



KOGI STATE UNIVERSITY, KABBA

FACULTY OF SCIENCE AND COMPUTING
DEPARTMENT OF MATHEMATICAL SCIENCES

COURSE TITLE: **STATISTICS FOR PHYSICAL SCIENCES AND ENGINEERING**

COURSE CODE: **STA202**

Units: **3**

Session: 2024/2025

Semester: **SECOND**

Date: 14/08/25

Time allowed: 2Hours.

INSTRUCTION: Answer any **four (4)** questions

Q1. (a) State the uses, merits and demerits of Quartile deviation.

(b) Calculate the quartile deviation and coefficient of quartile deviation for the data below.

Age	20	30	40	50	60	70	80
Frequency	3	61	132	153	140	51	3

Q2. (a) What are the problems usually encountered in calculating mean deviation?

(b) Calculate the mean deviation from the mean for the following data and the coefficient of mean deviation.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No of Students	6	5	8	15	7	6	3

Q3.(a) Enumerate the uses, merits and demerits of Standard Deviation.

(b) Compute the variance and standard deviation for the data below.

Class Interval	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	5	12	15	20	10	4	2

Q4. (a) What is Estimation? Differentiate between An Estimator and Estimate.

(b) What are the desirable properties of a good estimator?

(c) If a random sample of 40 selected from a normal population with variance 300 and mean 75. Construct a 95% confidence interval for the population mean.

Q5. (a) One hundred tyres made by a certain manufacturer lasted on the average of 21,819km with a standard deviation of 1295km. test the null hypothesis $\mu=22,000\text{km}$ against the alternative that $\mu<22,000\text{km}$ at 5% level of significance.

(b) A random sample of 40 diesel engines shows a mean thermal efficiency of 31.4% with a standard deviation of 1.6%. Test at 0.01 level of significance the null hypothesis $\mu=32.3\%$ against the alternative that the population is different from 32.3%

Q6. (a) Find a 95% confidence interval for the population mean from where the following seven samples were drawn: 9.8, 10.2, 10.4, 9.8, 10.0, 10.2 and 9.6.

(b) Differentiate between Type I and Type II errors.