# Class Test 1 – Units 1 & 2 – Solutions

Answer to Q1 (2 Marks):

Descriptive analytics summarises past data to show what has happened; diagnostic analytics explores data to determine why events occurred.

Answer to Q2 (2 Marks):

Hypothesis testing is a statistical method to evaluate whether a claim about a population parameter is supported by sample data using null and alternative hypotheses and a test statistic.

Answer to Q3 (3 Marks):

Range (difference between maximum and minimum), variance (average squared deviation from the mean) and standard deviation (square root of variance) describe how spread out data are.

Answer to Q4 (3 Marks):

It measures the strength and direction of a linear relationship between two variables: values close to +1 indicate strong positive correlation, values close to -1 indicate strong negative correlation and values near zero suggest weak correlation.

Answer to Q5 (4 Marks):

Simple random sampling selects items purely at random; stratified sampling divides the population into strata and samples within each stratum; systematic sampling selects every k-th item. These methods aim to represent the population.

Answer to Q6 (4 Marks):

Methods include mean or median substitution, regression imputation (predicting missing values based on other variables) and multiple imputation (creating several plausible values and combining results).

Answer to Q7 (6 Marks):

ANOVA compares means of three or more groups of quantitative data; the Chi‑Square test assesses independence between categorical variables. ANOVA requires continuous data, whereas Chi‑Square works with categorical data.

Answer to Q8 (6 Marks):

Mean = 10.33; variance ≈ 13.47; standard deviation ≈ 3.67. The relatively small standard deviation shows that the data values are not widely spread around the mean.