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Program: B. Sc. in Civil Engineering
Semester: 8th Semester

Date: 09 May 2023
Time: 10:00 am – 1:00 pm

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

Final Examination
Course Number: CEE 4807
Course Title: Socioeconomic Aspects of Development Projects

Summer Semester: 2022 - 2023
Full Marks: 150
Time: 3 Hours

There are 6 (Six) questions. Answer all questions. The symbols have their usual meanings. Marks of each question and the corresponding CO and PO are provided in brackets.

1. (a) Explain the consequences of involuntary resettlement. Draw an information flow diagram for resettlement planning. (10)
(CO1)
(PO1)
- (b) List and describe the policy considerations that should be taken into account in the early stages of project preparation regarding involuntary resettlement. (10)
(CO1)
(PO1)
- (c) What critical factors need to be considered for alternative site selection for resettlement? (5)
(CO1)
(PO1)
2. (a) State the significance of people's participation in the WSS projects. (5)
(CO1)
(PO1)
- (b) A country's life expectancy at birth is 79 years, the expected year of schooling is 15 years, and the mean year of schooling is 10 years. The inequality measures can be considered as 0.087, 0.055, and 0.336 for life expectancy, mean years of schooling, and GNI per capita (2017 PPP \$). What is that country's HDI to IHDI ratio? The table below may be considered for reference values. (20)
(CO2)
(PO2)

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 per capita (2017 PPP\$)	100	75,000

Derive the loss (in %) due to inequality and coefficient of human inequality.

3. (a) Estimate the female wage bill, female earned income per capita, male earned income per capita, female HDI, male HDI, and GDI from the following table.

(20)
(CO2)
(PO2)

Indicator	Female Value	Male Value
Life expectancy at birth (years)	74	66
Expected years of schooling (years)	15	14
Mean years of schooling (years)	11	10
Wage ratio (female/male)	0.8	
Gross national income per capita (2017 PPP \$)	10,800	
Share of the economically active population	0.45	0.55
Share of population	0.52	0.48

Goalposts for GDI are provided in the table below.

Indicator	Minimum	Maximum
Life expectancy at birth (years)		
Female	22	87
Male	17	82
Expected years of schooling (years)	0	18
Mean years of schooling (years)	0	15
Estimated earned income (2017 PPP \$)	100	75,000

- (b) Comment on the estimated GDI value in terms of the absolute deviation of GDI from gender parity.

(5)
(CO2)
(PO2)

4. (a) Calculate the GII using the following parameters. Elaborate all the steps with proper explanation.

(15)
(CO2)
(PO2)

	Health		Empowerment		Labour market
	Maternal mortality ratio (deaths per 100,000 live births)	Adolescent birth rate (births per 1,000 women ages 15-19)	Share of seats in parliament (% held by women)	Population with at least some secondary education (%)	Labour force participation rate (%)
Female	342	75.1	23.3	29.8	72.1
Male	na	na	76.7	37.3	77.3

- (b) Present the challenges and levels of community participation. Explain how beneficiary participation can be ensured.

(10)
(CO1)
(PO1)

5. (a) Apply the methodological framework to develop MPI for Bangladesh. Include the dimensions, indicators, and weights to detail the framework.

(10)
(CO3)
(PO6)

- (b) Assess any 5 (Five) mega national projects of Bangladesh in terms of socioeconomic perspectives and explain why these projects require involuntary resettlement. (10)
(CO3)
(PO6)
- (c) What are the phases of rural infrastructure development? (5)
(CO3)
(PO6)
6. (a) Exemplify the QOL index. (5)
(CO3)
(PO6)
- (b) Assess the direct and indirect impacts associated with a wastewater treatment plant. Design an information flow diagram in the prediction and assessment of socio-economic impacts. (15)
(CO3)
(PO6)
- (c) Explain the project categories for SIA procedure in a developing country. (5)
(CO1)
(PO1)

Notes

$\frac{W_f/W_m \cdot EA_f}{W_f/W_m \cdot EA_f + EA_m}$	$GNIpc \cdot S_f/P_f$	$GNIpc \cdot S_m/P_m$
N_f/N	$1 - P_f$	$(I_{Health_f} \cdot I_{Education_f} \cdot I_{Income_f})^{1/3}$
$\sqrt[3]{\left(\frac{10}{MMR} \cdot \frac{1}{ABR}\right)^{10} \cdot (PR_f \cdot SE_f)^{10} \cdot LFPR_f}$	$\left[\frac{(G_f)^{-1} + (G_m)^{-1}}{2}\right]^{-1}$	$\left(\sqrt{\frac{10}{MMR} \cdot \frac{1}{ABR}} + 1\right)/2$
$\sqrt[3]{1 \cdot (PR_m \cdot SE_m)^{10} \cdot LFPR_m}$	$\sqrt[3]{Health \cdot Empowerment \cdot LFPR}$	$\left(\sqrt{PR_f \cdot SE_f} + \sqrt{PR_m \cdot SE_m}\right)/2$
$\frac{LFPR_f + LFPR_m}{2}$	$1 - \frac{HARM(G_f, G_m)}{G_{GM}}$	$A_x = 1 - \frac{\sqrt[2]{X_1 \dots X_n}}{\bar{X}}$