



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING & CIVIL ENGINEERING
INSTITUTIONAL BASED PROGRAMME
UNIVERSITY EXAMINATION FOR:
- DIPLOMA IN BUILDING AND CIVIL ENGINEERING

AMA 2251: ENGINEERING MATHEMATICS IV
END OF SEMESTER EXAMINATION

SERIES: JULY 2017

TIME: 2 HOURS

DATE: ----JULY 2017

Instructions to Candidates

You should have the following for this examination

- Answer Booklet, examination pass and student ID
- Drawing instruments.
- Scientific calculator

This paper consists of **FIVE** questions.

Attempt **any THREE** questions.

Do not write on the question paper

Mobile Phones are NOT allowed inside the examination room

QUESTION ONE

The thickness for pieces of steel rods for construction were determined and found to be as follows:

Thickness (mm)	2.23-2.25	2.26-2.28	2.29-2.31	3.32-2.34
Frequency	3	8	11	17

Thickness (mm)	2.35 – 2.37	2.38-2.40	2.41-2.42
Frequency	15	10	5

Using the coding method determine the mean value for the thickness.

(20 marks)

QUESTION TWO

The number of casual workers for a building site were recorded as;

57 37 43 51 29 41 35 66 45 32
44 47 42 46 54 65 17 35 53 24
45 31 46 25 57 39 42 55 20 37
40 59 11 38 34 22 62 33 48 43
38 22 33 39 45 32 43 41 57 45

(a) Prepare a frequency distribution table for grouped classes starting with the class 10-19

(10 marks)

(b) Use the Frequency table obtained in (a) to draw a frequency polygon.

(10marks)

QUESTION THREE

Masses for dimension stones from a quarry site as shown in the following table:

Mass (Kg)	13-15	16-18	19-21	22-24	25-27	28-30	31-33
Frequency	7	11	20	14	12	9	5

(a) Draw a histogram

(15 marks)

(b) Determine the mode using the histogram obtained

(5marks)

QUESTION FOUR

Compressive strength for a material under Investigation were obtained as follows:

24.0	16.1	22.0	16.8	21.5	16.6	18.9	13.9	15.5
18.8	17.5	30.1	23.5	22.2	15.3	37.0	25.5	17.4
18.6	17.7	28.9	25.7	22.4	15.7	28.0	27.2	22.2

- (a) Make frequency distribution arrangement for 6 classes of class width 4 starting with class 13.5 – 17.5
- (b) Use coding method to determine the standard deviation.

QUESTION FIVE

The number of concrete cubes that attained highest compressive strength at different surrounding temperatures is as shown in the following table:

Temperature ($^{\circ}\text{C}$):	30.0 -30.2	30.3 -30.5	30.6 -30.8	30.9-31.1	31.2-31.4	31.5-31.7	31.8-32.0
Frequency (f)	13	17	21	18	15	11	7

- (a) Determine the median
- (b) Calculated the mean