SCHOOL OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF DATA SCIENCE AND ANALYTICS

SUMMER 2024 – ASSIGNMENT 2

COURSE CODE: STA 3050A   **UNIT NAME:** TIME SERIES AND FORECASTING

DATE: 23RD MAY 2024   **TOTAL MARKS**: 20 MARKS

INSTRUCTIONS:

For this exercise:

1. ANSWER ALL QUESTIONS
2. Do all your working in the Rmarkdown (.rmd).
3. Submissions should be in either a `.rmd` file
4. NO SUBMISSIONS SHOULD BE DONE VIA EMAIL

QUESTION 1 [10 Marks]

The following table gives the gross domestic product (GDP) in 100 million for a certain country from 2010 to 2020:

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GDP	35	37	51	54	62	64	74	71	83	80

   i.   Fit the trend line for GDP data.[HINT: Try the linear, polynomial of order 2 and exponential to determine the best trendline]
   ii. Find forecast errors.
   iii. Use best-fit trend model to predict the country's GDP for 2022.

QUESTION 2 [10 Marks]

The number of subscribers to a streaming service from 2014 to 2021 is given in the following table:

Year	2014	2015	2016	2017	2018	2019	2020	2021
Subscribers (in millions)	2	5	11	20	35	50	70	95

   i.   Fit the exponential trend.
   ii. Find the forecast errors.
   iii. Use the exponential trend model to predict the number of subscribers for 2024.