

**ACTUARIAL SCIENCE EXAMINATION****FOUNDATIONS OF CASUALTY ACTUARIAL SCIENCE - PART II****Time : 3 Hours****Total Marks : 100****Multiple choice :** (all questions carry 2 marks each).

1. RELC stands for Reinsurance Expected Loss Cost and is expressed by the following equation

$$\text{RELC} = \text{ELCF} \times \text{PCP} \times \text{PCPLR} \times \text{RCF}$$

What do ELCF, PCP, PCPLR and RCF stand for?

2. Basic concepts from credibility are as follows :-
- A How to determine the criterion for full credibility while estimating frequencies.
  - B How to determine the criterion for full credibility when estimating severities.
  - C How to determine the criterion for full credibility when estimating pure premiums.
  - D How to determine the amount of partial credibility when one has more data than is needed for full credibility.

Which of the above four, if any, is wrong?

3. Which of the following reinsurance category is usually not short tailed?
- A Treaty property proportional
  - B Treaty property excess
  - C Facultative property
  - D Treaty casualty proportional
4. The items to be considered for determining the credibility of the experience loss cost estimate are as follows :-
- A The accuracy of the estimate of claims cost inflation.
  - B The accuracy of the estimates of loss development
  - C The accuracy of the subject premium on-level factors.
  - D The stability of the loss cost or loss cost rate, over time.

Which of the above, if any, is not relevant?

5. The following are the components of general insurance company investments.

- A Government Bonds.
- B Agricultural farms
- C Real Estate
- D Equities

Which of the above, if any, is normally not a component?

6. Which of the following items, if any, does not appear in the Balance Sheet of a non-life insurance company?

- A IBNR
- B General Reserve
- C Management Expenses
- D Unexpired premium reserve

7. The issues that concern insurance companies in respect of pollution are as under:-

- A Common man's interpretation of coverage.
- B Determination of estimated clean-up costs.
- C Cost allocation over policy years.

Which of the above, if any, is not an issue of concern?

8. Which of the following, if any, is incorrect?

- A Cash Ratio = Cash + Marketable securities divided by current liabilities.
- B Current Ratio = Current income divided by current expenditure.
- C Asset Turnover = Annual sales divided by assets.
- D Leverage Ratio = Debt divided by equity..

9. The standard for full credibility is 3000 claims.

How much credibility is assigned to 1,000 claims?

- A 0.333
- B 0.500
- C 0.167
- D 0.575

10. Suppose,  $x > 0$ , parameter  $\lambda > 0$

Distribution function  $F(x) = 1 - e^{-\lambda x}$

Probability density function =  $f(x) = \lambda e^{-\lambda x}$

Which of the following distributions the information relates to :-

- A Binomial Distribution
- B Exponential Distribution
- C Lognormal Distribution
- D Poisson Distribution

11. What does MPL stand for ?
- A Maximum Possible Loss
  - B Mean Probable Loss
  - C Most profitable Line
  - D Minimum Profit Level
12. State whether following statements are true or false
- A Actuaries can be useful in Facultative certificate pricing
  - B Many professional re-insurers have the knowledge and ability to provide informal consulting service for their cedants.
13. Financial statements that provide the financial activities of an insurance company can be utilised by the following interested parties.
- A External investments
  - B Municipal corporations
  - C Regulators
  - D Internal Decision Maker
- Which of the parties, if any, has least interest in the statements?
14. Fill in the blanks in the following statements :-
- A The value of a fixed income investment is sensitive to \_\_\_\_\_ rate changes.
  - B A clash treaty is a casualty treaty that \_\_\_\_\_ above all policy limits.
15. Which of the following is the most likely to be the cause of general insurance company failure?
- A Alleged fraud
  - B Reinsurance Failure
  - C Rapid growth
  - D Deficient loss reserves

**Essay type questions (All questions carry 10 marks each)**

16. a) What role can Actuaries play in facultative certificate pricing ?  
b) State the components of Reinsurance loss reserves.
17. Write short notes on
- a) Dynamic Financial Analysis
  - b) Valuation of a general insurance company.

18. An insured is selected at random from a population whose average annual claim frequency follows a Gamma distribution with  $\alpha = 2.0$  and  $\lambda = 8.0$ . The distribution of the number of claims for each insured is Poisson. If the insured is observed to have 4 claims during next 4 years, calculate the Bühlmann credibility weighted estimate of the insured's average annual claim frequency.

19. A sample of 100 claims was distributed as follows :-

Size of claim	Number of claims
Rs. 1,000	85
Rs. 5,000	10
Rs. 10,000	3
Rs. 25,000	2

Estimate the coefficient of variance of the claims severity based on this empirical distribution.

20. Describe in detail the role that Investment plays in the running of a general insurance company.

21. How is Surplus or Net Worth of a general insurance company assessed?

22. a) Enlist the various forms a reinsurance treaty can take.  
b) Describe the concept of facultative certificate in details.

..... **The End** .....