

JAMIA HAMDARD

Department of Biochemistry

School of Chemical and Life Sciences
Jamia Hamdard, New Delhi, 110062
M.Sc. Biochemistry Semester II

Paper: Biostatistics

Time: 1.5 hrs

Note: This paper has 3 sections A, B, and C. Attempt all the three sections. Section A: Answer all the questions; Section B: Answer any 2 out of 4; Section C: Answer all the questions, each question has an internal choice

Paper code: MBC 208

Maximum Marks: 30

COURSE LEARNING OUTCOME

Upon the completion of the course, the students shall be able to understand:

CLO204.1: the principal concepts about biostatistics. (Cognitive Level: understand)

CLO204.2: the data relating to variable/variables; define the principal concepts of probability. (Cognitive Level: Analyze)

CLO204.3: The concepts about hypothesis testing and apply hypothesis testing to the data through these concepts. (Cognitive Level: Apply)

CLO204.4: Applications of different types of Statistical Tests. (Cognitive Level: Apply)

Abbreviations Used

CLO- Course Outcome, PO- Program Outcome, BTL- Bloom's Taxonomy Level: BT level 1-Remember; BT level 2-Understand; BT level 3-Apply; BT level 4-Analyse; BT level 5-Evaluate, BT level 6-Create

Section A

Very Short answer Questions; Answer all questions (5×1mark = 5 Marks)

Q. No	Questions	CO	BL
1.	State one difference between linear and curvilinear regression.	2	2
2.	Give the relation between the variance and standard deviations.	2	3
3.	Find the median of the following data set: 32, 6, 21, 10, 8, 11, 12, 36, 17, 16, 15, 18, 40, 24, 21, 23, 24, 24, 29, 16, 32, 31, 10, 30, 35, 32, 18, 39, 12, 20	2	2
4.	What is the difference between the sample mean, and the population mean?	4	5
5.	Which is the most commonly used measure of dispersion?	1	2

Section B

Long Answer Type Questions. Answer any ONE out of the two given questions. (1×10=10 Marks)

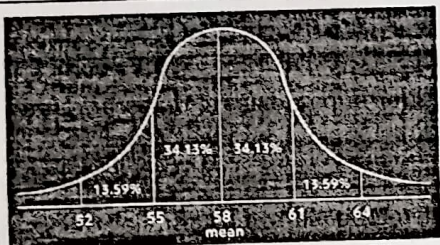
6.	Find the mean, median, and mode of the following data	2	3
	Classes Frequency		
	0 -10 5		
	10-20 10		
	20-30 18		
	30-40 30		
	40-50 20		
	50-60 12		
	60-70 5		

7.	A factory has a machine that dispenses 80 mL of fluid into a bottle. An employee believes that the average amount of fluid isn't 80 mL. Using 40 samples, he measures the average amount dispensed by the machine to be 78 mL with a sample standard deviation of 2.5 mL. a. State the null and alternative hypotheses for the given situation. b. At a 95% confidence level, is there enough evidence to support the idea that the machine is not working properly?	4	5
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Section C

Answer all the questions. Each question has an internal choice.

(3×5 marks=15 marks)

Q. No.		Questions	CO	BL																		
8.		 The average age of people is 58 years. The standard deviation is 3 years. What percentage of people lie between 2 deviations downward and 1 deviation upward from the mean? OR The following data provide the runs scored by two batsmen in the last 10 matches. Batsman A: 25, 20, 45, 93, 8, 14, 32, 87, 72, 4 Batsman B: 33, 50, 47, 38, 45, 40, 36, 48, 37, 26 Find the measure of dispersion for each batsman.	4	5																		
9.		What is Linear Regression? Explain the regression equations of X on Y and Y on X. OR Find a linear regression equation for the following two sets of data: <table><tr><td>X</td><td>2</td><td>4</td><td>6</td><td>8</td></tr><tr><td>Y</td><td>3</td><td>7</td><td>5</td><td>10</td></tr></table>	X	2	4	6	8	Y	3	7	5	10	3	4								
X	2	4	6	8																		
Y	3	7	5	10																		
10.		A doctor claims that a particular hospital contains over 100 diabetes patients with a sugar level of 234 or more. To verify the claim, a random test was conducted on 90 diabetes patients. The test resulted in a mean blood sugar level of 279. In addition, the test resulted in a standard deviation of 18. At 95% confidence, would you accept or reject the hypothesis? OR Calculate the median of grouped data. <table><tr><th><u>Class Interval</u></th><th><u>frequency</u></th><th><u>cumulative frequency</u></th></tr><tr><td>0 - 20</td><td>17</td><td>17</td></tr><tr><td>20 - 40</td><td>28</td><td>45</td></tr><tr><td>40 - 60</td><td>32</td><td>77</td></tr><tr><td>60 - 80</td><td>24</td><td>101</td></tr><tr><td>80 - 100</td><td>19</td><td>120</td></tr></table>	<u>Class Interval</u>	<u>frequency</u>	<u>cumulative frequency</u>	0 - 20	17	17	20 - 40	28	45	40 - 60	32	77	60 - 80	24	101	80 - 100	19	120	4	5
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