INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

25th June 2019

Subject CP3 – Communications Practice

Time allowed: 3 Hours 15 Minutes (10.15 – 13.30 Hours)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. ***Please read the instructions inside the cover page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception.***
2. ***Mark allocations are shown in brackets.***
3. ***Attempt all questions, beginning your answer to each question on a separate sheet.***
4. ***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. You are not allowed to carry the question paper in any form with you.

Q. 1) You are a consultant to a private *ABC* trust offering fund management services to corporate defined contribution schemes in country XYZ. In country XYZ the schemes offer an accumulation of employer and employee contributions during employment with a particular company. Post-employment with an employer, an employee can either withdraw his/her accumulated amount or can transfer to a new employer if the new employer is also associated with this trust.

Over the years the trust has been able to grow its reputation and several new employers have associated themselves with the trust.

Years since inception	**1 year**	**2 years**	**3 years**	**4 years**	**5 years**
Number of associated employers	5	7	10	20	50
Total AUM (INR cr.)	55	140	250	550	900

There are multiple reasons that have helped the trust grow its reputation which are given below:

1. Strong asset performance – CAGR – 13% p.a.
2. Prompt administration support and development of online reporting platform for employees.
3. Flexibility for employers to decide on scheme structure – employers can choose between varying contribution structures for itself and its employees.
4. Portability of fund between associated employers.

Years since inception	**1 year**	**2 years**	**3 years**	**4 years**	**5 years**
Annual Return	12%	14%	15%	13%	12%
CAGR	12%	12.75%	13.25%	13.25%	13%

<u>Trust investment policy</u>

Trust investment policy recommends asset allocation across a variety of investment instruments:

Financial Instrument	**Recommended range**	**Current investment**
High Quality Corporate Bonds (AA+)	50-60%	55%
Central & State Govt. Bonds	25-35%	25%
Equity	10-15%	15%
Short term Money Market instruments	Balance	5%

The policy is revised periodically for strategic and tactical purposes. Over the years the trust has kept aggressive allocations towards corporate bonds and equity. This drives superior fund performance. Employers and employees contribute to the trust on a monthly basis. The trust looks to invest money in available securities as per investment policy. At times it does take time to invest in suitable securities (as long as 2-3 months). In the meantime, the trust keeps its investments in the money market.

The trust usually holds assets for the long term and looks to hold bonds till maturity. It tries to manage its outflows from the inflows to the funds and any balance by selling securities. Weighted average duration of trust's asset investments is about 6 years while its expected liability duration (redemption of employee accumulation) is expected to be only 3 years.

The Trust credits investment return to account balances on an annual basis at the end of the year.

Turbulence in Bond market

From the beginning of the year, *XYZ* country's bond market started witnessing unusual turbulence. Combined with interest rate hikes by a large economy and fall in local currency, demand for country bonds have gone down among Foreign Institutional investors. This has pushed bond yields to all time high.

Recently a large private infrastructure finance company had failed to service its debt repayment schedule. This has overnight brought down its bond ratings to nearly default from existing AA+. It has also caused ripples in other corporate bonds as investors suspect similar issues with them.

Following tables show credit rating transition matrix for different graded bonds issued by local companies:

Rating Transition Matrix before financial crisis (From ↓ To →)	AAA+	AA+	A+	Default
AAA+	0.90	0.10	0.0	0.0
AA+	0.10	0.80	0.09	0.01
A+	0.05	0.15	0.70	0.10

Rating Transition Matrix after financial crisis (From ↓ To →)	AAA+	AA+	A+	Default
AAA+	0.75	0.15	0.05	0.05
AA+	0.05	0.65	0.15	0.15
A+	0.00	0.15	0.55	0.30

The above tables indicate probability of a bond with a given rating staying at that rating or moving to another rating in a year. The Trust's present investment portfolio has about 25% share invested in local bonds of private companies.

You have received the following email from the Trust's Investment Committee team asking for support for upcoming board meeting.

Dear Tom,

You have been advising us on a variety of trust related matters in the past and we continue to value your support. We need your support again to prepare for an upcoming Board

meeting. Recent economic developments and turmoil in bond markets have come to the notice of our Board. One of the trustees has requested us for a discussion on the Trust's investment strategy at the upcoming Board meeting.

We need your inputs, preferably as a paper to help us draft suitable material for our Board's review. Look forward to your inputs soon.

In this regard attached is a note by the trustee shared with the investment team.

Regards

Thomas

ABC Trust Investment Committee Leader

Trustee Email

Hi Thomas,

In our upcoming Board meeting, I would like you to provide us with information related to the investment strategy of our trust. We have seen aggressive investments by the trust in past years and significant exposure to corporate bonds. The bond market has seen significant turbulence recently. How does the change in market conditions impact us? How can our investment strategy be shaped to better manage such situations?

Regards

John

i) Draft a paper to the Investment Committee of 650 to 700 words. (45)

ii) Set out three criteria you used for deciding which information to include or exclude from the paper, giving an example of each. (5)

[50]

Q. 2) You are Shyam, the pricing Actuary in a company which predominantly sells health insurance both for individual and group clients. Most of the group policies sold by your company are yearly renewable. The market is very competitive with thin profit margins. Even though policies are yearly renewable the market practice is to give a soft commitment to hold the same rates for at least a period of three years. This makes pricing a challenge. Of late, claim experience has been higher than allowed for and with hardly any margin left for many schemes. You have been increasing the prices and this has met with some resistance from the sales team. You have now proposed an increase in premium rates for one of the group clients. The client is fairly big and the head of sales is particularly unhappy with the proposal and has written to you as follows.

"Dear Shyam,

I have received your new quote for PQR Company limited and I fear that if we do revise the rates we may lose the client. In this particular case I checked to see if we are making losses by comparing premiums with the claims that we have paid and I do not see any losses though

I do agree that the claims as a percentage of premiums have been increasing. I would like you to review and see if we can maintain the same rates. In case this is not possible I request you to help me understand the reasons for the increase. This will help me in my discussion with the client.

Thank you for your help.

Regards

Ram"

The head of sales has come from financial services background but does not have much experience in the Insurance industry.

Pricing philosophy

The risk appetite statement approved by the Board has stability of earnings as one of its agenda. This has been translated into a pricing philosophy which says that contracts should be written only if there is a reasonable certainty of earning gross margins of 10% of the premium. Where there is uncertainty the gross margin has to be higher than 10% and depending on the extent of uncertainty can go upto 20%. Therefore, contracts are usually priced on best estimates if the experience is credible with a loading of 10%.

Assessment of profitability of ABC Limited

Your team has performed a detailed analysis of the profitability for this client and has presented you with the following summary.

The scheme has been with the company since Calendar year 2012. (Calendar year and Financial year are the same). The scheme is renewable in March of each year. The employer offered health insurance for the first time in 2012 and therefore no experience was available for the Group at the time of the original pricing. The benefit is reimbursement on hospitalization up to a maximum of Rs.5 lakhs. Risk rates used for individual products was the basis for pricing this contract. A margin of 20% had been added on to the priced rates. The contract charged premiums based on age bands. Therefore the contract does not have any additional risk of mix by age of the employees being different than expected. A review of the appropriateness of pricing was carried out earlier in 2015 and it was decided to leave the rates unchanged.

The details of the premiums and claims as seen in the Financials are presented below.

In millions	Premiums	Claims
CY12	19.42	8.82
CY13	21.55	16.34
CY14	24.51	19.11
CY15	31.76	24.14
CY16	35.34	29.09
CY17	35.29	31.25
CY18	36.25	31.87

In the financials the entire premium is shown as revenue. Claims that are reported are shown as expenses. These include both settled and not settled claims.

An "Unearned premium reserve" is held in respect of the balance of premiums received in respect of periods of insurance not yet expired. In respect of claims an additional reserve called the Incurred But Not Reported (IBNR) Reserve is held. This ensures that the Financials reflect the correct level of profitability.

In order to get a better understanding of actual claims the team has recast the claims based on the year of issue. The results are as below.

Year of origin of policy	**Premiums**	**Claims without IBNR**	**Claims with IBNR**
In millions	`(1)	`(2)	`(3)
CY12	19.42	14.70	14.70
CY13	21.55	17.43	17.43
CY14	24.51	20.23	20.23
CY15	31.76	26.74	26.74
CY16	35.34	30.65	30.65
CY17	35.29	31.65	31.65

Almost 100% of the claims get reported within a period of 4 to 5 months. Claims for CY12 to CY16 are fully developed. For CY17 an adjustment has been made for IBNR.

Results of experience analysis

The team has separately carried out an experience analysis by breaking down the data into agewise brackets to see if the experience is very different across these cells. The results are as below.

Age bands	**CY12**	**CY13**	**CY14**	**CY15**	**CY16**	**CY17**	**CY18**	**Total for all years**
<=30	89%	87%	87%	96%	98%	101%	106%	96%
31-35	84%	89%	89%	91%	94%	100%	103%	94%
36-40	84%	94%	97%	94%	97%	99%	104%	97%
41-45	88%	95%	106%	97%	95%	98%	103%	98%
46-50	68%	84%	84%	95%	95%	99%	102%	92%
51-55	83%	99%	97%	84%	108%	107%	100%	98%
>=56	81%	77%	68%	68%	98%	85%	114%	88%
Total across age bands	84%	90%	92%	94%	96%	100%	104%	95%

- The expected claim payout has been calculated with the same incidence rates for the all the years.
- The exposed to risk is less for ages greater than 45 years.

The conclusions of the experience study are as follows.

- Experience is not very different across different age bands especially when seen for all years together. For ages greater than 45, the experience is not very credible. However even for these ages experience is not very different as compared to the other ages.
- Claim experience is showing an increasing trend. There is some volatility at an individual cell level, however, when the analysis is combined for all ages as seen from the last row of the table it can be concluded that there is claims inflation. Claims inflation here is both an account of frequency of claiming and increase in amounts for certain procedures.

Claims inflation has been calculated as below.

Year of origin of policy	Premiums	Claims without IBNR	Claims with IBNR	Claim to premium ratio	Claim inflation
In millions	`(1)	`(2)	`(3)	`(4=(3)/(1))	
CY12	19.42	14.70	14.70	76%	
CY13	21.55	17.43	17.43	81%	6.8%
CY14	24.51	20.23	20.23	83%	2.1%
CY15	31.76	26.74	26.74	84%	2.0%
CY16	35.34	30.65	30.65	87%	3.0%
CY17	35.29	31.65	31.65	90%	3.4%
CY18	36.25	32.01	33.89	94%	4.3%
Average claim inflation				3.6%	

Conclusions

The experience across different age bands is not very different. There is no need to revise the underlying incidence rates due to this. There is definite evidence of Claims inflation. On an average it is 3.6%. However, it has been increasing.

On a projected basis CY19 will not meet the profitability requirement. Projecting the experience to CY2020 and onwards by assuming an inflation of 4% and assuming the rates will be held for about three years we propose an increase of 17% to the incidence rates. This will ensure a margin of 10% over a three year period.

	Premium	Claim	Claim to premium ratio
CY19 Projected	100.00	97.00	97.0%
CY20	116.83	101.09	86.5%
CY21	116.83	105.13	90.0%
CY22	116.83	109.34	93.6%
Total from CY20 to CY22	350.50	315.56	90.0%

i) Draft an email to Ram in about 600 to 700 words explaining the necessity of increasing the premium rates. (45)

ii) Explain how you exercised judgement as to the relevance of information and decide to exclude information if any from your reply. (2)

iii) Explain how you ensured that your use of language did not contain technical terms or jargon. (1)

iv) Visual aids such as graphs, tables or charts can be useful for communications. Comment on your approach to these in your answer to part **(i)**. (2)

[50]

****