# INSTITUTE OF ACTUARIES OF INDIA

# EXAMINATIONS

## 1st December 2020

## Subject SP1 – Health and Care

### Time allowed: 3 Hours 30 Minutes (09.30 – 13.00 Hours)

### Total Marks: 100

### INSTRUCTIONS TO THE CANDIDATES

1. *Please read the instructions to examinees sent along with hall ticket carefully and follow without exception.*

2. *The answers are not expected to be any country or jurisdiction specific. However, if Examples/illustrations are required for any answer, the country or jurisdiction from which they are drawn should be mentioned.*

3. *Mark allocations are shown in brackets.*

**Q. 1)** A health insurance company is considering the design of its individual regular premium Standard and Tiered Critical Illness (CI) products.

**i)** Define *Tiered Benefit* and discuss the benefits of having *Tiered benefit* under CI contract. (4)

The competitor is offering a variety of CI plans wherein the sum assured is linked to a particular index to protect the policyholder against increasing medical treatment expenses.

Considering this, the pricing actuary has proposed an *Inflation Protection* feature along with the existing Standard CI plan. According to this feature, both the sum assured and premium of Standard CI plan will increase every year by 5% of initial sum assured and premium respectively. There will be no additional premium for this new feature.

**ii)** Outline the potential complexities that the policyholder may face under :

**a)** the Standard CI product and (2)

**b)** Standard CI plan with *Inflation Protection* feature (2)

**iii)** Outline the factors that will influence the suitability of offering Critical Illness contracts with this feature of *Inflation Protection*. (10)

**iv)** Compare and analyze the following parameters of the Standard CI plan with and without *Inflation Protection* feature.

**a)** New Business Margin (3)

**b)** New Business Strain (3)

**v)** Considering the needs of the customers, suggest the suitable index (correspond to each need) by which the Sum Assured should increase every year instead of fixed percentage. (4)

**[28]**

**Q. 2)** **i)** Outline, giving brief reasons, how the choice of assumptions will differ among different purposes of calculating *Embedded Value* of a health insurance company. (4)

**ii)** Outline different components of *Surplus Arising* during the year of a health insurance company. (2)

**iii)** The valuation actuary of a health insurance company has kept the reserving basis exactly same as those used to calculate the future best estimate cash flows.

**a)** Explain how this will influence different components of the *Embedded Value*. Also, comment on the overall impact on the *Embedded Value* of the company. (6)

**b)** Explain how this will influence the Surplus arising during the year while performing the *Analysis of Surplus* exercise. (6)

**[18]**

**Q. 3)** A health insurer XYZ writes all forms of health insurance business. XYZ has recently conducted a market study to understand and compare customer needs of different benefit types.

Basis the market study, the company has decided to offer *Income Stream* as the default benefit option to the policyholder with an option to take the commuted value at any time during the payout period (at a pre-determined basis).

**i)** Discuss the suitability of this decision on the following health insurance products:

**a)** Income Protection (2)

**b)** Critical Illness (2)

**ii)** Compare the benefits of *Indemnity Plans* with the *Cash Benefit Plans* from the policyholder's perspective. (6)

**[10]**

**Q. 4)** A health insurance company aims to bring a specialized PMI product only for the customers, which are suffering from Type 2 diabetes. However, in order to buy the product, the policyholder will need to enroll into a compulsory wellness program run by a health care provider that the insurance company has partnered with. The wellness program shall assist the policyholders with active management of diabetes with incentives such as premium discount upon successful management of health parameters.

**i)** Discuss some of the features which can be included as part of the wellness program. (5)

**ii)** Describe the risks inherent in the proposed product design for the health insurance company. (8)

**iii)** Discuss ways in which the risks described in part (ii) can be mitigated. (6)

**[19]**

**Q. 5)** A health insurance company sells its policies through insurance intermediaries, own sales force and online channel. CEO of the company has decided to close the sales of its CI products through all channels except online.

**i)** Discuss the possible reasons behind this decision. (4)

**ii)** Discuss the merits and risks associated with selling CI products only through online channel for the company. (6)

**[10]**

**Q. 6)** An established health insurance company with sizeable PMI and IP portfolio wants to launch a CI product in which the cover amount could be reinstated once after a claim. Since the company does not have any experience in this product category, it aims to engage with a reinsurer to reduce risk. The CFO of the company has suggested to recapture the existing reinsurance arrangement on its IP portfolio and to enter into a fresh arrangement with the reinsurer for the proposed CI product. Recapture is a provision that allows a ceding company to take back all or a part of the reinsured business from a reinsurer.

**i)** Suggest ways in which reinsurer can help the insurance company with the proposed product. (5)

**ii)** Suggest a reinsurance structure suited for the proposed CI product. (2)

**iii)** Outline the possible reasons underlying the CFO's advice to recapture the IP portfolio. (4)

**iv)** Discuss the approach and assumption set-up reinsurer will adopt in calculation of recapture value. (4)

**[15]**

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