

**PGDM-INS, 2022-24
Insurance Economics
INS-102**

Trimester I, End-term Examination, September 2022

Roll No:

Time Allowed: 2 Hours

Max Marks: 40

Instruction: Students are required to write Roll No on the cover page of the Answer Sheet. All other instructions on the question paper / Admit card should be followed meticulously.

SECTION A: 4 x 5 = 20 marks

A1a (CILO1) Compare and contrast cross-price elasticity of demand when the two goods are substitutes and when the two goods are complements. You may use examples to substantiate your answer. (5 marks)

OR

A1b (CILO1) Derive consumer's demand curve from consumer equilibrium diagrammatically (5 marks). Hint: for the initial equilibrium position you may use a budget line and an indifference curve. Thereafter, vary price of the good for which the demand curve is to be drawn. State assumptions, if any.

A2a (CILO2) What is average variable cost and how it is related to quantity produced by a firm? Discuss using diagram. (5 marks)

OR

A2b What is the relationship between average variable cost and marginal cost. Discuss using diagram. (CILO2) cost (5 marks)

A3a (CILO3) What differences can you find between short-run equilibrium and long-run equilibrium of a firm operating in monopolistic competition market structure. Use diagram. (5 marks)

OR

A3b (CILO3) How can you measure market power or competition in an industry? Illustrate. (5 marks)

(Turn Over...)

A4a (CILO4) Draw the constant expected consumption line of a person who has an expected consumption of 500 units under the assumption that the probability of bad state is 1/3 (i.e. good state probability is 1 - 1/3). Show graphically that the person will be willing to pay insurance premium if his/her consumption is away from the guaranteed consumption line. (5 marks)

Or

A4b (CILO4) A paddy farmer earns income of ₹100,000 if the monsoon is adequate and an income of zero if the monsoon is inadequate. The probability of inadequate monsoon is 2/3. What is the certainty equivalence and risk premium if the utility from income is

a) $Utility = \sqrt{Income}$

b) $Utility = Income$.

(5 marks)

SECTION B – CASE STUDY (20 Marks)

INSURANCE SECTOR

4.46 Internationally, the potential and performance of the insurance sector are generally assessed on the basis of two parameters, viz., insurance penetration and insurance density. Insurance penetration is measured as the percentage of insurance premium to GDP and insurance density is calculated as the ratio of premium to population (measured in US\$ for convenience of international comparison).

4.47 In India, insurance penetration was 2.71 per cent in 2001 and has steadily increased to 4.2 per cent in 2020. As of 2020, the penetration for life insurance in India is 3.2 per cent and nonlife insurance penetration is 1 per cent (Table 15 and 16). While India is at par with international average in terms of insurance penetration for life insurance, we lag behind in terms of non-life insurance. Globally, insurance penetration was 3.3 per cent for the life segment and 4.1 per cent for the non-life segment in 2020.

Table 15: Penetration and density in life insurance in India

Particulars	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Insurance Penetration	3.40	3.17	3.10	2.60	2.72	2.72	2.76	2.74	2.82	3.20
Insurance Density	49.0	42.7	41.0	44.0	43.2	46.5	55.0	55.0	58.0	59.0

Source: SwissRe, Sigma various issues. Note: Insurance penetration in per cent and insurance density in US\$

Table 16: Penetration and density in non- life insurance in India

Particulars	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Insurance Penetration	0.7	0.78	0.80	0.70	0.72	0.77	0.93	0.97	0.94	1.00
Insurance Density	10.0	10.5	11.0	11.0	12.0	13.2	18.0	19.0	20.0	19.0

Source: SwissRe, Sigma various issues. Note: Insurance penetration in per cent and insurance density in US\$

(Turn Over...)

4.48 The insurance density in India increased from \$11.5 in 2001 to \$78 in 2020. In 2020, density for Life insurance in India is \$59 and Non-Life insurance is \$19, much lower than global standards. Globally, insurance density was \$360 for the life segment and \$449 for the non-life segment respectively in 2020 (Table 17 and 18).

Table 17: International comparison of insurance penetration (in per cent)

Sl	Country*	2019			2020		
		Life	Non-life	total	Life	Non-life	total
1	USA	2.9	8.5	11.4	3.0	9.0	12.0
3	Brazil	2.3	1.8	4.0	2.3	1.8	4.1
5	France	6.0	3.2	9.2	5.1	3.5	8.6
14	Russia	0.4	1.0	1.4	0.4	1.0	1.4
15	South Africa	10.7	2.7	13.4	11.2	2.5	13.7
16	India#	2.8	0.9	3.8	3.2	1	4.2
17	China	2.3	2.0	4.3	2.4	2.1	4.5
18	Japan#	6.7	2.3	9.0	5.8	2.4	8.1
	World	3.4	3.9	7.2	3.3	4.1	7.4

Source: Swiss Re, Sigma Volume 4/2020 and 3/2021

Note: *Data pertains to calendar year 2019 & 2020. #Data pertains to financial year 2019-20 & 2020-21,

Table 18: International comparison of insurance density (in US\$)

Sl	Country*	2019			2020		
		Life	Non-life	total	Life	Non-life	total
1	USA	1915	5580	7495	1918	5754	7673
3	Brazil	196	155	351	151	120	271
5	France	2413	1306	3719	1959	1359	3317
14	Russia	43	113	157	41	105	146
15	South Africa	643	160	803	560	124	684
16	India#	58	20	78@	59	19	78
17	China	230	201	430	241	214	455
18	Japan#	2691	930	3621	2329	951	3280
	World	379	439	818	360	449	809

Source: Swiss Re, Sigma Volume 4/2020 and 4/2021

Note: *Data pertains to calendar year 2019 & 2020. #Data pertains to financial year 2019-20 & 2020-21, @ rounding off difference

4.49 During 2020-21, the gross direct premium (within and outside India) of Non-Life insurers was ₹ 2,02,082 crore, as against ₹ 1,92,193 crore in 2019-20, registering a growth of 5.2 per cent. Motor and health segments contributed a significant portion of the growth. Life insurance industry recorded a premium income of ₹ 6,28,731 crore during 2020-21, as against ₹ 5,72,910 crore in the previous financial year, registering a growth of 9.74 per cent. While renewal premium accounted for 55.7 per cent of the total premium received by the life insurers, new business contributed the remaining 44.3 per cent.

(Source: Economic Survey, 2021-22)

B1. (CILO 2) Compare insurance penetration and insurance density in the life and non-life insurance in India (10 marks)

B2. (CILO 3) How can insurance penetration and density be improved in life and non-life insurance sectors? (10 marks)