INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

16th November 2011

Subject SA1 – Health and Care Insurance

Time allowed: Three hours (9.45* - 13.00 Hrs)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. *Please read the instructions on the front page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception*

2. ** You have 15 minutes at the start of the examination in which to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.*

3. *You must not start writing your answers in the answer sheet until instructed to do so by the supervisor*

4. *The answers are expected to be India Specific application for the syllabus and corresponding core reading. However, substantially the core reading material is still taken from material supplied by Actuarial Education Company which are meant for UK Fellowship examination. The core reading also contains some material which is India Specific, mostly the IRDA regulation. In view of this, it should be noted that focal point of answers is expected to be India Specific application. However if application specific to any other country is quoted in the answer the same should answer the question with reference to Indian environment.*

5. *Attempt all questions, beginning your answer to each question on a separate sheet.*

6. *Mark allocations are shown in brackets.*

7. *Please check if you have received complete Question Paper and no page is missing. If so, kindly get new set of Question Paper from the Invigilator.*

AT THE END OF THE EXAMINATION

Please return your answer book and this question paper to the supervisor separately.

Q. 1) ABC Enterprises is a manufacturing concern which presently employs around 1200 people at various levels. It is having a Group Health Policy with the XYZ Insurance Ltd. for all its employees and their family members. The Group Health Policy is due for renewal in one month from now. The underlying benefits in Group Health policy include reimbursement of inpatient and outpatient bills and are tiered (becomes more liberal as the grade of employee increases). There is no waiting period on claims for maternity or pre-existing diseases.

The quote of XYZ insurer for next year is for Rs. 1.68 Crore (including service tax). The CFO of the ABC Enterprises feels that it is exorbitant, especially, compared to the claims paid in the existing policy. He contacts the broker and ask them for the data of premium and claims paid by XYZ (both cashless and reimbursement) in last 5 years. Summary of the last 5 years performance of the Group Health policy is given below:

Amount in Rs. Lac

Year	**Premium (including service tax)**	**Total Claims**	**No. of employees**
1^{st}	69.6	56.2	900
2^{nd}	87.5	63.7	950
3^{rd}	110.4	77.4	1075
4^{th}	100.7	76.7	1050
5^{th} (existing policy till date)	132.8	78.8	1125

CFO is very surprised as to why XYZ Insurance Ltd. is charging Rs. 1.68 Crore while claims disbursed by them in the existing policy stand at Rs. 78.8 Lac only.

a) Describe the reasons for difference in claims under existing policy and the quote of premium submitted by XYZ Insurance Ltd. for the next year. (7)

Looking at the data CFO is even more convinced that it is not worth going for Group Health Policy with XYZ Insurance because total claims paid by insurer are always less than premium they have charged. However, he is not against providing insurance benefits to employees that they have been enjoying for last 5 years. Considering everything, he comes up with a proposal to retain the risk internally. As per his proposal, company can provide the fund equal to last year's claims plus 10% more in its budget and will pay all the claims from this money thereby saving a huge amount that would have been wasted on paying insurance premium to the outside insurance company.

b) Discuss the merits of proposal put forth by CFO. (8)

XYZ Insurance Company contacts the CFO through the broker and puts forth an offer to make some changes in the policy design to reduce the overall premium.

c) List down the changes in policy design that will bring down the overall premium of the Group Health Policy in question. (5)

[20]

Q. 2) Following data is extracted from the books of the two medium sized general insurance companies that are dealing in only health insurance:

Insurer - A	**Available Assets (Approved)**	**Liabilities**
Policyholder's Funds	24300	19400
Shareholder's Funds	17200	12100

Insurer - B	**Available Assets (Approved)**	**Liabilities**
Policyholder's Funds	24500	19400
Shareholder's Funds	15700	11200

Insurer - A	**Gross**	**Net**
Written Premium	36400	32800
Incurred Claims	22200	20800

Insurer - B	**Gross**	**Net**
Written Premium	34700	22000
Incurred Claims	28000	19700

Note: All amounts are given in Rs. Lac and calculated as per the requirements of Solvency Margin Calculation.

The minimum Required Solvency Margin is Rs. 50 Crore. The benefit of reinsurance for Solvency Margin Calculation is restricted to 25% only in case of health insurance.

a) Please compute Solvency Ratio of Insurers A and B as per the IRDA (Assets, Liabilities and Solvency Margin of Insurers) Regulations. (12)

b) Suggest the measures to improve the Solvency Ratios applicable to Insurers A and B. (8)

[20]

Q. 3) Following is the extract from the PMI product portfolio of a General Insurance Company. Find out the missing values from A to F in the table given below:

Age Group	**Incidence Rate**	**Average Claim Size**	**Burning Cost per Capita**	**Premium per Life**	**Loss Ratio**
0-35	4.3%	20800	A	1525	B
36-60	C	42500	3060	D	55.9%
>60	13.7%	E	7836	F	73.8%

[6]

Q. 4) Explain the meaning of the following terms related to Health Insurance:

a) Budget policies

b) Capitation

c) Free cover

d) ICD

[4]

Q. 5) You are pricing actuary of a General Insurance Company in India and requested to price for a RSBY (Rasthria Swasthya Bima Yojna) renewal tender. The scheme is due for the second renewal. Your company did not participate in the scheme before. The following information related to the previous scheme is provided:

- Insurer: XYZ
- TPA: ABC
- Commencement date of scheme: 1.12.2010
- Expiry Date of the scheme: 30.11.2011
- Total BPL Families coverable: 70,000
- Enrolled BPL Families: 38000 (maximum number of insured's per family=5)
- Number of Hospitalization claims: 2,500
- Claims paid as of 1.10.2011: Rs.: 10,000,000
- Provider Enrolled: 12

Due to the tough timelines, more detailed data will not be available for the pricing exercise.

a) Describe the most important pricing factors you should consider in your risk premium pricing. Please especially relate your answer to this RSBY tender and give reasons why the factors described are of relevance. (13)

b) Which pricing factor seems of special importance related to this scheme? Give reasons for your explanation. Hint: This particular pricing factor is of lower relevance in case of regular group business in India. (4)

c) The data provided above are not comprehensive and not ideal to arrive at risk adequate rates. Which additional information would be important and relevant to arrive at risk rates? Please provide reasons for your answers. (8)

d) Your actuarial colleague is of the opinion that the data basis for a quotation is not adequate and the company should not participate on such a tender since it appears too risky. What are potential reasons for still participating on the tender? (1)

[26]

Q. 6) **a)** What are the three major catastrophic risks a Health Insurer is facing? (3)

b) How can the health insurance company protect itself or mitigate such risks? (6)

c) Based on data related to the Spanish Flu outbreak in 1918, it is known that per 1000 population about 25 where required to get hospitalized due to this disease within a 12 month period**.** Please roughly estimate the impact it would have on a portfolio in India running at a loss ratio of 80%. (4)

[13]

Q. 7) You are the actuarial member of a product development and product enhancement team which plans to improve the inpatient flagship product for individuals. This product has no cashless facility and no-sub limits. You are asked to provide the team with our actuarial opinion and views related to the following questions:

a) What are the risks if the entry age is increased from 65 to 85 years?

b) What are the risks if the expiry age of 85 is waived and renewal is guaranteed for life?

c) What are the risks to waive the waiting period and underwriting for newborn babies in case the parents are already insured for more than 4 years?

[11]

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