题型：

1. Ture or False 10
2. Single Choice 10
3. Fill in Blanks 20
4. Q&A 610

课程名: Software Project Management或SPM
老师名: Angaj

客观题

- PMI是组织
- Pmbok是书（是PMI整理编撰的项目管理知识体系书籍）
- 跟进项目日常的人: Project manger

> PMBOK指南是由项目管理协会（PMI）发布的全球公认的项目管理标准。其目的是提供一套最佳实践和知识领域框架，对于有效的项目管理至关重要。

简答题：

> 不需要让所有内容都和 shortQA 里相同，但是标黑的关键词必须写对，后面可以用自己的话

> 咱们考的是 SPM，不是英语考试，所以不用担心语法错误和拼写错误，只要让老师知道你会这个题就行,但是关键词最好别拼错

WBS （Chapter5）

考试时大概会给出一句话例如“画出图书馆管理系统的 WBS 图，采用瀑布模型” 系统只会是图书馆或者在线商城，模型只会是瀑布模型或 scurm。即 2*2 种可能的题目。
要填的具体的功能不做要求，合理即可，建议参考小组项目

Describe the Work Breakdown Structure (WBS) for an online library system. << 10 marks>

Online Library System (1)
- **Project Management (1.1)**
  - Planning (1.1.1)
  - Scheduling (1.1.2)
  - Budgeting (1.1.3)
  - Risk Management (1.1.4)
  - Quality Assurance (1.1.5)
- **Requirements Analysis (1.2)**
  - Stakeholder Identification (1.2.1)
  - Requirements Gathering (1.2.2)
  - Requirements Documentation (1.2.3)
  - Requirements Validation (1.2.4)
- **System Design (1.3)**
  - System Architecture Design (1.3.1)
  - Database Design (1.3.2)
  - User Interface Design (1.3.3)
  - Security Design (1.3.4)
- **Development (1.4)**
  - Front-end Development (1.4.1)
    - Web Interface Development (1.4.1.1)
    - Mobile Interface Development (1.4.1.2)
  - Back-end Development (1.4.2)
    - Server-side Logic (1.4.2.1)
    - Database Integration (1.4.2.2)
    - API Development (1.4.2.3)
  - Security Implementation (1.4.3)
- **Testing (1.5)**
  - Unit Testing (1.5.1)
  - Integration Testing (1.5.2)
  - System Testing (1.5.3)
  - User Acceptance Testing (UAT) (1.5.4)
  - Security Testing (1.5.5)
- **Deployment (1.6)**
  - Deployment Planning (1.6.1)
  - Server Setup (1.6.2)
  - Data Migration (1.6.3)
  - Launch (1.6.4)
- **Training and Support (1.7)**
  - User Training (1.7.1)
  - Technical Support (1.7.2)
  - Documentation (1.7.3)
  - Maintenance and Updates (1.7.4)

PPT示例

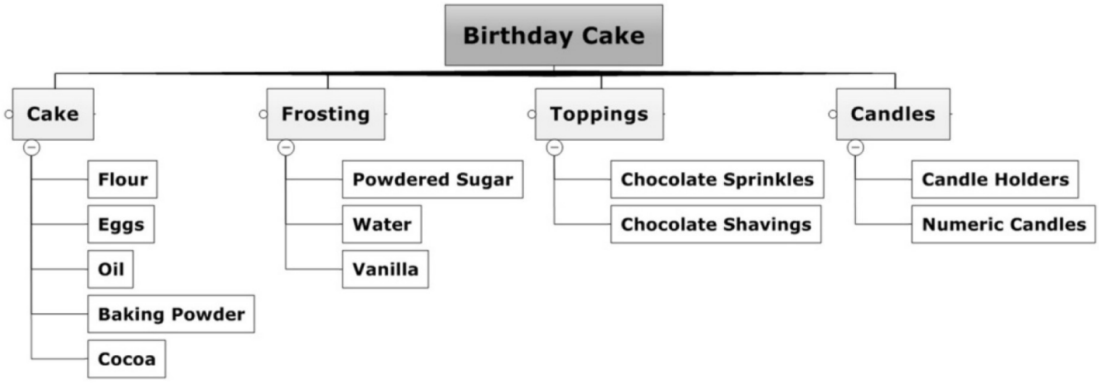
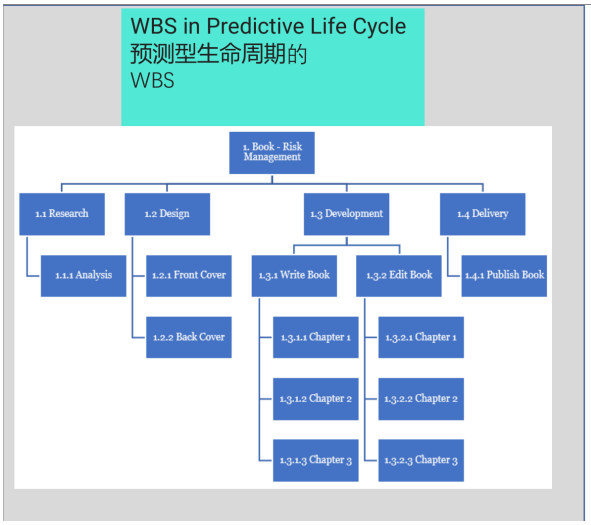
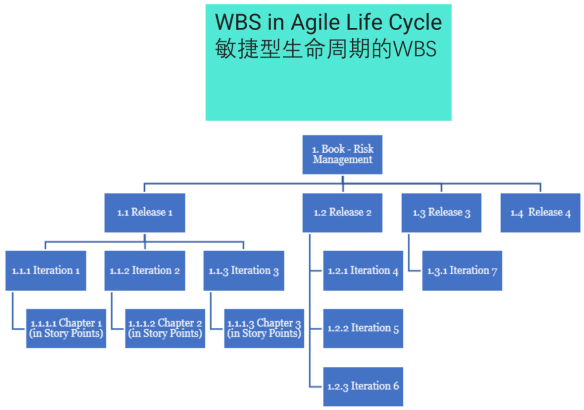


Figure 4-8. WBS for a birthday cake



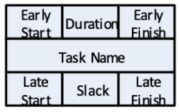


PND图（Chapter6)

画图 计算关键路径

1. Draw the network diagram
2. List the network paths
3. Determine the critical path(s)
4. Determine the float for each activity

Activity	Duration	Dependency	Float
Start	0 days	-	
A	5 days	Start	
B	2 days	Start	
C	3 days	A, B	
D	5 days	Start	
E	6 days	Start	
F	4 days	D, E	
G	2 days	C, F	
H	5 days	G	
I	7 days	G	
J	3 days	H	
Finish	0 days	I, J	



1. Given the following project activities, durations, and dependencies, identify the critical path, calculate the total project duration, and determine the earliest and latest start and finish times for each activity:

Activity	Duration (days)	Predecessor(s)
A	5	None
B	3	A
C	8	A
D	6	B
E	2	B
F	7	C
G	4	C
H	3	D, E
I	4	F, G
J	5	H, I

· Draw the network diagram.

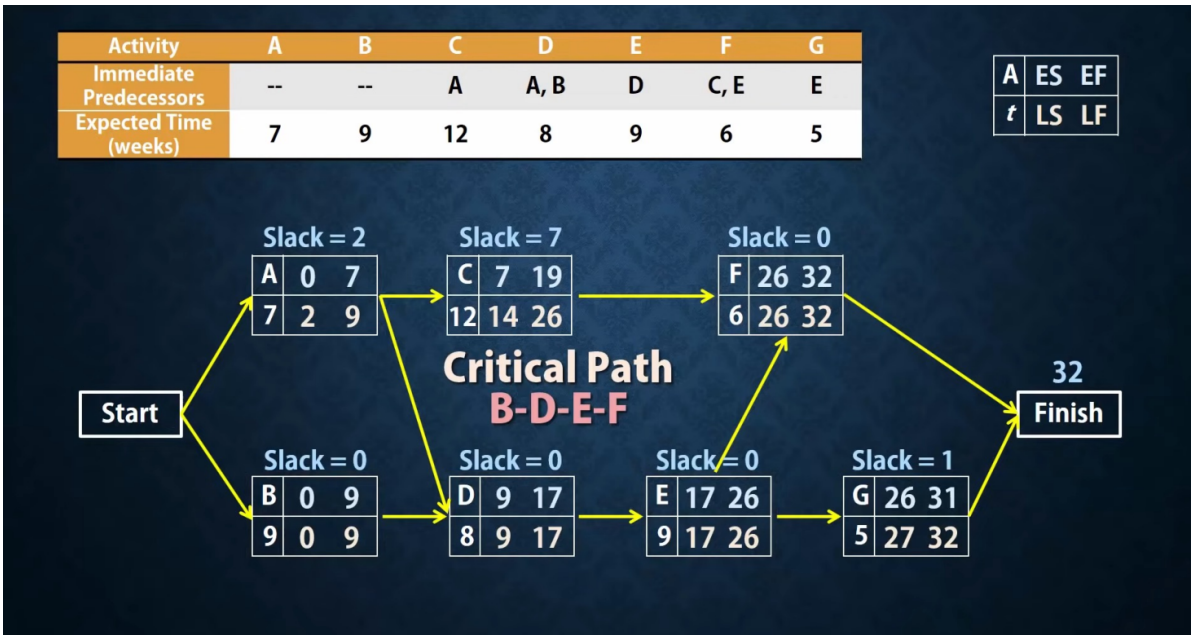
· Identify all possible paths from start to finish.

· Calculate the total duration of each path.

· Determine the critical path and its duration.

Critical Path: A -> C -> F -> I -> J

Total Project Duration: 29 days



EVM计算（Chapter 7）

Earned Value Management 挣值管理（EVM) (3)

- Table 7-4 Earned value formulas

Term	Formula
Earned value (EV)	EV = PV of all completed work
Cost variance (CV)	CV = EV - AC
Schedule variance (SV)	SV = EV - PV
Cost performance index (CPI)	CPI = EV/AC
Schedule performance index (SPI)	SPI = EV/PV
Estimate at completion (EAC)	EAC = BAC/CPI
Estimated to Complete (ETC)	ETC = EAC - AC

Earned Value Variances	
Cost Variance (CV) = Earned Value (EV) - Actual Cost (AC)	> 0 means under budget < 0 means over budget
Schedule Variance (SV) = Earned Value (EV) - Planned Value (PV)	> 0 means ahead of schedule < 0 means behind schedule
Earned Value Indices	
Cost Performance Index (CPI) = EV/AC	> 1 means better progress for the money < 1 means less progress for the money
Schedule Performance Index (SPI) = EV/PV	> 1 means more work performed than scheduled < 1 means less work performed than scheduled
Project Percent Complete = (EV/BAC) * 100	Percent of project work complete. Where BAC = Budget at Completion
To Complete Performance Index (TCPI) = (BAC-EV)/(BAC-AC)	The cost performance index required to complete the project on budget.
Note! Comparing CPI and TCPI at any point in a project gives a unique insight into the likelihood of a project completing on budget. For example if a project is running at a CPI of 0.8 with a TCPI of 1.2 required to complete on budget; such a step change is unlikely without major management intervention.	
Earned Value Forecasts	
Estimate at completion (EAC) = BAC/CPI	The estimated total cost at project completion.
Variance at completion (VAC) = BAC-EAC	The estimated variance between actual total cost and planned total cost at project completion.

1. A project has a total budget (BAC) of $200,000 and is planned to last 10 months. At the end of the 5th month, the following data is available:

Planned Value (PV): $100,000

Earned Value (EV): $90,000

Actual Cost (AC): $110,000

Calculate the following:

a) Schedule Variance (SV)

b) Cost Variance (CV)

c) Schedule Performance Index (SPI)

d) Cost Performance Index (CPI)

Solution:

a) **Schedule Variance (SV)**

$$\text{SV} = EV - PV$$
$$\text{SV} = 90,000 - 100,000$$
$$\text{SV} = -10,000$$

b) **Cost Variance (CV)**

$$\text{CV} = EV - AC$$
$$\text{CV} = 90,000 - 110,000$$
$$\text{CV} = -20,000$$

c) **Schedule Performance Index (SPI)**

$$\text{SPI} = \frac{EV}{PV}$$
$$\text{SPI} = \frac{90,000}{100,000}$$
$$\text{SPI} = 0.90$$

d) **Cost Performance Index (CPI)**

$$\text{CPI} = \frac{EV}{AC}$$
$$\text{CPI} = \frac{90,000}{110,000}$$
$$\text{CPI} = 0.818$$

2. Using the data from Question 1, calculate the following:

a) Estimate at Completion (EAC) assuming the CPI remains the same.

b) Estimate to Complete (ETC) assuming the CPI remains the same.

Solution:

a) **Estimate at Completion (EAC)**

$$\text{EAC} = \frac{\text{BAC}}{\text{CPI}}$$
$$\text{EAC} = \frac{200,000}{0.818}$$
$$\text{EAC} \approx 244,255$$

b) **Estimate to Complete (ETC)**

$$\text{ETC} = \text{EAC} - \text{AC}$$
$$\text{ETC} = 244,255 - 110,000$$
$$\text{ETC} \approx 134,255$$

简答 （Chapter 11）

Q1这种简答重点是答出前面的关键词，用自己的话简要解释就行
Q2同上

1. List common sources of risks on IT projects.

Technical Risks: Inadequate technology, system failures, software bugs.

Project Management Risks: Poor planning, unclear requirements, scope creep.

Organizational Risks: Resource availability, organizational changes, stakeholder conflicts.

External Risks: Regulatory changes, market fluctuations, vendor reliability.

Security Risks: Data breaches, cyber-attacks, compliance issues.

列出 IT项目中的常见风险来源。

技术风险： 技术不足、系统故障、软件漏洞。

项目管理风险： 规划不当、需求不明确、范围蔓延。

组织风险： 资源可用性、组织变更、利益相关者冲突。

外部风险： 法规变化、市场波动、供应商可靠性。

安全风险： 数据泄露、网络攻击、合规问题。

2. What are the key elements of planning risk management?

Risk Management Plan: Defines how to approach, plan, and execute risk management activities.

Risk Identification: Process of identifying risks that might affect the project.

Risk Analysis: Qualitative and quantitative methods to analyze risks.

Risk Response Planning: Strategies to enhance opportunities and reduce threats.

Risk Monitoring and Control: Tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness.

风险管理规划的关键要素是什么?

风险管理计划： 定义如何进行风险管理活动的方法、计划和执行。

风险识别： 识别可能影响项目的风险的过程。

风险分析： 使用定性和定量方法分析风险。

风险应对规划： 增强机会和减少威胁的策略。

风险监控和控制： 跟踪已识别的风险，监控残留风险，识别新风险，并评估风险过程的有效性。

Scrum Chapter 15

Q1 Scrum

type people meeting doc

Question: What is Scrum and how does it benefit project management?

问题：什么是 Scrum，它如何有助于项目管理 ？

Answer:

Scrum is an **Agile framework** for managing complex projects, typically software development. It promotes an **iterative, incremental approach** to optimize predictability and control risk. Scrum is well-regarded for its flexibility, collaborative nature, and ability to deliver high-value products to customers efficiently.

Scrum 是一种用于管理复杂项目的敏捷框架，通常用于软件开发。它提倡一种迭代、增量的方法，以优化可预测性并控制风险。Scrum 因其灵活性、协作性和高效交付高价值产品的能力而备受推崇。

Overview of Scrum: Scrum divides projects into time-boxed iterations called **"Sprints,"** usually lasting two to four weeks. Each Sprint aims to produce a potentially shippable product increment. The framework includes defined roles, events, and artifacts to guide the process.

Scrum 概述： Scrum 将项目划分为称为“冲刺”的时间盒迭代，通常持续两到四周。每个冲刺的目标是生产一个可交付的产品增量。该框架包括定义的角色、事件和工件，以指导整个过程。

Key Roles:

1. **Product Owner:** The Product Owner represents stakeholders and is responsible for maximizing the product's value. They manage the Product Backlog, ensuring it is clear, prioritized, and conveys what is needed for the product.
2. **Scrum Master:** The Scrum Master facilitates the process, helps remove impediments, and ensures the team adheres to Scrum practices. They act as a coach, supporting the team in self-organization and continuous improvement.
3. **Development Team:** This is a cross-functional group responsible for delivering the product increment. They self-organize to decide how to accomplish the work within a Sprint.

关键角色 ：

1. 产品负责人 (Product Owner)： 产品负责人代表利益相关者，负责最大化产品的价值。他们管理产品待办事项列表，确保其清晰、优先排序并传达产品需求。
2. Scrum Master： Scrum Master 促进过程，帮助消除障碍，确保团队遵循 Scrum 实践。他们充当教练，支持团队自组织和持续改进。
3. 开发团队 (Development Team)： 这是一个跨职能团队，负责交付产品增量。他们自组织决定如何在冲刺内完成工作。

Core Events:

1. **Sprint Planning:** The team collaborates to define what can be delivered in the upcoming Sprint and how to achieve it. The Product Owner presents prioritized items from the Product Backlog, and the team selects those they commit to completing.
2. **Daily Scrum:** A short, daily meeting where team members synchronize their work and plan for the next 24 hours. Each member answers three questions: What did I do yesterday? What will I do today? Are there any impediments?
3. **Sprint Review:** At the end of each Sprint, the team demonstrates the increment to stakeholders, gathers feedback, and discusses what to do next. This ensures continuous alignment with stakeholder needs and expectations.
4. **Sprint Retrospective:** The team reflects on the Sprint, identifying what went well, what could be improved, and how to enhance their processes. This fosters a culture of continuous improvement.

核心事件 ：

1. 冲刺规划 (Sprint Planning)： 团队协作定义在即将到来的冲刺中可以交付的内容以及如何实现。产品负责人展示优先级排序的产品待办事项，团队选择承诺完成的项目。
2. 每日 Scrum (Daily Scrum)： 每日简短会议，团队成员同步工作并计划接下来24小时的工作。每个成员回答三个问题：昨天我做了什么？今天我将做什么？有没有任何障碍？
3. 冲刺评审 (Sprint Review)： 每个冲刺结束时，团队向利益相关者展示增量产品，收集反馈，并讨论接下来的工作。这确保了与利益相关者需求和期望的持续对齐。
4. 冲刺回顾 (Sprint Retrospective)： 团队反思冲刺，找出做得好的地方、可以改进的地方以及如何优化流程。这促进了持续改进的文化。

Scrum Artifacts:

1. **Product Backlog:** An evolving list of product requirements ordered by priority. The Product Owner manages it, ensuring it reflects the current needs and goals of the project.
2. **Sprint Backlog:** A list of tasks the Development Team commits to completing during the Sprint. It includes selected items from the Product Backlog and a plan for delivering them.
3. **Increment:** The sum of all completed Product Backlog items at the end of a Sprint, representing a potentially shippable product.

Scrum 工件 ：

1. 产品待办事项列表 (Product Backlog)： 一个不断发展的产品需求列表，按优先级排序。产品负责人管理它，确保它反映项目的当前需求和目标。
2. 冲刺待办事项列表 (Sprint Backlog)： 开发团队承诺在冲刺期间完成的任务列表。包括从产品待办事项列表中选定的项目和交付它们的计划。
3. 增量 (Increment)： 每个冲刺结束时所有完成的产品待办事项的总和，代表一个可交付的产品。

Benefits of Scrum:

1. Flexibility and Adaptability: Scrum's iterative nature allows for frequent reassessment and adaptation of plans based on feedback and changing requirements.
2. Improved Collaboration: The defined roles and regular meetings foster better communication and collaboration among team members and stakeholders.
3. Enhanced Transparency: Scrum's emphasis on visibility ensures all stakeholders are aware of the project's progress, risks, and any issues.
4. Faster Delivery: By focusing on delivering small increments of value, Scrum enables quicker releases, allowing for faster feedback and adjustment cycles.
5. Continuous Improvement: Regular retrospectives promote a culture of learning and improvement, helping teams to enhance their processes continuously.

Scrum 的优势 ：

1. 灵活性和适应性： Scrum 的迭代性质允许根据反馈和变化的需求频繁重新评估和调整计划。
2. 改进的协作： 定义的角色和定期会议促进了团队成员和利益相关者之间更好的沟通与协作。
3. 增强的透明性： Scrum 强调可见性，确保所有利益相关者了解项目的进展、风险和任何问题。
4. 更快的交付： 通过专注于交付小型增量价值，Scrum 使得更快速的发布成为可能，从而允许更快的反馈和调整周期。
5. 持续改进： 定期的回顾促进了学习和改进的文化，帮助团队不断优化他们的流程。

In conclusion, Scrum is a powerful framework that supports Agile principles, enabling teams to manage complex projects efficiently. By emphasizing collaboration, flexibility, and continuous delivery of value, Scrum helps organizations respond swiftly to changes and deliver high-quality products that meet customer needs.

总之，Scrum 是一个支持敏捷原则的强大框架，使团队能够高效地管理复杂项目。通过强调协作、灵活性和持续交付价值，Scrum 帮助组织快速响应变化并交付满足客户需求的高质量产品。

surprise(随机出)