

Problem 5**BBA (Professional) 2011**

Calculate the net single premium (NSP) and net annual premium (NAP) for 5 years endowment policy of Tk 5000 from the following information:

Age	No. of insured persons	No. of death	Present Value of Tk 1.00 @5%
35	30550	4196	0.952
36	26354	3285	0.907
37	23069	2562	0.864
38	20507	1978	0.823
39	18529	1164	0.784

Solution:

Calculate the NSP and NAP for the 5 years endowment policy

year	age	Number of insured person	Number of Death	Amount of claim	PV of Tk 1@ 5%	Present Value of Death Claim/ PV
1	35	30550	4196	5000	.952	19972960
2	36	26354	3285	5000	.907	14897475
3	37	23069	2562	5000	.864	11067840
4	38	20507	1978	5000	.823	8139470
5	39	18529	1164	5000	.784	4562880
Total Present value of death claim						58640625

Number of living person at the end of 5th year = (18529 - 1164)

= 17365 persons

Total claim of living person = (17365 × 5000)

= 86825000

Total PV of living claim = (86825000 × .784)

= Tk. 68070800

We know,

$$\begin{aligned} \text{Net single premium (NSP)} &= \frac{\text{Total PV of claim (Death + Living)}}{\text{Total no. of insured person}} \\ &= \frac{58640625 + 68070800}{30550} \\ &= \text{TK.4148 [Ans.]} \end{aligned}$$

Calculate the NAP for the 5 years Endowment Policy

year	age	Number of insured person	Premium collected @ Tk.1	PV of Tk 1 @ 5%	Present Value of the premium collected @ Tk. 1 per policy holder
1	35	30550	30550	1.00	30550
2	36	26354	26354	.952	25089
3	37	23069	23069	.907	20924
4	38	20507	20507	.864	17718
5	39	18529	18529	.823	15249
Total present value of premium collected @ TK 1 per policy holder					109530

So, Net annual premium (NAP)

$$\begin{aligned} &= \frac{\text{Total PV of Claim (death + living)}}{\text{Total PV of Premium collected @Tk 1 Per policyholder}} \\ &= \frac{58640625 + 68070800}{109530} \\ &= \text{TK. 1157 [Ans.]} \end{aligned}$$

Problem 6

BBA (Professional) 2011

From the following information calculate the terminal reserve at the end of 3rd year:

- (i) Rate of interest @4% per annum.
- (ii) Net annual premium of a 20 years ordinary endowment policy of Tk 1000 issued at the age of 40 years is Tk 40.00.
- (iii) 1000 policies have been issued.

Number of death per thousand at the end of 1st, 2nd and 3rd year are 1, 2 and 3 respectively.