MS2001 Business Data Management

**Jan 2024 Term**

**Week 8 - Graded Assignment 8**

If a shift is operational, then the Availability for that shift is 1; else 0.

Performance, Quality or MAPE can be calculated for operational shifts only.

$$\boldsymbol{Performance} = \frac{\boldsymbol{Actual\ Output}}{\boldsymbol{Rated\ Output}}$$

$$\boldsymbol{Quality} = \frac{\boldsymbol{No.\ of\ accepted\ parts}}{\boldsymbol{Actual\ Output}}$$

$$\boldsymbol{MAPE} = \frac{\mathbf{1}}{\boldsymbol{n}}\sum_{\boldsymbol{t=1}}^{\boldsymbol{n}}\left|\frac{\boldsymbol{A_t - F_t}}{\boldsymbol{A_t}}\right|$$

where, $n$ = no. of days (exclude non-operational shifts / days);

$A_t$ = Actual Output;

$F_t$ = Rated Output

Take Rated Output as 4000.

1. What is the Overall Equipment Effectiveness (OEE) of manufacturing in Week-1 (01-04-2022 to 07-04-2022 both days included)? **(3 decimal)**
   *Hint: OEE of a particular shift can be zero if no production happens.*
2. What is the overall quality of the Part-A manufacturing process during the fortnight? **(3 decimal)**
3. What is the performance of the Part-A manufacturing process during Week-2? **(3 decimal)**
4. What is the average number of Part-A manufactured per hour during the fortnight? Assume that a shift runs for 8 hours and there is no break between shifts. (Round down the answer to the nearest whole number. E.g. We can't have 2.3 parts, so the answer will be 2 parts) **(Integer)** *Hint: Exclude non-production time.*
5. The company uses MAPE (Mean Absolute Percentage Error) to measure process variability in Part-A manufacturing. Which shift sees the maximum process variability during the fortnight? E.g. Shift 1 **(String)**