

University of Colombo  
Faculty of Arts  
Bachelor of Arts Degree Examination (Special) – Second Year  
End Semester Examination–Semester II – 2021/2022  
DMG 2223: Demographic Analysis

Answer Three (03) Questions only.

Time: Two Hours (02)

Calculators can be used.

This paper contains five (05) questions and four (04) pages.

1. a) Explain the merits and demerits of crude rates by citing examples of mortality, fertility and migration analysis. (06 Marks)
- b) Using the data given in the following table, calculate the following population measures.

Age group	Male Population (000)	Female Population (000)
0-4	95,488	89,564
5-9	184,562	170,678
10-14	160,879	210,132
15-19	543,772	424,896
20-24	220,301	318,456
25-29	78,427	81,145
30-34	33,287	48,658
35-39	20,396	25,789
40-44	15,829	14,655
45-49	16,759	18,654
50-54	17,600	18,798
55-59	16,759	15,654
60-65	16,964	14,500
65-69	15,375	13,254
70-74	13,230	12,114
75-79	12,150	10,859
80+	65,450	50,725

- i) Percentages of child population, labour force population and elderly population (04 marks)
- ii) Sex ratio at birth (02 Mark)
- iii) Dependency ratio (02 Mark)
- iv) Total female population in reproductive age group (02 Mark)
- v) Proportion of male and female population in each age group (04 Mark)



2. a) Briefly explain the importance of standardisation technique in mortality analysis.

(05 Marks)

b) Briefly explain the data that required to calculate the standardized death rates with examples.

(05 Marks)

c) i) Use the data in the table given below and calculate Direct Standardized death rates and Indirect standardised death rates for country A and B.

Age	Standard Population	Age-specific death rates for country A	Age specific Death rates for country B
0-4	6,394,535	30.2	28.5
5-9	6,394,277	3.3	2.9
10-14	5,466,041	1.5	1.6
15-19	4,224,115	2.0	2.2
20-24	3,636,540	2.4	3.0
25-29	3,383,185	3.2	3.3
30-34	2,949,337	3.2	4.1
35-39	2,545,648	4.0	5.1
40-44	2,000,789	3.5	7.9
45-49	1,741,339	6.0	12.1
50-54	1,399,803	10.1	18.9
55-59	1,002,365	18.4	30.6
60-64	895,131	24.8	44.7
65+	974,327	40.8	49.2

ii) Interpret your results

(10 Marks)

3. a) Briefly explain the importance of life tables in demographic analysis

(03 Marks)

b) Explain the meaning of each column of the abridged life table

(05 Marks)

c) i) Complete the following life table

(10 Marks)

Age	$nq_x$	$np_x$	$lx$	$ndx$	$nL_x$	$T_x$	$ex$
45	0.01597		91,810				
50	0.02318						
55	0.03488						
60	0.05073						
65	0.07919			6403	388,246	1,456,982	18.2



ii) Interpret your results. (02 Marks)

4. a) Explain why nuptiality analysis is important in demography by citing any 04 nuptiality measures as examples (05 Marks)

b) Briefly explain why Net Reproduction Rate (NRR) is always lower than Gross Reproduction Rate (GRR)? (02 Marks)

c) Briefly explain the data that required to calculate Net Reproduction Rate (03 Marks)

d) The following table exhibits statistics for fertility. Using the data given in the following table calculate the measures given below.

Age	Total births by age of mother	Female births by age of mother	Total women	Probability of daughters surviving to age of mother
15-19	13500	6250	645000	0.99175
20-24	44820	23430	689000	0.98985
25-29	81750	41270	708959	0.98792
30-34	76450	36220	713456	0.98566
35-39	32456	14350	724567	0.98261
40-44	6589	2345	675830	0.97826
45-49	156	56	620340	0.97152

i) Age Specific Fertility Rates for ages 15-19 to 45-49 (02 Marks)

ii) Total Fertility Rate (02 Marks)

iii) Gross Reproduction Rate (02 Marks)

iv) Net Reproduction Rate (02 Marks)

v) Interpret your results (02 Marks)



5. a) Using the vital statistics method, calculate intercensal Net Migration to the following places A,B,C and D.

Place	Estimated Resident Population		Intercensal	
	1996 census	2001 Census	Births	Deaths
A	22,400	22,100	1,872	1,018
B	44,150	48,700	4,131	1,448
C	4,150	4,250	359	125
D	11,600	11,850	1,019	345

(08 Marks)

- b) Write short notes for the concepts given below

- i. Place of Birth Method and Vital Statistics/ Residual Method
- ii. Internally Displaced Persons and Refugees
- iii. Lifetime Migrants and Lifetime non-migrants

(04 Marks)