

**Q1 - A**

**Q1.1 - A)** A is possible to complete unlike C, and unlike B and D is likely more than one action. It's possible. D is a project too (see the next question), but since A definitely is, option a) is the best option

**Q1.2 - D)** this is the most project-like (specific goal, multiple tasks)

**Q2 - A)** This is an essential element of the initiation stage.

**Q2.1 - A)** This is an essential element of the initiation stage.

**Q2.2 - D)** This is ideally part of the initiation stage, and necessary in the planning stage as well

**Q2.3 - B)** This is the only task in the list that happens in the execution stage.

**Q2.4 - B)** These three tools assist in carrying out the planning stage

**Q2.5 - E**

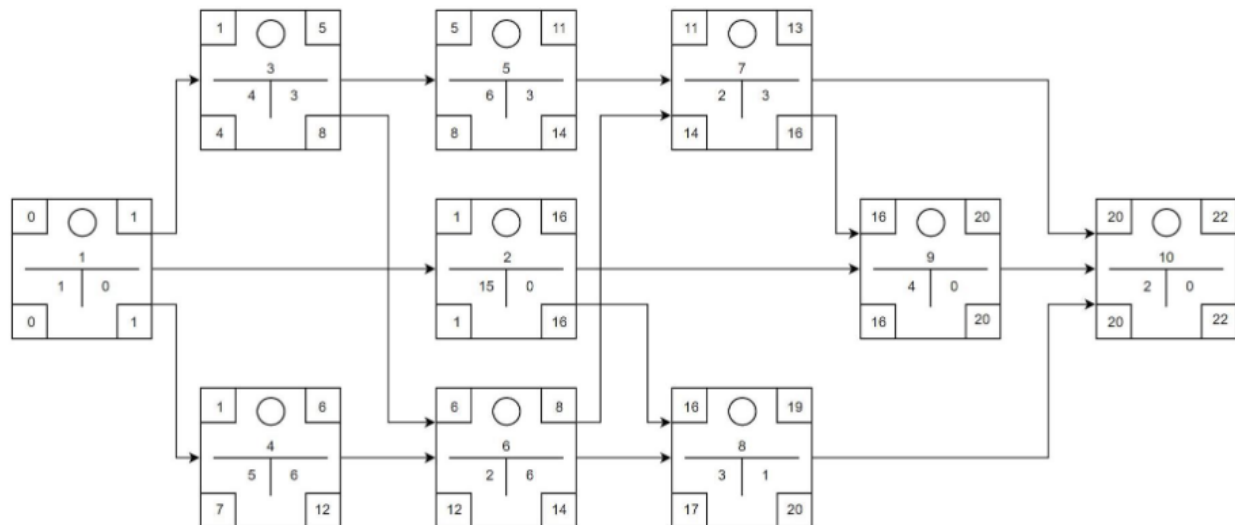
**Q2.6 - C)** This is the execution of the project, implementing the improved process. Training the employees on this process is executing the project. If it's in the project and involves doing something that directly makes progress towards the goal, it's in the execution stage

**Q3 - B)** Best describes a Gantt chart

**Q3.1 - C)** The CPM technique will give a representation of how each project relates to each other in terms of dependence

**Q3.2 - D)** The objective of crashing a project activity is to address the critical path.

**Q4 - B)** Activity 8 has one day of float.



**Q4.1 - C)** Day 11 is the early start date, and Day 14 is the late start date. This means Activity 7 has three days of float

**Q4.2** - A) The path 1 > 2 > 9 > 10 has no days of float

**Q4.3** - C) Day 12

**Q4.4** - C) Day 22

**Q4.5** - D) There is no benefit to crashing activities when they're not on the critical path, as this does not reduce the project duration.

Crashing activities 2 & 4: Additional costs of \$35,000 compared to not crashing, duration of project ends 3 days earlier, net value of -\$20,000.

Crashing activities 2, 6, & 8: Additional costs of \$44,000 compared to not crashing, duration of project ends 3 days earlier, net value of -\$29,000

Crashing activities 4 & 7: Both are off the critical path; pointless as there is no benefit, only additional costs

Crashing activity 10: Additional costs of \$3,000 compared to not crashing, project ends 1 day earlier, net value of +\$2,000

Crashing activity 9: Additional costs of \$20,000 compared to not crashing, project ends 2 days earlier, net value of - \$10,000

**Q4.6** – D) Additional costs \$53,000. Duration change: 22 days -> 17 days, for benefit of \$25,000, total net value of -\$28,000. Shortens duration, but isn't worth the costs! Optimum decision isn't to crash the entire path

**Q4.7** – D) It changes! Activity 9 has an early end date of Day 15, but now Activity 10 is limited in its early start by Activity 8! If you were to crash an additional activity, you would assess Activity 8 next

**Q5** – D) it is not as measurable as the others (or at least, it's not as clear what environmental impact means)

**Q5.1** - B) is the correct answer. The other answers are purposefully obtuse and difficult to understand. This is directly taken from the lecture discussion

**Q6** - This is a lag indicator on a start-start relationship, meaning that activity B must not begin until 1 day has passed since activity A started. Showing this 1 changes the lag from the default 0; i.e., without a number it would mean "activity B must not begin until [0 days have passed since] activity A started"

**Q6.1** - This is a lag indicator on a finish-start relationship, meaning that activity D must not begin until 2 days have passed since activity A finished.

**Q6.2** - A(start only) to B to C to E to F

Because of the start-start relationship from A to B, this leads to starting A being on the critical path (i.e., if its start time is delayed so is the project), but finishing A is not (i.e., its finish time has float in it; we could finish a day later and not delay anything)

**Q6.3** - There is no float between the earliest and latest possible start dates for activity A. However, the end date for activity A may be delayed by 1 day without the project taking longer to end

**Q6.4** - The same:  $A_{(\text{start only})}$  to B to C to E to F

**Q6.5** – 0-2