**PART A: (PERT)**

**Formula:**

(Optimistic + 4 x most likely + pessimistic) / 6 = Duration

**ANSWER:**

A = (4 + 4\*9 + 16) / 6 = 9.33

B = (3 + 4\*6 + 9) / 6 = 6

C = (6 + 4\*12 + 24) / 6 = 13

**PART B: (SD and Variance)**

**Formulas:**

(P - O) / 6 = Task SD

Task SD \* 2 = Variance

**ANSWER:**

A:

Task SD = (16 - 4) / 6 = 2

Variance = 2 \* 2 = 4

B:

Task SD = (9 - 3) / 6 = 1

Variance = 1 \* 2 = 2

C:

Task SD = (24 - 6) / 6 = 3

Variance = 3 \* 2 = 6

**PART C: (Project Standard Deviation)**

**Formula:**

sqrt(sum of the task variances) = Project SD

**ANSWER:**

Project SD = sqrt(4 + 2 + 6) = sqrt(12) = 3.46

**PART D: (Probability of completing in 32 days)**

**ANSWER:**

Having Standard Deviation of 3.46 days for the ABC project, the probability of completing the ABC project lies within ( 32 / 3.46 ) = 9.24 standard deviations away from the mean, making the probability of completing the ABC project in 32 day to be less than 0.5%.

Part A: Calculate the PERT Expected Duration for each Activity o PERT(A) = (4+9\*4+16)/6 = 56/6 = 9.33; PERT(B) = 6; PERT(C) = 13

• Part B: Calculate the Standard Deviation for each activity individually. o StDev(A) = (16-4)/6 = 2; StDev(B) = 1; StDev(C) = 3

• Part C: Calculate the total standard deviation for the project o Task variances = (task stdev)^2; Var(A)=2\*2=4, Var(B)=1, Var(C)=9 o Total StDev = Sum(Variances)^1/2; Sqrt(9+1+4) = sqrt(14) = 3.74

• Part D: Determine % probability that the project (ABC) can be done in about 32 days.

o From part C, the total PERT duration is 28.33 with a StDev of about 3.74. Therefore, 32 day duration is equivalent to approximately +1 Standard Deviations. o From the normal distribution chart, you could add the probability areas leading up to the +1 standard deviation from the mean. Mean +1StDev = 0.5+2.0+13.5+34+34 = 84%... o Therefore, there is an 84% probability that project (ABC) can be completed within 32 days.