

## Task 5

5a) Before we begin, the three stages are Commit, Rollback and Redo. Based on the diagram given, we can tell that T3 and T6 had been successfully committed, as it was committed before the checkpoint, where at the checkpoint the system would have ensured the data was written to the disk. As for Rollback, T1, T4, T7, T9 and T11 would require a rollback since they are still running at the point of failure. Lastly for Redo, T2, T5, T8 and T10 would require a redo even though it reached completion, it still passed the time of checkpoint.