

**Master of Arts Examination: 2022**  
(2<sup>nd</sup> Year, 4<sup>th</sup> Semester)  
**Economics**  
**Economics of Social Sector**

Time: Two Hours

Full Marks: 30

(Answer question number 1 and any two from the rest)

1. Answer any four

2.5 x 4 = 10

a). How income is discounted in measuring Human Development Index (HDI) before and after 2010?

b). Let us consider the following regression equation as:

$\frac{2\sigma_r^2}{\mu} . h_i = \beta_0 + \beta_1 . r_i + \varepsilon_i$  where,  $\sigma_r^2$  is the variance of fractional rank,  $h$  stands for health variable,  $r$  is the fractional rank of socio-economic status (like income) and  $\mu$  is the mean health. Prove that  $\beta_1$  represent the Concentration Index (CI).

c). Does higher HDI necessarily imply lower Human Poverty Index (HPI)? Give Reasons.

d). Deduce Mean Log Deviation (MLD) from the Generalized Entropy (GE) measure of inequality. Can you evaluate MLD for an income distribution with extreme inequality? (2+0.5)

e). How can you compare the relative increase in  $X_{ede}$  (Equally Distributed Equivalent Achievement) through a unit increase in female achievement ( $X_f$ ) compared with a unit increase in male achievement ( $X_m$ )?

f). Evaluate the Foster-Greer-Thorbecke (FGT) Index if the sensitivity parameter ( $\alpha$ ) tends to infinity.

2. Critically examine the role of investment in education and health in economic growth of a country experiencing demographic dividend. 10

3. Consider the following income distribution of rural (R) and urban (U) of 10 individuals:

Rural (R)	Urban (U)
10	15
15	12
20	30
25	20
30	40

[ Turn over

Show that the Theil Index(MLD) is perfectly sub-group decomposable but not Gini Index.  
10

4.(a)Develop a suitable formula that makes a relationship between force of mortality and resistance to disease in the context of graduation of mortality (viz.  $l_x$  column of the Life Table). (b) Assume a female child who contracts poliomyelitis at age 10 and survives next 10 years (after being affected by poliomyelitis) and then she dies. Given that the total horizon of time is 87.5 years, disability weight is 0.5 and discount rate is 3%. Find the DALYs lost due to early death following disability of the girl child, given that the age-weighting parameter,  $\beta=0.04$  and  $C=0.16243$ .  
(5+5)

5.(a)Distinguish between Human Poverty Index (HPI) developed by Anand and Sen (1997) and Multidimensional Poverty Index (MPI) developed by Alkire and Foster (2009). (b)What happens to HPI if the order of the average ( $\alpha$ ) tends to infinity? (c ) Show that the HPI is not sub-group decomposable.  
(3+3+4)