Green University of Bangladesh

Department of Computer Science and Engineering

Midterm Assessment (Assignment with rubrics), Fall 2021

Course Code: MAT 201 **Course Title: Statistics and Complex Variables**

Full Marks: 10 **Time: 24 Hours**

Answer all the following questions:

[The values on the right-hand side indicate marks allocated for that question only and the [CO#] represents mapping of the question with one of the expected outcomes of the course.]

1. (a) A sample of 77 individuals working at a particular office was selected and the noise level (dBA) experienced by each individual was determined, yielding the following data ("Acceptable Noise Levels for Construction Site Offices," Building Serv. Engr. Research and Technology, 2009: 87–94) [CO1] 2

55.3	55.3	55.3	55.9	55.9	55.9	55.9	56.1	56.1	56.1	56.1	56.1	56.1
56.8	56.8	57.0	57.0	57.0	57.8	57.8	57.8	57.9	57.9	57.9	58.8	58.8
58.8	59.8	59.8	59.8	62.2	62.2	63.8	63.8	63.8	63.9	63.9	63.9	64.7
64.7	64.7	65.1	65.1	65.1	65.3	65.3	65.3	65.3	67.4	67.4	67.4	67.4
68.7	68.7	68.7	68.7	69.0	70.4	70.4	71.2	71.2	71.2	73	73	73.1
73.1	74.6	74.6	74.6	74.6	79.3	79.3	79.3	79.3	83	83	83	

Calculate an estimate of the mean of this distribution by short-cut method.

(b) From the following data calculate quartile deviation: [CO1] 2

Profit (Lakhs)	No. of companies
0-9	25
10-19	100
20-29	175
30-39	74
40-49	66
50-59	35
60-69	5

Rubrics for Question-1

Marks	Level	Descriptions
4	Excellent	Gives a complete response with a clear, coherent and suitable explanation including strong arguments; identifies all the important elements of the problem with proper examples.
3.5	Very Good	Gives a complete response including strong arguments; identifies all the important elements of the problem without examples.
3	Good	Completes the problem but the explanation may be muddled; argumentation may be incomplete; may not include examples.
2	Average	Completes the problem with some minor computational errors, may include wrong examples.
1	Poor	Description is not understandable; may make major computational errors, include wrong examples.

2 (a) Calculate mean deviation and then calculate standard deviation using empirical relation from the following frequency distribution given below: [CO1] 1.5

wages	300-399	400-499	500-599	600-699	700-799	800-899	900-999	1000-1099	1100-1199
No. of Companies	9	12	17	22	30	45	30	25	10

(b) The following data are the shoe sizes of 50 male students. The sizes are discrete data since shoe size is measured in whole and half units only. Draw a histogram, frequency polygon. Suppose you choose six bars. [CO1] 1.5

9	9	9.5	10	10	10	10	10	10	10.5
10.5	10.5	10.5	10.5	10.5	10.5	10.5	11	11	11
11	11	11	11	11	11	11	11	11	11
11.5	11.5	11.5	11.5	11.5	11.5	11.5	12	12	12
12	12	12	12	12.5	12.5	12.5	12.5	14	9.5

Rubrics for Question-2

Marks	Level	Descriptions
3	Excellent	Gives clear explanations with appropriate diagrams (if necessary); identifies all the important elements of the problem.
2.5	Very Good	Gives clear explanations without appropriate diagrams; understands the underlying mathematical ideas shortly.
2	Good	Completes the problem but the explanation may be muddled; diagram may be inappropriate or unclear, understands the underlying mathematical ideas shortly.
1.5	Average	Completes the problem with some minor computational errors and mathematical ideas is not clearly stated.
1	Poor	Unable to indicate which information is appropriate to the problem.

3. Calculate skewness and kurtosis form the following frequency distribution and comment on the result: [CO1] 3

Daily Wages	No. of Factory
12-14	25
14-16	10
16-18	17
18-20	74
20-22	66
22-24	35
24-26	5

Rubrics for Question-3

Marks	Level	Descriptions
3	Excellent	Gives clear explanations with appropriate diagrams (if necessary); identifies all the important elements of the problem.
2.5	Very Good	Gives clear explanations without appropriate diagrams; understands the underlying mathematical ideas shortly.
2	Good	Completes the problem but the explanation may be muddled; diagram may be inappropriate or unclear, understands the underlying mathematical ideas shortly.
1.5	Average	Completes the problem with some minor computational errors and mathematical ideas is not clearly stated.
1	Poor	Unable to indicate which information is appropriate to the problem.