

2020

## STATISTICS — HONOURS — PRACTICAL

Paper : CC-6P

Full Marks : 30

*The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*Answer **all** the questions.

1. Following table shows the population of New Zealand between 1990 to 2020. Fit a logistic curve to the data by Rhode's method. Obtain a projection for the population in 2025. 9+3

Year	1990	1995	2000	2005	2010	2015	2020
Population	3398172	3674936	3858999	4135355	4370062	4614532	4822233

2. The age structures of the populations in the U.S. and Venezuela, and their ASDRs are given below. The standard population given is as suggested by the World Health Organization (WHO).

Age groups (Years)	US 2002		Venezuela 2002		Standard Population (%)
	Population (%)	ASDR (per 1000)	Population (%)	ASDR (per 1000)	
0-4	6.8	1.7	11.1	3.5	8.9
5-14	14.2	0.2	21.6	0.3	17.4
15-24	14.1	0.8	19.4	1.8	16.5
25-34	13.8	1.0	15.6	2.1	15.5
35-44	15.6	2.0	12.9	2.4	13.7
45-54	13.9	4.3	9.2	4.5	11.4
55-64	9.3	9.5	5.5	8.8	8.4
65-74	6.3	23.1	3.2	21.5	5.2
75-84	4.4	55.6	1.3	52.4	2.4
85+	1.6	148.3	0.2	140	0.6

- (a) Calculate CDRs for two countries and compare.  
 (b) Calculate dependency ratios for two countries and comment.  
 (c) Compare the mortality situations of two countries using a suitable measure. 2+3+5

Please Turn Over

3. (a) Calculate  $e_x^0$  from the following data (symbols have their usual meaning).

Age (x)	$l_x$	$T_x$
0	1273	***
1	1129	***
2	1090	58510
3	1066	57432
4	1049	56374

(b) Let A, B and C are three children of age 0, 1 and 2 l.b.d. respectively. Find the probabilities.

- (i) At least one of them will survive for two years more
- (ii) One of the three will die in two years.

4+2+2

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