

(b) Establish the relation between $s_{\overline{n}|i}$ and $a_{\overline{n}|i}$

12. (a) Find the expression for present values of

- Temporary assurance.
- Whole life assurance in terms of commutation notation.

(b) Given :

$x :$	25	26	27	28	29	30
$l_n :$	97380	97088	96794	96496	96194	95887
$d_x :$	292	294	298	302	307	313

Calculate the value of the following benefits at 6% p.a.

- The value of a temporary assurance of Rs. 1000 for 2 Years for a person aged 25.
- The value of a pure endowment of Rs. 600 for a person aged 27 receivable on attaining age 30.

13. (a) Write a note on increasing life annuity.

(OR)

(b) Prove that $(I\ddot{a})_x = \frac{S}{D_x}$

Register Number :

Name of the Candidate :

6 1 8 9

PG. DIPLOMA EXAMINATION, 2008

(ACTUARIAL STATISTICS)

(PAPER - II)

120. INSURANCE AND ANNUITIES

December]

[Time : 3 Hours

Maximum : 100 Marks

PART - A (5 × 8 = 40)

Answer any FIVE questions.

Each question carries Eight Marks.

1. Explain :

- Natural premium.
- Level premium.

- Describe level benefit insurance.
- Define various types of annuities.
- Derive the formula for present value of an immediate annuity of 1 p.a.

Turn over

5. Write a note on whole life assurance.
6. Derive an expression for pure endowment assurance.
7. Find the present value of a series of 6 payments of Rs. 200 p.a., the first one being made at the end of 8 years, assuring a rate of interest of 6% p.a.
8. Explain Deferred Temporans Life Annuities.

PART - B (5 × 12 = 60)

Answer all questions by choosing

either (a) OR (b)

Each questions carry Twelve marks.

9. (a) Describe the different aspects involved in insurance payable at the moment of death.
(OR)
- (b) Assume that each of 100 independent lives, is age x , is subject to a constant force of mortality, $m = 0.04$ and is insured for a death benefit of 10 units, payable at the moment of death. The benefit payments are to be withdrawn from an

- investment fund earning $s = 0.06$. Calculate the minimum amount at $t = 0$ so that the probability is approximately 0.95 that sufficient funds will be on hand to withdraw the benefit payment at the death of each individual.
10. (a) Establish the relationship between the insurance payable at the moment of death and the end of the year of death.
(OR)

(b) If

$$l_n = 100 - x \quad \text{for } 0 \leq x \leq 100$$

and $i = 0.05$,

evaluate $A_{40:\overline{25}|}$

11. (a) A series of 8 annual sums of money is payable, the first payment taking place at the end of one year from now. The first five payments are Rs. 300 each and the last three payments are Rs. 200 Each. Find the accumulated value of 8 annual sums at the end of eight years.
(OR)

Turn over