Institute of Actuaries of India

Subject
SP8 – General Insurance Pricing Specialist Principles

For 2019 Examinations

Aim

The aim of this General Insurance: Pricing Principles subject is to instil in successful candidates the ability to apply, in simple pricing situations, the mathematical and economic techniques and the principles of actuarial planning and control needed for the operation on sound financial lines of general insurers.

Competences

On successful completion of this subject, a student will be able to:

1   understand the main principles and techniques of pricing that are relevant to general insurance.

2   apply these principles to simple situations within the context of general insurance.

3   analyse hypothetical scenarios, including using judgement to assess the implications of possible actions and to develop appropriate proposals or recommendations relating to pricing in general insurance business.

Links to other subjects

CS2 – Risk Modelling and Survival Analysis
CP1 – Actuarial Practice
SP7 – General Insurance Reserving and Capital Modelling Principles
SA3 – General Insurance Advanced

Syllabus topics

1   General insurance products and general business environment (20%)
2   Data, risks and risk management (30%)
3   Rating bases and methodology (35%)
4   Credibility, reinsurance and catastrophe modelling (15%)

These weightings are indicative of the approximate balance of the assessment of this subject between the main syllabus topics, averaged over a number of examination sessions.

The weightings also have a correspondence with the amount of learning material underlying each syllabus topic. However, this will also reflect aspects such as:

- the relative complexity of each topic, and hence the amount of explanation and support required for it.

- the need to provide thorough foundation understanding on which to build the other objectives.

- the extent of prior knowledge which is expected.

- the degree to which each topic area is more knowledge or application based.

Skill levels

The use of a specific command verb within a syllabus objective does not indicate that this is the only form of question which can be asked on the topic covered by that objective. The Examiners may ask a question on any syllabus topic using any of the agreed command verbs, as are defined in the document "Command verbs used in the Associate and Fellowship written examinations".

Questions may be set at any skill level: Knowledge (demonstration of a detailed knowledge and understanding of the topic), Application (demonstration of an ability to apply the principles underlying the topic within a given context) and Higher Order (demonstration of an ability to perform deeper analysis and assessment of situations, including forming judgements, taking into account different points of view, comparing and contrasting situations, suggesting possible solutions and actions and making recommendations).

In the SP subjects, the approximate split of assessment across these three skill types is 25% Knowledge, 50% Application and 25% Higher Order Skills.

SP8 – General Insurance Pricing Specialist Principles

Detailed syllabus objectives

0   Introduction

0.1   Define the principal terms in use in general insurance.

1   General insurance products and general business environment (20%)

1.1   Describe the main types of general insurance product in terms of:

- the needs of customers.
- the financial and other risks they pose for the general insurer including their capital requirements and possible effect on solvency.

1.2   Describe the main types of general reinsurance products and the purposes for which they may be used.

1.3   Describe the implications of the general business environment in terms of:

- the main features of the general insurance market.
- the effect of different marketing strategies.
- the effect of fiscal regimes.
- the effect of inflation and economic factors.
- the effect of legal, political and social factors.
- the effect of the climate and environmental factors.
- the general effect of professional guidance.
- the impact of technological change.

2   Data, risks and risk management (30%)

2.1   Describe the major areas of risk and uncertainty in general insurance business with respect to pricing, in particular those that might threaten profitability or solvency.

2.2   Describe, with regard to the use of data in pricing:

- the types of data that are used.
- the main uses of data.
- the requirements for a good information system.
- the possible causes of data errors.
- the effects of inadequate data.

2.3   Outline the major actuarial investigations and analyses of experience undertaken with regard to pricing for general insurers.

2.4   Describe the Individual Risk Model and its applications in a general insurance environment.

2.5

2.6 Describe the Collective Risk Model and its applications in a general insurance environment.

2.7 Analyse the derivation of the Aggregate Claim Distribution for the Collective Risk Model, and its approximations using stochastic simulation.

3 Rating bases and methodologies (35%)

3.1 Analyse the various components of a general insurance premium.

3.2 Describe the basic methodology used in rating general insurance business.

3.3 Suggest the various factors to consider when setting rates.

3.4 Evaluate appropriate rating bases for general insurance contracts, having regard to:
- return on capital.
- underwriting considerations.
- reinsurance considerations.
- investment.
- policy conditions such as self retention limits.
- the renewal process.
- expenses.

3.5 Discuss the burning cost approach to pricing.

3.5.1 Describe the burning cost approach to rating.

3.5.2 Determine the assumptions required when using this approach.

3.5.3 Outline the practical considerations when using this approach.

3.6 Discuss the frequency/severity approach to pricing.

3.6.1 Describe the frequency / severity approach to rating.

3.6.2 Determine the assumptions required when using this approach.

3.6.3 Outline the practical considerations when using this approach.

3.7.1 Describe how Original Loss Curves can be used in rating.

3.7.2 Determine the assumptions required when using this approach.

3.7.3 Outline the practical considerations when using this approach.

3.8   Understand generalised linear models and multivariate modelling.

3.8.1   Assess the applications of generalised linear models to the rating of personal lines business and small commercial risks.

3.8.2   Evaluate the uses of multivariate models in pricing.

3.8.3   Outline the different types of multivariate models.

4   Credibility, reinsurance and catastrophe modelling (15%)

4.1   Outline the fundamental concepts of credibility theory.

4.2   Describe and compare the Classical and Bayes credibility models.

4.3   Describe the practical uses of credibility models in a general insurance environment.

4.4   Outline the similarities and differences between pricing direct and reinsurance business.

4.5   Describe how to determine appropriate premiums for each of the following types of reinsurance:

- proportional reinsurance
- non-proportional reinsurance
- property catastrophe reinsurance
- stop losses

4.6   Describe the data required to determine appropriate premiums for each of the above types of reinsurance.

4.7   Outline the basic structure of a catastrophe model.

4.8   Describe the key perils that can be modelled in a catastrophe model.

5   Solving problems

5.1   Analyse hypothetical examples and scenarios in relation to the financial management of general insurance companies.

5.1.1   Propose solutions and actions that are appropriate to the given context, with justification where required.

5.1.2   Suggest possible reasons why certain actions have been chosen.

5.1.3   Assess the implications of actions within a given scenario.

5.1.4 Discuss the advantages and disadvantages of suggested actions, taking into account different perspectives.

Assessment

Three hour written examination.

END