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UNIVERSITY EXAMINATIONS 2023/2024

SECOND YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE

SMS 3230: PRINCIPLES OF HEALTH CARE RESERVING

DATE: APRIL 2024

TIME: 2 HOURS

INSTRUCTIONS: Answer Question ONE and any other TWO questions.

QUESTION ONE (30 MARKS)

- A health and care insurance company may experience problems as a result of writing too much or too little business. Describe the risks, associated with administration, caused by too much new business. [2 Marks]
- Highlight the main advantages of the functional assessment tests (FATS) over test for total permanent disablement based on the ability to follow your normal occupation. [4 Marks]
- State three criterion or conditions that are considered for an illness to be included under the critical illness (CI) cover. [3 Marks]
- Outline any two features of LTCI product. [2 Marks]
- Define the meaning of worksite marketing and state three reasons why it is not suitable for long-term care insurance. [14 Marks]
- Governments may impose restrictions on the way in which insurance companies operate. Identify and explain any three commonly used regulatory restrictions. [6 Marks]



MUST is ISO 9001:2015 and



ISO/IEC 27001:2013 CERTIFIED

g) Investment performance is of paramount importance to an insurer writing unit-linked health and care insurance. Discuss, with reasons, whether or not you agree with the above comment.

[3 Marks]

h) An insurer with a portfolio of business faces an uncertain future. Hence, the claims outgo from any period of risk cannot be predicted to any degree of accuracy. In this regard, insurer consider using re-insurance to cover the unknown financial consequences of possible future perils affecting members of the public. Highlight three factors that will determine the insurer's appetite for offsetting its risk by using reinsurance.

[6 Marks]

QUESTION TWO (20 MARKS)

a) Group business is defined as any collection of individuals who combine to make a single proposal for uniform insurance cover. Highlight four ways in which group products arise.

[4 Marks]

b) Explain why each of the following features of a group IP scheme enables an insurer to offer a high free cover limit:

- i. Compulsory membership [2 Marks]
- ii. A minimum number of members in the scheme [2 Marks]
- iii. The use of an 'actively at work' criterion [2 Marks]
- iv. A prescribed benefit formula [2 Marks]

c) You are an actuary for a health and care insurance company. The governors of a private school have approached your company about the possibility of offering a group critical illness scheme to the parents of pupils at the school. The benefit would be the payment (direct to the school) of all fees on a termly basis from the date on which either parent satisfied one of standard list of conditions until the child left school following their 16th birthday. Premiums would be collected by the school with the fees due each term, and would increase in line with the level of fees payable. The policy for any pupil would end when the first qualifying critical illness event occurred, or when the child left the school, if earlier. Pupils enter the school in the year in which they have their 11th birthday.

- i. Describe, giving reasons, the underwriting procedures you would put in place. [5 Marks]
- ii. Discuss whether it would be satisfactory to charge the same premium to all parents. [3 Marks]



QUESTION THREE (20 MARKS)

- a) Describe an Income Protection (IP) insurance and discuss how benefits are defined under this policy. [8 Marks]
- b) For income protection insurance, explain what is meant by:
- i. benefit limitation [2 Marks]
 - ii. linked claim [2 Marks]
- c) Published mortality tables are based on the combined experience of all the IP insurers contributing to the study.
- i. Outline the factors that are likely to give rise to the large differences in the rates observed for different insurers. [3 Marks]
 - ii. Describe the factors that are likely to cause the published tables to become out-dated so quickly. [3 Marks]
- d) Insurers of IP products do not usually pay benefits during the first few weeks of sickness. Identify two reasons for most contracts having a non-zero deferred period. [2 Marks]

QUESTION FOUR (20 MARKS)

- a) State three main forms of direct marketing of health care insurance products [3 Marks]
- b) Consider sickness experience on IP insurance contracts. How is this likely to differ between customers of an insurance intermediary and those of a direct salesforce targeted at a broad range of society? [5 Marks]
- c) A health and care insurance company believes that it has identified a gap in the market and that it can sell profitable stand-alone critical illness insurance to financially unsophisticated individuals who have below-average disposable income. Describe the features of the target market. [4 Marks]
- d) Discuss how the different stages of the actuarial control cycle can be used in the management of a health and care insurer's sales distribution. [8 Marks]



QUESTION FIVE (20 MARKS)

- (a) State any two medical covers that are usually included under a Private Medical Insurance (PMI). [2 Marks]
- (b) Distinguish between a risk factor and a rating factor. Hence, identify two price factors affecting risk under PMI. [4 Marks]
- (c) Company A is a health and care insurance company specialising in individual and group Private Medical Insurance (PMI) products. The individual PMI product is renewable annually, and policyholders can choose to pay a single premium or monthly premiums. The group PMI product is renewable every two years, and policyholders must pay a single premium at the policy inception/renewal date.

Company A is in the process of preparing financial, policy and claims data (collectively referred to as 'valuation data') for its year-end statutory valuation. Its valuation approach is to use statistical estimation for standard claims, and a case-by-case estimate for large or non-standard claims.

- i. Describe the types of insurance reserve that Company A may hold for statutory reporting purposes only. [4 Marks]
- ii. Suggest possible causes that could lead to poor-quality valuation data. [4 Marks]
- iii. Suggest possible controls that could be put in place to identify and prevent the causes of poor-quality valuation data identified in part (ii). [3 Marks]
- iv. Suggest possible consequences of using poor-quality valuation data identified in part (ii) for Company A. [3 Marks]

