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| **Ministry of Higher Education and Scientific Research**  **Salahaddin University-Erbil**  **College of Administration & Economics**  **Department: Statistics and Informatics** |  | **Subject: Time Series**  **Postgraduate Studies: Master**  **Time: 1.30 hours**  **Date: 21 / 1 /2024** |
| **Final Exams - First Semester: First Trial**  **2023 – 2024**    **Theoretical Aspect** | | |

**Q.1 /** The moving average process of order *q* is denoted MA(*q*) and defined by



prove that:



**(10 Marks)**

**Q.2 /** Prove that  is an unbiased estimator of the spectrum,  and 

**(5 Marks)**

**Q.3 /** In Double Exponential Smoothing for the linear time series: 

And when t → ꝏ, prove that:

, where 

**(10 Marks)**

**Good Luck**

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| Assist. Prof. Dr. Bekhal Samad Sedeeq  Head of Department |  |  | Prof. Dr. Taha Hussein Ali  Examiner |

