

(4)

7. Suppose that firms wanting to hire new employees for particular jobs know that there are two groups of applicants that exist in roughly equal proportions. One group has a productivity P_1 and the other has a productivity $P_2 = 2P_1$. Further suppose that these productivity levels can not be changed by education and that firms can not readily distinguish which applicants are from which group. Illustrate how the firms can use educational signaling to distinguish between the two groups of applicants. 5
8. Using the present value method, develop a simple model for explaining the demand for college education. Based on your model explain what factors would affect the demand for college education. 3+2=5
9. Define cohort life expectancy. Show how cohort life expectancy is calculated on the basis of age and time-specific annual probability of death. Why is cohort life expectancy greater than period life expectancy? 1+3+1=5
10. Describe in details the steps in the calculation of the Inequality-adjusted Human Development Index (IHDI). Show that IHDI can not exceed the Human Development Index (HDI). 4+1=5

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EX/UG/ECO/DSE 5.1/1/2025

BACHELOR OF ARTS EXAMINATION, 2025

(3rd Year, 1st Semester)

ECONOMICS (HONOURS)

PAPER : ECO/DSE 5.1/1

(Economics of Health and Education)

Time : Two Hours

Full Marks : 30

Group—A

Answer *any three* from the following :

5×3=15

1. What is Solow Residual (SR)? How do you examine the role of investment in human capital (viz. Education and health) in analyzing SR in the context of economic growth? 2+3=5
2. Distinguish between Gini Index and Concentration Index (CI). Find the value of CI from the following data on income and Self-Assessed Health Status (SAHS) : 2+3=5

Individuals	1	2	3	4	5	6
SAHS	38	25	30	40	24	23
Income ('00)	150	100	125	200	90	80

(2)

3. (a) What are the social values incorporated in measuring the Disability Adjusted Life Years (DALYs)?
- (b) Given the following information, find the incidence of malnutrition of Neha and Puja, assume that the Standard Deviation (SD) of weight and height of WHO standard is 1.

Parameter	Neha	Puja	WHO Standard (Median Value)
Age (in months)	24 months	24 months	24 months
Weight (kg)	8	11.1	11.5
Height (cm)	82.2	85.5	86

How would your results differ if you could consider the Indian Growth Standard (IGS)? Given that median weight and height at age 24 months as per IGS are 9.6 and 80.1 respectively, assume SD = 1. $2+(2+1)=5$

4. Find the aggregate value (combining rural and urban) of Human Poverty Index (HPI) from the following data assuming equal weights to each dimension and the power mean $(\alpha)=3$; where P_1, P_2 and P_3 are the percentages of population suffering from health, education and access to resource deprivation respectively :

Sector	N (Population)	P_1 (%)	P_2 (%)	P_3 (%)
Rural (R)	20	25	40	40
Urban (U)	10	10	20	20

(3)

5. Find the elasticity of substitution (σ) between any two poverty sub-indices, assuming other one is fixed from the following Human Poverty Index ($P(\alpha)$) :

$$P(\alpha) = \left[\frac{W_1 P_1^\alpha + W_2 P_2^\alpha + W_3 P_3^\alpha}{W_1 + W_2 + W_3} \right]^{\frac{1}{\alpha}}$$

Where, W stands for weight, P_1, P_2 and P_3 are the proportion of people suffering from health, education and access the resource deprivations respectively. Show that an increase in the weight (W) on the largest sub-index [viz. $\max \{P_1, P_2, P_3\}$] will increase $P(\alpha)$ while increasing the weight on the smallest sub-index [viz. $\min \{P_1, P_2, P_3\}$] will reduce $P(\alpha)$. $3+2=5$

Group—B

Answer *any three* from the following : $5 \times 3 = 15$

6. Consider the following situations :
- (i) An individual enjoys wealth W if she is healthy.
 - (ii) She faces a probability of illness of q .
 - (iii) If she is ill, she suffers a financial loss L , thus, resulting in wealth $W - L$.
 - (iv) Insurance is offered at actuarially fair prices.
 - (v) Marginal utility of wealth is diminishing.

Graphically show that an uninsured situation gives her a lower level of utility. What is the maximum premium that she will be willing to pay? Explain why. $3+1+1=5$