

"QUESTION PAPER MUST BE ATTACHED ALONGWITH THE ANSWER BOOK."

CFG-84/A-2

May, 2016

**FOUNDATION OF CASUALTY ACTUARIAL
SCIENCE PART-II**

Reg. No.

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[Time : 3 Hours]

[Total Marks: 100]

(All questions are compulsory.)

Multiple –Choice Question (All Multiple-Choice Questions carries Two Marks Each)

- Q.1. Which of the following is incorrect 2
- a) Current Ratio = Current Assets minus Current liabilities
 - b) Leverage Ratio = debt divided by equity
 - c) Return on Equity = Net income divided by shareholders' fund
 - d) Cash Ratio = Cash plus marketable securities divided by current liabilities
- Q.2. Which of the following is not a type of Securitized Insurance Products? 2
- a) Risk Exchanges
 - b) Catastrophe Equity Puts
 - c) Risk Equity Calls
 - d) Catastrophe Bonds
- Q.3. If assets and liabilities are not matched then insurance companies are exposed to 2
- a) Underwriting Risk
 - b) Interest Rate Risk
 - c) Expense Risk
 - d) Solvency Risk
- Q.4. Assume for a given risk frequency and severity are independent and mean frequency =15, Variance of the Frequency = 40, Mean severity =250, Variance of the Severity =150000. Find the variance of the pure premium for this risk. 2
- a) 475000
 - b) 425000
 - c) 525000
 - d) None of them
- Q.5. Which of the financial statement provides a snapshot of the company's financial position on a specified date 2
- a) Income Statement
 - b) Balance Sheet
 - c) Cash Flow Statement
 - d) Letter to shareholder in Annual Report
- Q.6. Which of the following is not commonly used to model number of claims? 2

- a) Normal Distribution
b) Binomial Distribution
c) Poisson Distribution
d) Negative Binomial Distribution
- Q.7. If 20% of students take examination seminars and 10% of student both take seminar and pass the exams. What is the chance of a student who has taken an exam passing his exam? 2
- a) 47%
b) 52%
c) 57%
d) 62%
- Q.8. The Expected return on Asset A is 18%. The risk free rate of return is 6%. The expected return from the market over and above three risk free rate of return is 8%. The systematic risk of the asset is 2
- a) 0.15
b) 1.5
c) 6
d) 2
- Q.9. The Buhlmann credibility model is being applied to the loss variable X (per exposure). It is found that after $n=50$ exposures, the Buhlmann credibility factor Z is 0.4. How many additional exposures are needed to increase the factor Z to 0.5? 2
- a) 10
b) 15
c) 20
d) 25
- Q.10. A retrocession refers to 2
- a) An insurer purchasing insurance from reinsurer
b) A reinsurer purchasing insurance cover from an insurer
c) A reinsurer purchasing reinsurance cover from other reinsurers
d) None of the above
- Q.11. Dividends on common stocks are 2
- a) Stable
b) Are subject to Less volatility than Preferred stocks
c) Are subject to More volatility than Preferred stocks
d) Can be raised or lowered only with obligation to restore it to prior levels
- Q.12. The k th moment of Pareto Distribution with parameters (b, q) is (for $k < q$) 2
- a)
$$\frac{b(k!)}{(q-1)(q-2)\dots(q-k)}$$

- b) $\frac{b^k(k)}{(q-1)(q-2)(q-k)}$
- c) $\frac{b^k + k!}{(q-1)(q-2)(q-k)}$
- d) $\frac{b^k(k!)}{(q^2 - 3q + 2)(q-k)}$

Q.13. The following are Underwriting Variables except 2

a) Non-Catastrophe losses

b) Exposures

c) Expenses

d) Equity Market Performance

Q.14. Net realised capital gains and losses consists of 2

a) Any difference between the net sale price and the net purchase price of bonds, stocks and any other investment assets.

b) Margin on Liquid assets

c) Adjustments in book values resulting from market value changes

d) Prices of options and futures

Q.15. Under GAAP Principles 2

a) Common stock is booked at book value

b) Bonds are booked at amortized value only if they are categorised as being "held to maturity".

c) No matching of expenses associated with the writing of the policies against the revenues associated with the policies,

d) There are several non admitted assets under GAAP

(Essay type questions: All essay type questions carry Ten marks each)

Q.16. Write short notes on: 3

a) Internal rate of Return 3

b) Cost of Capital 4

c) Discounted Cash Flow Analysis

Q.17. What determines the minimum capital requirements of a general insurance company in context of risk based capital? Explain the concept of Risk Based capital. 10

Q.18. What are catastrophe models? Discuss major components of catastrophe model. 10

Q.19. What role does reinsurance play in running a general insurance company? Describe the various forms that reinsurance arrangements can take. 10

Q.20. a) List out the factors involved in a Flat Rate Reinsurance Pricing Formula, clearly denoting the items involved and expanding each of the factors 5

	b)	Write short notes on the following in relevance to Pricing of Property Certificate Coverage	5
		i) Maximum Possible Loss	
		ii) Probable Maximum Loss	
Q.21.	a)	What is conjugate Prior? Give an example in terms of probability distribution function with brief explanation	3
	b)	You are given the following information about workers' compensation coverage: The number of claims for an employee during the year follows a Poisson distribution with mean $(100 - p)/p$ where p is the salary (in thousands) for the employee. The distribution of p is uniform on the interval $(0,100)$. An employee is selected at random. No claims were observed for this employee during the year. Determine the posterior probability that the selected employee has salary greater than 50 thousand.	7
Q.22.		Compare and contrast Asset-Liability Matching between Banks and Property Liability Insurers	10

End