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Register Number:

Name of the Candidate:

P.G.DIPLOMA EXAMINATION, May 2015

(ACTURIAL STATISTICS)

110: BASICS OF ACTUARIAL SCIENCE

Time: Three hours Maximum : 100 marks

SECTION – A

Answer any FIVE Questions (5 × 8 = 40)

1. The amounts for a certain sum with compound interest at a certain rate in three years are ₹12,500 and ₹13,375 respectively. Find the rate and the sum.
2. Obtain the formula for present value of 1 payable at the end of n years.
3. Discuss the properties of exponential utility function.
4. How are Jonson's inequalities used for insurance decisions?
5. Explain curate-future life time of a life aged x.
6. Give that e_{72}=7.102, e_{73}=6.680 and I_{73}= 30585. Find I_{72}.
7. Discuss the assumptions of a life table and explain its construction.
8. Define mortality table with its components.

SECTION – B

Answer ALL Questions (5 × 12 = 60)

9. a) Derive the formula for computing present value.

(OR)

b) Obtain the present value at the rate of interest 8% p.a. of ₹20,000 payable at the end of 5 years and 6 months.

10. a) Obtain the value of P for an exponential utility function $U(x)= -e^{-\alpha x}$

(OR)

b) Describe the elements of insurance.

11. a) Discuss the models for individual class random variables.

(OR)

b) If x has a inform distribution on [0,2] and y is independent of x with a uniform distribution over (0,3). Obtain the distribution function of S=x+y by convolution.

12. a) Explain the meaning of time-until-date for a person aged x. Also point out the importance of survival models in actuarial theory.

(OR)

b) Derive survival function from the force of mortality. Also explain time until death for a person aged x.

13. a) Write a detailed note on life table and its various columns.

(OR)

b) Describe the following in detail.
   i) Gompertz law of mortality.
   ii) Weibull's law of mortality.

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