CGGC 5005 Midterm Exam – Winter 2023: February 21, 2023

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Question 1. [5 marks]

Describe the four components of SWOT analysis and give an example for each one.

Ans -

➢ Strengths – This is the strength of a organization that is internal to it and can be managed by the organization itself.
Eg- Lets take example of nike, they have one of the best brand recognition in the world so this is one of the examples of their strengths.

➢ Weaknesses – This is the weaknesses of a organization that is also internal and can be managed/controlled(improved/worsen) by the organization itself.
Eg- Nike's weakness would be its product diversity since it is internal(i.e they can improve upon it) and their majority of the revenue comes from heir footwear lineup.

➢ Opportunities – This is the opportunities that the organization gets which cannot be controlled or managed by the organization.
Eg- Consumers are increasingly concerned about the environmental impact of the products they buy, and Nike can capitalize on this trend by promoting sustainable practices.

➢ Threats – These are external threats to the company which cannot directly be dealt with by the organization.
Eg- Shifts in consumer preferences and fashion trends can impact Nike's sales.

Question 2. [5 marks]

Describe the characteristics of traditional Waterfall and Agile methodologies. Give an **example** of when it would be best to use each methodology.

Answer in next page

Ans -

> Waterfall and Agile are different ways to do projects. Waterfall is like following a recipe step by step.
> Agile is like making changes as you go.
> Waterfall works well when you know what you want and how to get it.
> Agile works well when you don't know what you want, or things keep changing.

For example, Waterfall is good for building things like bridges or houses. Agile is good for making new software or services.

Question 3. [5 marks]

What is involved in project scope management, and why is good project scope management so important on information technology projects? What is involved in collecting requirements for a project?

Ans - Project scope management is about planning for what you need to do and making sure you stick to it. It helps you avoid doing too much or too little work. Collecting requirements is about asking your stakeholders what they want and need from the project. It helps you know what you must make or do.

To collect requirements, you can talk to your customers/stakeholders, write down what they say and want, and check with everyone if they agree. You can also use a tool that lets you share and change your requirements document easily.

Question 4. [5 marks]

What is a Work Breakdown Structure (WBS)? Why do you need a good WBS on projects?

Ans-

A Work Breakdown Structure is a way to divide a project into smaller parts. It's important to have a good WBS because it helps identify all the work that needs to be done, manage the project's scope, schedule, and resources, and report on progress to stakeholders. Essentially, a WBS is a helpful tool for project management, making sure the project is completed on time, within budget, and to the required quality standards.

Question 5. [5 marks]

In your own words, explain the following schedule development tools and concepts.

Ans -

Gantt charts:

Gant charts are used to represent the timeline /schedule in a easy to understand format can also be a tool used to create a visual timeline of a project that shows when tasks start, end, and overlap. Basically, it helps to track progress and manage the project timeline.

Critical path:

Critical path is the longest sequence of tasks in a project that must be completed in order to finish the project on time (longest path in shortest time). It helps to identify the most important tasks and their dependencies.

PERT (3-point Estimates):

PERT is a tool/method that uses optimistic, pessimistic, and most likely estimate to calculate the expected time for a task. It helps to identify the probability of completing the task within a given timeframe.

Milestones:

Specific points in a project that indicate progress and achievement of key objectives. They help to keep the project on track and also used to keep track of accomplishments.

Work Package:

A task or a group of related tasks that can be assigned to one person or team. It helps to break down a project into manageable parts and allocate resources efficiently.

Question 6. [5 marks]

When you would prepare Rough Order of Magnitude (ROM) vs. a definitive cost estimate for a project.

Give an example of how you would use each of the following techniques for creating a cost estimate: analogous, parametric, and bottom-up.

Ans -

We can use rough order of magnitude when you don't have much info, and a definitive cost estimate when you have more info to estimate the cost of a project.

Some examples of analogous, parametric, and bottom-up cost estimate would be: -

➢ Analogous: build house, look at cost of similar houses before, adjust for changes
➢ Parametric: develop software, use formula for lines of code and cost, multiply by estimated lines of code
➢ Bottom-up: organize event, list all tasks like venue, catering, invitations, estimate each task cost, add them up

Question 7. [5 marks]

In use case diagrams:

a) What is an Actor?
In use case diagram an actor is represented as a stick figure, it is external, but it interacts with the system and can be human or automated system. Works based on its responsibilities and targets specified.

b) What is a use case?
Use cases are represented by ellipses in a use case diagram. It is a series of steps taken by the system/actor to do the work required. This helps in gathering the requirements of what functionalities to implement in each project.

c) What is a system boundary?
This is the outer boundary (thin line/boundary that covers the entire use case ellipses) of the use case diagram where it represents the separation of actors from the steps (use cases).

d) What is the different between include and extend relationship?

Include relationships are relationships between actor and use cases which are required and cannot be continued otherwise.

Whereas Extend relationship is optional and actors can continue with or without these.

Question 8. [5 marks]

Using the CPM diagram below diagram:

Activity	Predecessors	Duration (days)
A	-	3
B	A	4
C	A	5
D	B	1
E	C	3
F	C	8
G	D, E, F	5

Key:

ES	Duration	EF
	Task Name	
LS	Float	LF
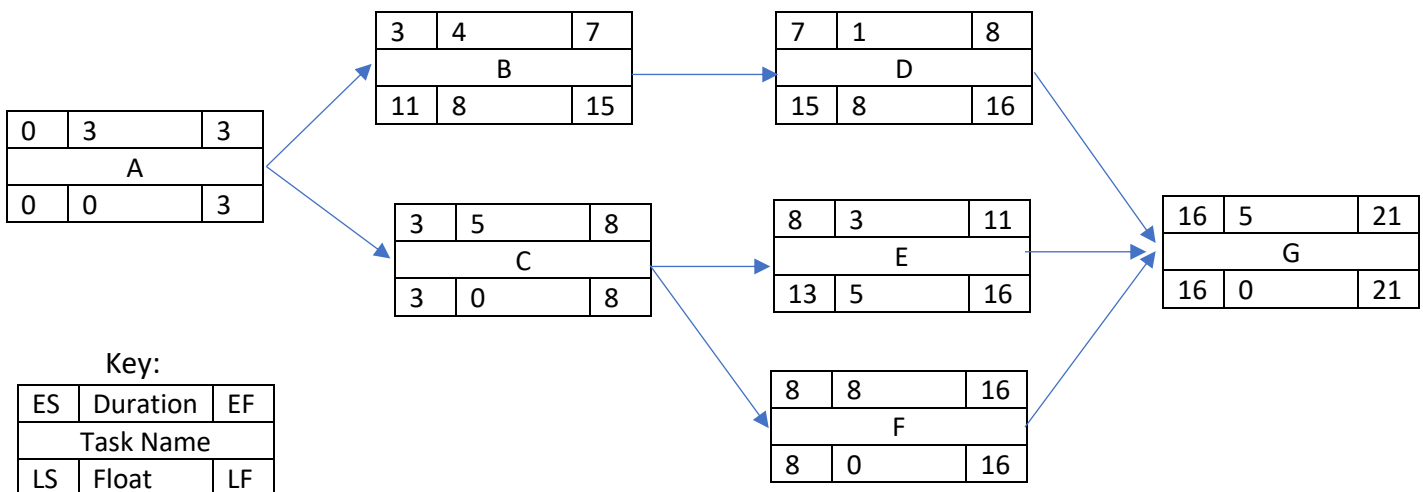
a) What is the critical path for this project?
   Critical path for this diagram is
   A -> B -> D -> G

This is the longest route but completes in the shortest time i.e this is the critical path.

b) What is the float for Activity E?
   The float of activity e is 5 (as seen in the box, bottom center)

c) If Activity C is delayed by 3 days, what will be the impact to the overall project schedule?
   Since C is not in critical path It wont effect the overall project and cause delays

d) If Activity D is delayed by 5 days, what will be the impact to the overall project schedule?
   Since D is in critical path it will delay the overall project by 5 days.

e) What is the latest day Activity B can start without causing a delay the overall project?
   Activity can start by 8Th day without causing a delay

Question 9. [10 marks]

You have a project to build a new fence. The fence is four sided as shown below. Each side is to take one day to build and is budgeted for $1,000 per side. The sides are planned to be completed one after the other. **Today is the end of day three**.

Answer the questions below using this project status chart (do the calculations to 3 decimal place accuracy):

Activity	Day 1	Day 2	Day 3	Day 4	Status End of Day 3
Side 1	S ---------- F				Complete, spent $1,000
Side 2		S ---------PF	---- F		Complete, spent $1,200
Side 3			PS---S---PF		50% done, spent $600
Side 4				PS-------PF	Not yet started

Key: *S = Actual Start,*   *F = Actual Finish,*   *PS = Planned Start,*   *PF = Planned Finish*

At the end of the 3rd day:

1) What is the Planned Value?
 Planned Value(PV) = 1000+1000+1000 = $3000

2) What is the Earned Value?
 Earned Value (EV) = 1000+1000+500 = $2500

3) What is the Actual Cost?
 Actual Cost(AC) = 1000 + 1200 + 600 = $2800

4) If this project is handled at the same cost performance as present, how much more will this project cost after the end of the third day?
 BAC = $4000(given, 4x1000)
 CPI = EV/AC = 2500 / 2800 = 0.893
 EAC = BAC/CPI = 4000 / 0.893 = $4479

 ETC = EAC – AC = 4479 – 2800 = $1679

5) What is the Variance at Completion (VAC)?
   Variance at Completion (VAC) = 4000 – 4479 = -$479

Reference Material: Earned Value Management (EVM) – Key terms and formulae

Name	Formula
Earned Value (EV)	% Complete x PV of Task
Cost Variance (CV)	EV – AC
Schedule Variance (SV)	EV – PV
Cost Performance Index (CPI)	EV / AC
Schedule Performance Index (SPI)	EV / PV
Estimate at Completion (EAC)	BAC / CPI
Estimate to Complete (ETC)	EAC – AC
Variance at Completion (VAC)	BAC - EAC