

Internal Assessment 3

ECON03SEC1
Department of Economics
Presidency University, Kolkata
Full Marks: 40
19/12/2022

Answer the following questions: $[4 \times 5 = 20]$

1. Using the data `GDP.xlsx`, for any two countries plot separate line charts for the components of GDP (Household Consumption Expenditure, Government final consumption expenditure, Net exports and Gross Capital formation).
2. Suppose that the firm's production function is $Q = F(K, L) = 50K^{0.5}L^{0.5}$. Suppose, too, that the price of labour $w = 5$ and the price of capital $r = 20$. What is the cost minimising input bundle if the firm wants to produce 1,000 units per year?
3. What is the average displacement of a manual car with 4 cylinders in the 'mtcars.xlsx' dataset?
4. How does the number of cylinders `cyl` affect the mileage `mpg` for a given horsepower `hp`? Calculate the partial correlation in the `mtcars.xlsx` dataset.
5. Calculate the HDI dimension indices and the HDI using the following formulae

$$DimensionIndex = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}}$$

$$HDI = (I_{health} \times I_{education} \times I_{income})^{1/3}$$

for health, income, and education respectively for all the countries. Refer to the following table for the minimum and maximum values:

Dimension	Indicator	Minimum	Maximum
Health	Life Expectancy (years)	20	85
Education	Expected years of schooling (years)	0	18
	Mean years of schooling (years)	0	15
Standard of Living	GNI percapita (2011 PPP \$)	100	75000

6.