

E0-259 Data Analytics

Practice problems on Duckworth-Lewis module

Instructions: For each question one or more of the presented choices may be true. Choose the correct ones.

1. In the interpretation of the formula, $Z(u, w) = Z_0(w)[1 - \exp\{-b(w)u\}]$, where u is the number of overs to go and w is the number of wickets in hand, identify whether each of the following statements is true.
 - a. $Z_0(w)$ is the average first innings score of a team with w wickets in hand and no over limitation.
 - b. $Z_0(w)$ is the average second innings score of a team with w wickets in hand and no over limitation.
 - c. $Z_0(w)$ is an increasing function of w .
 - d. $Z(u, w)$ increases with w for each fixed u , but decreases with u for each fixed w .

Answer: (a) and (c).

2. Australia scored 250 runs off 50 overs. India goes in to bat, but the forecast (with high certainty) is that rain will wash out play after 1.5 hrs (approximately 22 overs) of the Indian innings. The Duckworth-Lewis method will be used. Which of the following would be appropriate?
 - a. The captain of India should advise the batters to score at the fastest possible rate since all 10 wickets are available.
 - b. The captain of India should advise the openers to score but carefully and not lose wickets as much as possible.
 - c. The captain of India should advise the team to be above the average run rate and not worry about the wickets.
 - d. The captain of India should advise the team to bat as if they have 50 overs in the match, since that is what they would have done in a 50 over match.

Answer: (b).

3. Team 1 scores 250 off 50 overs. Team 2's innings is at 120/6 in 25 overs when rain stops play. The third umpire has to declare a winner. Assume $P(25, 4) = 0.33$ = value of resources with 25 overs to go and four wickets in hand. Define R_1 = resources used by Team 1. R_2 = resources used by Team 2. Which of the following calculations is correct?
 - a. $R_1 = 1.00$, $R_2 = 0.67$, Par score = 167.5. Team 2 loses.
 - b. $R_1 = 1.00$, $R_2 = 0.33$, Par score = 82.5. Team 2 wins.
 - c. $R_1 = 1.00$, $R_2 = 0.50$, Par score = 125. Team 2 loses.
 - d. $R_1 = 1.00$, $R_2 = 0.83$, Par score = 207.5, Team 2 loses.

Answer: (a).

4. In a 50 over ODI, Team 1 scores 80/0 in 10 overs when rain reduces the match to 10 overs for each side. Take $R1 = 0.1$, $R2 = 0.34$, and $G(50) = 250$. Which of the following gives the correct calculation for the par score in the D/L standard edition framework?
- a. $80 \times 0.34/0.1 = 272$
 - b. $80 + 0.34 \times 80 = 107.2$
 - c. $80 + (0.34 - 0.1) \times 250 = 140$
 - d. $80 + (0.34 - 0.1) \times 80 = 99.2$

Answer: (c).

5. Consider three adjacent grounds A, B, C hosting three matches. Teams 1A and 1B scored 250 off 50 overs. Teams 1C scored 180 off 50 overs. All Teams 2 played 20 overs, lost 3 wickets, when it rained. Team 2A is at 120/3, Team 2B is at 50/3, and Team 2C is at 50/3. Ten overs are lost to rain, and when play resumes, there are 20 overs to play.
- a. Under the D/L criterion, the par scores for Teams 2A and 2B are the same.
 - b. Under the D/L criterion, the par scores for Teams 2A and 2B are different.
 - c. Under the isoprobability criterion, the to-go scores for Teams 2A and 2C are the same.
 - d. Under the isoprobability criterion, the to-go scores for Teams 2A and 2C are different.

Answer: (a) and (c).