Q 1 ans
A.
Upon repeating the measurement results are expected to be 6.8(7-0.2) to 7.2(7+0.2), 95.45% of the time.

B.
It is error of the measurement.

C 1
Assuming the entire observation is the illustrated 10 values

Arithmetic mean = summation of values / number of values = Σ/N

Arithmetic mean = (7+8+7.5+8.9+7.1+7.4+8.1+8.9+7.3+7.2) / 10 = 7.74V

Calculating deviation of each of the observation:-

(7-7.74)^2 = 0.55	(7.4-7.74)^2 = 0.12
(8-7.74)^2 = 0.07	(8.1-7.74)^2 = 0.13
(7.5-7.74)^2 = 0.06	(8.9-7.74)^2 = 1.35
(8.9-7.74)^2 = 1.35	(7.3-7.74)^2 = 0.19
(7.1-7.74)^2 = 0.41	(7.7-7.74)^2 = 0.29

Variance σ^2 = (0.55+0.07+0.06+1.35+0.41+0.12+0.13+1.35+0.19+0.29) / 10 = 0.45

Standard deviation σ = 0.67

Standard deviation of the mean = σ / √(N) = 0.67/√(10) = 0.21

C 2
Standard uncertainty ≈ Standard deviation
≈ 0.67

C 3
Assume,
Uncertainty due to Bias [u(v,Bias)] = 0.000073
Uncertainty due to Drift [u(v,Drift)] = 0.000076
Standard uncertainty = 0.67

Combined Standard uncertainty (ų)=√(0.67^2 + [u(v,Bias)]^2 + [u(v,Drift)]^2)
≈ √(0.67^2)
≈ 0.67

95.45 % corresponds to coverage factor K=2
Expanded uncertainty (U) = K. Ų
≈ 2*0.67
≈ 1.34 V

C 4
A. mean = 7.74V
Expanded uncertainty U ≈ 1.34V
Assume measurement of Z we have

Z-1.34≤7.74 ≤ Z+1.34