Project Stakeholder management: Deals with managing all the stakeholders who are involved with the project. It aims to keep all stakeholders satisfied.
	c	Responsibilities of Project Manager: project manager is responsible for: Identify project goal and scope Planning and documenting project tasks Ensuring deliverables are delivered on time Managing project resources Communicating with stakeholders Eliminating risk Documenting project process Ensure project success Motivating team members Conflict resolution.
	d	Explain Scope Change with example. It's an official decision made by the project manager and the client to change a feature, to expand or reduce its functionality.

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		eg: The client wants to build an android mobile application and ten wants to developed to be used on different mobile platforms.
	c	What is the objective of negotiation. Objective of negotiation is to resolve conflict and make the situation win-win for all stakeholders involved in the conflict.
	f	Explain project communication plan Project communication is the process of identifying key information that will be shared with team members and stakeholders throughout a project life cycle. The plan includes <ul style="list-style-type: none"> • List of stakeholders • Tool for communication • Hierarchy of communication • Schedule for communication.
	g	Define project team management Team management is all about working with team to help them collaborate and be more productive. It also refers to the activities and tools that allow teams to work better together.

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	1	<p>H Elaborate ethics in project management</p> <p>Ethics in Project management are certain beliefs about what is morally acceptable or appropriate. It comprises the values of responsibility, honesty, respect and fairness.</p>

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a		Explain the project management life cycle with suitable diagram.



Initiation: First we need to identify need, problem or opportunity and brainstorm ways that your team can meet this need. Following steps are included in this phase

- undertaking feasibility study
- scope identification
- Identify deliverables
- Identify stakeholders
- developing SOW

Planning: Once the project is approved based on business case, SOW or project initiation document planning is started. Following activities are performed as part of project planning.

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		<ul style="list-style-type: none"> • creating project plan - identify the project timeline including the phases of the project, task to be performed and constraints
		<ul style="list-style-type: none"> • creating workflow diagrams
		<ul style="list-style-type: none"> • estimating budget and creating financial plan. we could estimation to get maximum of investment.
		<ul style="list-style-type: none"> • Gathering resources : Build functional team from internal and external talent pools while making sure everyone has the necessary tools
		<ul style="list-style-type: none"> • Prepare risk management plan.
		<ul style="list-style-type: none"> • Plan kick off meeting
		<p>Execution: Put plan in action. The PM job is to put word on track as per the plan, organise team members, manage timeline and ensure work is as per the plan. Task carried out during execution phase are</p> <ul style="list-style-type: none"> • Creating tasks and organising workflows - Assign proper work allotment to team members. • Briefing team members, provide necessary guidelines on how to complete work.

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		<ul style="list-style-type: none"> • Communicating with team members, clients and upper management. Provide updates to all stakeholders.
		<ul style="list-style-type: none"> • Monitoring quality of work ensure quality in execution.
		<ul style="list-style-type: none"> • Managing budget by monitoring spending and keeping project progress on track.
		<p>Closure: After the execution is complete project goes into closure phase. Following steps are performed</p> <ul style="list-style-type: none"> • Project performance is analyzed. Determine whether project's goal were met and if problem is solved using a prepared checklist.
		<ul style="list-style-type: none"> • Analyzing team performance by analyzing whether goal is meet as per timeline with quality.
		<ul style="list-style-type: none"> • Make sure all aspects of the project are completed with no loose ends remaining and providing reports to key stakeholders.
		<ul style="list-style-type: none"> • Conduct post implementation verification.
		<ul style="list-style-type: none"> • Accounting for used and unused budget

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	6	DISCUSS advantages and disadvantages of project management.
		<h3>Advantages of project management</h3> <ul style="list-style-type: none"> • Greater operational efficiency - It optimizes resource allocation reducing waste. • Deadline compliance - Establishing and meeting stringent deadlines, ensures continuous workflow. • Improved communication - It facilitates communication between teams, promoting efficient exchange of information. • Adaptation to changes - As it is common for projects to face unexpected changes. Therefore, effective project management enables agile adaptation, enabling team handle change without compromising on time and quality.
		<h3>Disadvantages:</h3> <ul style="list-style-type: none"> • Structural rigidity • Documentation overload • Resistance to change • ...

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	C	List and explain different types of numeric project selection models.
		Different numeric models are available to select project base on profit and profitability.
		Payback period: The payback period is the quotient of the initial investment and the assumed cash flow from the project. It represents the time period for which the investment will return.
		e.g. Investment 10,000 Profit 1000/month Payback period will start after 10 months.
		Rate of return (ROI): It determines how much the investment have earned or lost on the investment.
		e.g. if we buy land we sell 1200 sq ft office space at a price of 2500/sq ft, then the net inflow will be 3,00,000. If the cost of construction is 500,000.
		$\text{ROI} = 3,00,000 / 500,000$ $= 5.17$ $= 517\%$

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		$\text{Discounted cash flow : Also known as Net present value.}$
		$NPV = A_0 + \sum_{t=1}^n F_t$
		$F_t = \text{Net cash flow in period } t$
		$k = \text{Required rate of return}$
		$A_0 = \text{initial cash investment}$
		To include impact of inflation
		$NPV = A_0 + \sum_{t=1}^n F_t$
		$\frac{F_t}{(1+k+p_t)^t}$
		eg Suppose we invest 100000 with net cash flow of 25000/yr for a period of 8 yrs, a required rate of return 15% and inflation rate of 3%. we have
		$NPV = -100000 + \sum_{t=1}^8 \frac{25000}{(1+0.15+0.03)^t}$
		= 1739
		As the present value of inflow is greater than present value of outflow i.e NPV is +ve the project is accepted.
		Profitability index: Also known as benefit cost ratio, the profitability index is the net present

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		<p>value of all future expected cash flow divided by the initial cash investment. If the ratio is the project is accepted.</p> <p>Other models are scoring (unweighted 0-1 factor, unweighted factor, weighted factor, windows of opportunity analysis).</p>

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12		<p>Value of all future expected cash flow divided by the initial cash investment. If the ratio is +ve project is accepted.</p> <p>Other models are Scoring (unwanted o-1 factor, unweighted factor, weighted factor, windows of opportunity analysis).</p>
1		1. A
1		2. B
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1		24. X
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1		26. Z

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	Q3	Explain the stages of team development Different stages of team development.
		<ul style="list-style-type: none"> • Forming - This is where team members first meet. It's important for team leaders to facilitate the introductions and highlight each person's skills and background. Team members are also given project details and the opportunity to assign responsibilities.
		<ul style="list-style-type: none"> • Storming - At this stage, team members openly share ideas and use this as an opportunity to stand out and be accepted by their peers. Team leaders help teams in this stage by having a plan in place to manage competition among team members, make communication easier, and make sure projects stay on track.
		<ul style="list-style-type: none"> • Norming - By now, teams have figured out how to work together. There's no more internal competition and responsibilities and goals are clear. Each person works more efficiently because he or she has learned how to share ideas and listen to feedback while working towards a common goal.
		<ul style="list-style-type: none"> • Performing - There is a high level of cohesion and trust between team members. Teams are performing at peak efficiency with less conflict.

~~the stage of team development
and stage of team development~~

~~Team - This is where teams members first
meet and interact so team leaders try
to introduce the individuals and highlight each
team member's background. Team members
can also gain detailed and the opportunity
to receive feedback.~~

~~Shaping - At this stage team members
are more involved and view this as an opportunity
to stand out and be noticed by their peers.
Team leaders will focus in this stage by
having a plan to follow to manage competition
among team members, make communication easier
and make sure projects stay on track.~~

~~Moving - By now teams have figured out
how to work together. There's no more internal
competition and responsibilities and goals are
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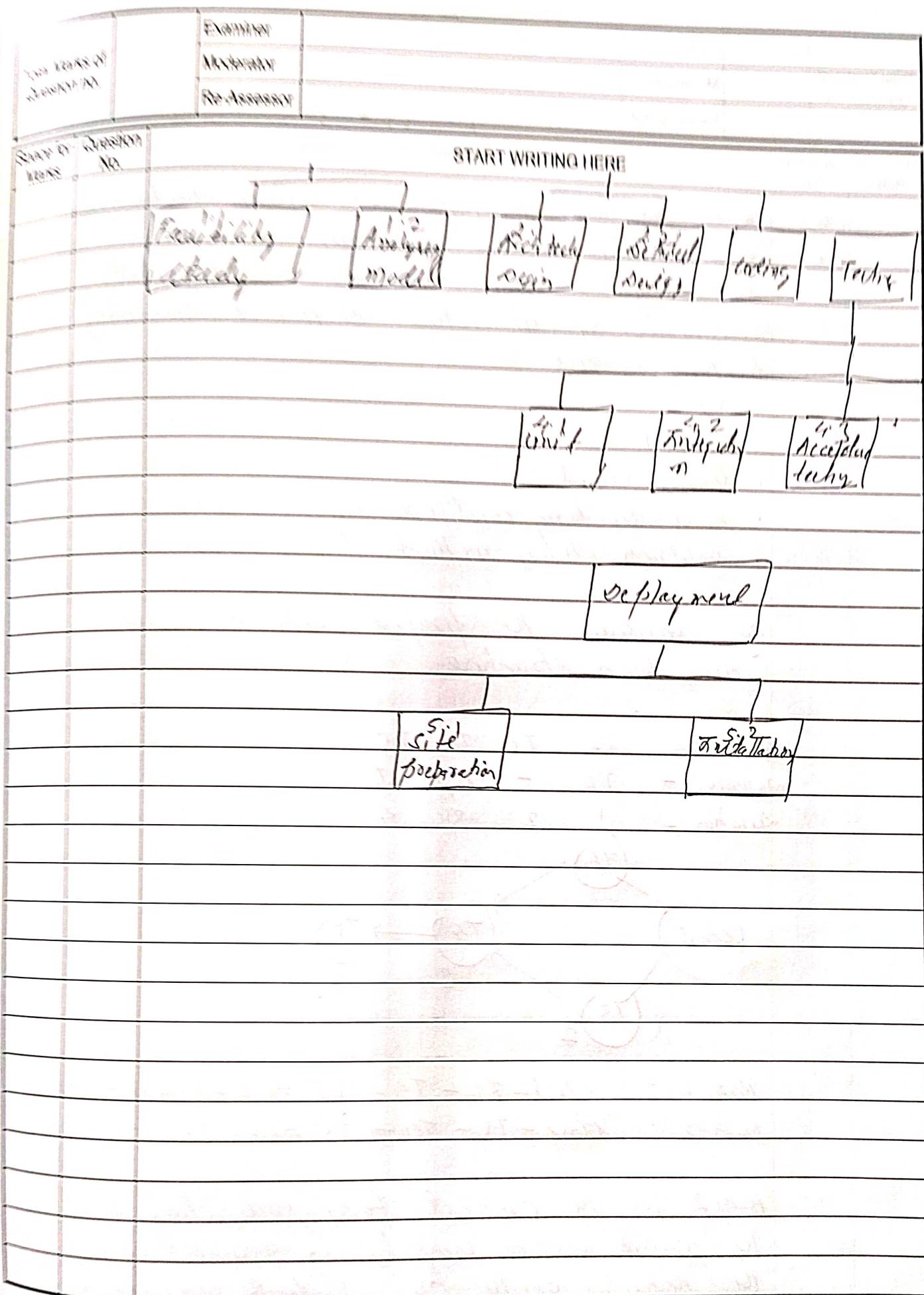
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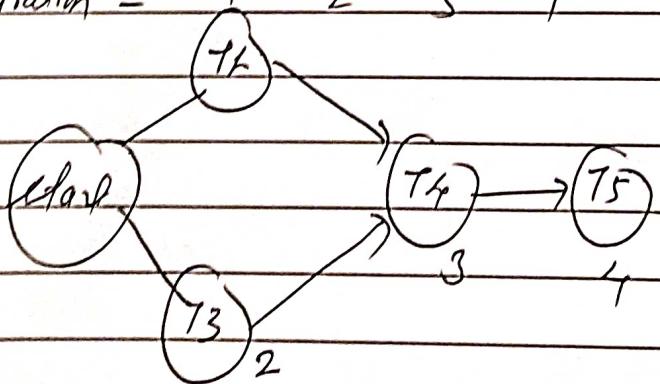
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		<p>from team leaders. Risks will come up, but at this point teams have strategy to work on it.</p> <p>Adjourning - Teams complete their project and debrief on what went well and what could be improved for future projects. Afterward, team members move on to new projects.</p> <p>B Elaborate the work breakdown structure with suitable example.</p> <p>Work breakdown structure is breaking the project activities into subactivities and breaking subactivities into further subactivities until we don't need to break further. The smallest activity is called as work package. These work packages are used for project planning. WBS is the basis for project scheduling, estimating and take an example of developing software for VIT examination.</p> <p style="text-align: center;"><u>VIT examination.</u></p> <table border="1"> <tr> <td>Analyse</td> <td>Design</td> <td>Coding</td> <td>Testing</td> <td>Deployment</td> </tr> </table>	Analyse	Design	Coding	Testing	Deployment
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	Q3 c	<p>list various project scheduling techniques and explain anyone with an example.</p> <p>Scheduling is sequencing of activities with precedences of activities. Different scheduling techniques are</p> <ul style="list-style-type: none"> • CPM • PERT • Gantt chart • Earn tracking and crashing • Goldruck chain method. <p>eg. consider the project with following breakdown structure.</p>

Task T1 T2 T3 T4 T5
 dependency - T1 - T2, T3 T5
 duration = 1 2 3 4



Path 1 : start - T1 - T4 - T5 $\Rightarrow 1 + 3 + 4 = 08$

Path 2 : start - T3 - T4 - T5 $\Rightarrow 2 + 3 + 5 = 09$

Path 2 is the critical path indicating that the project will be completed in 9 units if all activities on the critical path complete.

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Q3 List various project scheduling techniques and explain anyone with an example

Scheduling is sequencing of activities with precedences of activities. Different scheduling techniques are

- CPM
- PERT
- Gantt chart
- Task tracking and costing
- Goldrich chain method

e.g. consider the project with following breakdown structure

Task	T1	T2	T3	T4	T5
Dependency	-	T1	-	T2, T3	T5
Duration	1	2	3	4	

Path 1 : start - T1 - T4 - T5 $\Rightarrow 1 + 3 + 4 = 8$

Path 2 : start - T3 - T4 - T5 $\Rightarrow 2 + 3 + 4 = 9$

Path 2 is the critical path indicating that the project will be completed in 9 units if all the activities on the critical path complete.

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		<i>Outsourced firm.</i>
04	Q	<p>Describe Project outsourcing, define different types of outsourcing with suitable examples.</p> <p>Outsourcing is a business practice where a company hires a third party to perform its tasks, operations, jobs, or processes rather than doing it in-house. Based on type of activity outsourced it can be categorized as follows:</p> <ul style="list-style-type: none"> • Business process outsourcing • Knowledge process outsourcing • Project outsourcing <p>Business process outsourcing: It is the most common type of outsourcing. It refers to contracting a business process to a third party service provider who excels in performing the task. Usually repetitive tasks are outsourced. e.g.</p> <p>IT outsourcing - outsourcing technology related services and resources for a part or entire IT department. Mobile application development</p> <p>Manufacturing outsourcing: outsourcing a part or a unit to third party for production.</p>

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Space for Marks	Question No.	<p>operational outsourcing: Certain operational processes like repairing, supply, distribution etc are often outsourced to third parties.</p> <p>other process specific outsourcing: other processes are like customer support, maintenance are outsourced to third party.</p> <p>knowledge process outsourcing: Usually less task are very important but very complex and there is non availability of in house talent. It may not be feasible to train in house staff to acquire required skill. In such case it is outsourced</p> <p>project outsourcing: usually when the demand exceeds the resources of company. It may decide to outsource an entire project to an external service provider.</p> <p>location based outsourcing: Based on location outsourcing can be of following types.</p> <p>onshore outsourcing: Also called as onshoring or reshoring, this type involves business outsourcing to the same country</p> <p>Nearshore outsourcing: Outsourcing business to</p>
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		near countries
		offshore outsourcing: outsourcing to far countries
		Reasons for outsourcing:
		<ul style="list-style-type: none"> • Growth opportunity • Temporary processes • High costs • Benefit from other experience • Better focus
		Advantages
		<ul style="list-style-type: none"> • Reduced cost • Better focus • Increased efficiency • Better innovation • Shared risk • Targeted efforts
		Disadvantages:
		<ul style="list-style-type: none"> • lack of control • communication problem • Security risks • Financial risks
		eg:
		allowing audience code to a freelancer from India

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		寫程式碼 to a freelancer from Russia

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		<i>Disadvantages:</i>
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		<i>e.g.:</i>
		<i>introduce audience code to a freelancer from Russia</i>

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		P&G outsource R&D activities across world to different countries.
		Apple outsource its manufacturing to different countries.
Q4	B	Explain resource loading and leveling in project management
		Resource loading and leveling are activities of resource planning. Resource loading happens after resource allocation and involves distributing the tasks to the resources that have been allocated to the project.
		Resource optimization techniques such as resource leveling is then applied to ensure the resources are utilized efficiently and effectively. Resource leveling can be done by changing the schedule.
		To load resource, we divide the total hours needed to do the work by available hours for work in the time period.
		Resource loading = $\frac{\text{Estimated work hours needed}}{\text{Available work hours}}$.
		e.g. If forty hours work need to be completed in two days and if employees availability

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In 10 hours across two days per resource loading will be 80%. and employees will have 2 hours to work on other activity depending on project requirement resources can be loaded by hour, days, weeks or month depending on requirement. Reserve loading needs

- Accurate project plan
- Time estimates
- Dedicate time for each resource
- Other factors affecting project resource

Resource leveling strategies.

- CPM
- Critical chain method
- Crashing
- Fast tracking

Suppose a company has two employees working for 10 hours/day. Total working 5 days a week. Total available hours/week is $5 \times 10 \times 2 = 100$ hrs.

If a company gets a project of 120 hours to be completed it can be divided in 2 weeks.

Resource loading can be done by allocating 60 hours per employee. In such case extra work can be levelled on non working day, by paying extra pay. This is levelling of the resource.

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	Q5 9	Explaining earned value technique for measuring the value of work in project management.
		Earned value helps in understanding the real progress that the team has made. EVA needs three metrics
		PV - planned value
		EV - Earned value
		AC - Actual cost
		These three metrics are used to analyse different perspective of the project such as
		CV - cost variance
		SV - schedule variance
		CPI - cost performance index
		SPI - schedule performance index
		e.g.: Let's assume we are building a software. The project is to be completed in 10 months with an estimated cost of 500,000. The project has been running for 5 months now, and 250,000 is spent and completed work account to 250,000.
		$PV = 250,000$ as 50% time is over, we consider 50% of the value

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		$EV = 258000$ Value of work completed.
		$AC = 220000$ Value spent so far
		$CP\text{I} = EV/AC$ = 1.16 <i>< 1 means over budget and behind schedule</i>
		$SPI = EV/PV$ = 1.02. <i>> 1 means under budget and ahead of schedule</i>
	d	What is project termination? brief and explain various types of project termination techniques.
		Project termination is the end of a project, regardless of whether the project is complete. Typically, when a project is terminated, resources become unavailable and the management can reallocate resources to other projects. Terminating a project at the right time is beneficial for companies as it can help save time and money.
		few reasons for project termination.
		<ul style="list-style-type: none"> • lack of funding • Project length • Natural occurrence • Unrealistic expectations • Failure in the testing process.

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		Different types of project termination
		Natural termination of Project: When project achieves its goal and closes naturally. e.g. software project is terminated after delivering software to the client
		Unnatural termination of project: When a project reaches a pre-mature end. e.g.: lack of funds
		Termination by extinction: occurs when the client stops a project because it has a successful or unsuccessful outcome. Typically this termination occurs when the client accepts the final project outcome or when external factors, such as technological advancement or market crises, affect the project outcomes negatively. Failure in achieving the goal
		Termination by addition: If the project is successful, it might get terminated by institutionalizing it as a new and formal part of the parent company. This process might result in an added department, subsidiary, entity and division depending upon the project's importance. In this termination by addition, heavy resources such as materials, equipment and employees transfer to the parent company.

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		<p>newly created entity.</p>	
		<p>Termination by integration: In termination by integration, the project that a client is terminating either gets integrated into large project or becomes an integral part of the ongoing operation of the client's company. As a result the project loses its purpose and identity. In such case senior management distributes the project resource among the existing projects of the client company.</p>	
		<p>Termination by Aberration: It happens due to budget constraints</p>	