**Indian Statistical Institute**

**BSDS: 2024-26**

**First Year: Semester – II**

**Economics-II**

**Practical Exercise 12**

1 May 2025

1. **Examine the incomes of the following three groups of persons and arrange the groups in increasing order of their inequalities, if possible, giving sufficient reasons.**

**Group – I: 10 20 30 40 50 60 70 80 90 100**

**Group – II: 20 37 57 76 95 114 133 152 172 189**

**Group – III: 21 21 84 84 105 126 147 147 210 210**

**Solution to Qn1:**

I(10, 20, 30, 40, 50, 60, 70, 80, 90, 100)

= I(19, 38, 57, 76, 95, 114, 133, 152, 171, 190) due to scale invariance (It is 1.9 times of the first.)

> I(19+1, 38-1, 57, 76, 95, 114, 133, 152, 171+1, 190-1) due to principle of transfer (Transfer of 1 from 38 to 19 and transfer of 1 from 190 to 171)

I(10, 20, 30, 40, 50, 60, 70, 80, 90, 100)

= I(21, 42, 63, 84, 105, 126, 147, 168, 189, 210) due to scale invariance (It is 2.1 times of the first.)

< I(21, 42-21, 63+21, 84, 105, 126, 147, 168-21, 189+21, 210) due to principle of transfer (Transfer of 21 from 42 to 63 and transfer of 21 from 168 to 189)

1. **Suppose monthly per capita expenditures (x) of households in urban India follow Pareto law with inequality parameter ν = 2.0 and the threshold parameter c = Rs. 10/-. Find**
2. **the average monthly per capita expenditure of all households,**
3. **the average monthly per capita expenditure of households spending less than Rs 40/- per capita per month.**

**Solution to Qn2.**

1. **Suppose monthly per capita expenditure (x) of households in a community follows Pareto law with threshold parameters c = 1000 and inequality parameter ν = 1.5.**

**If households spending a total of Rs. x per capita per month spend x0.8 rupees per capita per month on a certain commodity then find (i) the average monthly per capita expenditure of households on that commodity. Also find (ii) the percentage increase in the consumption of that commodity if every household raises its per capita expenditure by 5%.**

**Answer to Qn3:**