

**DEPARTMENT OF MANAGEMENT
SCHOOL OF MANAGEMENT & BUSINESS STUDIES
JAMIA HAMDARD**

Odd Semester Examination (Online) March 2021

MBA [Semester I]

Subject Name: **Quantitative Methods**

MM: **75**

Subject Code: **MBA-FG-108**

Time: **03Hours**

Email Id of the Examiner: mspkhan100@gmail.com

Email Id of the Assistant Superintendent of Exams: mbal1march2021@gmail.com

Email Id of Dean: deanmanagement@jamiahamdard.ac.in

Note:

- Students have to submit the **Scannedhand written solution** to the Examiner, Assistant Superintendent of Examination and Dean on the email ids as mentioned above.
- Students shall use **ruled white paper & blue ink** to write the solution. Each page must have a **serial number and the signature** of the student.
- An additional $\frac{1}{2}$ an hour will be given to the examinees to scan the answer sheets, convert it into single PDF and upload it on the id's given on the question papers.
- If any two copies are found to be similar then both the copies shall be cancelled. Such students will be considered/ tried for unfair means.
- The attached PDF shall be named as follows –
Full Name-Enrollment Number-Course-Semester-Subject Abbreviation(Example: Rabia Shaheen-2017-334-032-MBA-III-QTM)and students shall also mention the same in subject line of the email & his/her answer copy also.
- Answer All Questions, each carry equal marks.

Q1 A sample of 12 small accounting firms reveals the following numbers of professionals per office.

7	10	9	14	11	8
5	12	8	3	13	6

- a. Determine the mean.
- b. Determine the variance.
- c. Determine the standard deviation.
- e. What is the z score for the firm that has six professionals?
- f. What is the coefficient of variation for this sample?

Q2 It seems logical that restaurant chains with more units (restaurants) would have greater sales. This assumption is mitigated, however, by several possibilities: some units may be more profitable than others, some units may be larger, some units may serve more meals, and some units may serve more expensive meals, and so on. The data shown here were published by Technomic. Perform a simple regression analysis to predict a restaurant chain's sales by its number of units. How strong is the relationship?

Chain	Sales (\$ billions)	Number of Units (1000)
McDonald's	17.1	12.4
Burger King	7.9	7.5
Taco Bell	4.8	6.8
Pizza Hut	4.7	8.7
Wendy's	4.6	4.6
KFC	4.0	5.1
Subway	2.9	11.2
Dairy Queen	2.7	5.1
Hardee's	2.7	2.9

Q3 That the starting salaries of new accounting graduates would differ according to geographic regions of the United States seems logical. A random selection of accounting firms is taken from three geographic regions, and each is asked to state the starting salary for a new accounting graduate who is going to work in auditing. The data obtained follow. Use a one-way ANOVA to analyze these data. Note that the data can be restated to make the computations more reasonable (example: \$42,500 = 4.25). Use a 1% level of significance. Discuss the business implications of your findings.

South	Northeast	West
\$40,500	\$51,000	\$45,500
41,500	49,500	43,500
40,000	49,000	45,000
41,000	48,000	46,500
41,500	49,500	46,000

Q4 Shown below are quarterly sales of a product of a company during recent years. Deseasonalise the given time-series and develop the equation of a trend line through this deseasonalised time-series and use this forecasting model to forecast sales for fourth quarter 2021.

Sales/Quarter * (\$10,000)				
Year/Quarter	I	II	III	IV
2016	36	41	39	38
2017	35	40	30	38
2018	37	44	33	44
2019	37	45	31	41
2020	38	46	34	45

Q5 A manufacturing company makes two models A and B of a product. Each piece of Model A requires 9 labour hours for fabricating and 1 labour hour for finishing. Each piece of Model B requires 12 labour hours for fabricating and 3 labour hours for finishing. For fabricating and finishing, the maximum labour hours available are 180 and 30 respectively. The company makes a profit of Rs 8000 on each piece of model A and Rs 12000 on each piece of Model B. How many pieces of Model A and Model B should be manufactured per week to realise a maximum profit? What is the maximum profit per week?