

M.Sc. ACTUARIAL SCIENCE

Term-End Examination

June, 2011

**MIA-012 F2F : ACTUARIAL RISK
MANAGEMENT - I**

Time : 3 hours

Maximum Marks : 100

SECTION - A

*Note : There are 7 questions in Section - A each carries 8 marks,
answer any five.*

1. An insurance company is to launch with a new profits insurance product. Describe the areas in which actuaries may provide support during the life span of the product. 8

2. An employer is considering setting up a defined contribution retirement benefit scheme for his employees.
 - (a) outline how a defined contribution scheme operates 1
The employer has heard that a defined contribution on scheme would be a good choice because it passes all risks to the employees.

 - (b) Comment on the validity of this statement, highlighting any risks to which the employer may still be exposed. 7

3. For each of the following life insurance products, state the risks faced by the policy holder that might lead to their reasonable expectations not being met 8
- (a) With profit endowment assurance to cover mortgage
 - (b) Without profit convertible term assurance
 - (c) Unit linked immediate annuity
 - (d) Index-linked critical illness plan
4. (a) Compare the cash flow paid by a customer on 6
- (i) an interest only mortgage
 - (ii) a repayment mortgage
- (b) Explain what is meant by "indemnity". 2
5. Describe the investment and risk characteristics of a capital project that involves the construction of a new sports stadium. 8
6. (a) Describe the principle theories of the real yield curve. 5
- (b) "Bonds that are riskier will give higher returns", Comment. 3

7. (a) List 15 potential problems of investing overseas. 4
- (b) Show that under certain assumption 4

(which you should state).
$$V = \frac{D}{i - g}$$

Where V is the discounted present value of the share

D is the dividend on the share

i is the required rate of return

g is rate of growth of dividends

SECTION - B

There are six questions in Section - B each carries 15 marks. Attempt any Four.

8. (a) List eight stakeholders of a final salary pension scheme 2
- (b) State the interests and financial needs of these stakeholders 8
- (c) Give reasons why an employer may provide benefits for its employee. 5
9. (a) List the factors to consider in designing a financial contract. 10
- (b) List ten basic elements that are common to all actuarial work. 5
10. (a) State the relationship between the total return on equities and the risk free rate of return, expected inflation and the equity risk premium. 2
- (b) Explain the effect on the components of the relationship in part (i) at the point when a country enters into a prolonged recession. 7
- (c) Describe the economic factors that affect the level of conventional government bond yields. 6

11. (a) Define the term "new business strain". 2
- (b) Describe the steps an insurer can take to reduce the effects of new business strain. 4
- (c) A General insurer has only ever sold private motor insurance. The general insurer is now considering expanding into selling property insurance, both building and contents. 9
- Outline the key features of such insurance, the perils and the risks that the general insurer is exposed to in, offering the new products.
12. A city council is considering building a new tourist and leisure complex which it hopes will appeal to visitors to the city as well as to local residents.
- (a) Discuss the steps necessary to achieve an effective identification of the risks facing the project. 11
- (b) State the major risks associated with this project. 4
13. (a) Discuss the factors to take into account when deciding whether to invest directly or indirectly in property. 10
- (b) List the main expenses associated with initially investing in property, and subsequently managing a property portfolio. 5