



Date: 06-05-2023

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

**Section A**

**Answer ALL questions.**

**(10 x 2 = 20)**

1. Define compound interest.
2. What is uniform annuity?
3. What do you mean by a deferred perpetuity?
4. Define discount.
5. Define Endowment assurance.
6. Define stationary population.
7. What is the use of mortality table?
8. What is the principle of insurance?
9. What is an annual premium?
10. What is a life annuity?

**Section B**

**Answer any FIVE questions.**

**(5 x 8 = 40)**

11. Derive the present value and accumulated value of an immediate increasing annuity.
12. Derive the expressions for effective rate of interest corresponding to nominal rate of interest and vice-versa.
13. In lieu of a single payment of Rs. 1000 at the present moment a person agrees to receive three equal payments at the end of 3 years, 6 years and 10 years respectively. Assuming a rate of interest at 6% p.a., what should be the value of each of the three payments?
14. Calculate the present value of a deferred annuity payable for 10 years certain, the first payment falling due at the end of 6 years from the present time. The annuity is payable at the rate of Rs.1000 p.a. for the first five years and Rs. 2000 p.a. thereafter at 5% interest.
15. Explain in detail the classification of annuities.
16. Elaborate the contents of all the columns of a mortality table and write a short note on all the probabilities of survival and death.
17. Explain the concept of life annuities and derive the expressions for the present values of immediate life annuity and life annuity due.

18. A fixed term (Marriage) Endowment assurance of Rs. 10, 00,000 is taken by a person aged 35 years payable for marriage of his daughter, aged 7 years 15 years hence. Find the value of the benefit at 6% p.a. interest.

**Section C**

**Answer any TWO questions.**

**(2 x 20 = 40)**

19. Derive the expressions for present value and accumulated value of immediate increasing annuity and increasing annuity due.
20. A loan of Rs. 10,000/- is to be repaid with interest at 8% p.a. by means of an immediate annuity for 5 years. Find the level payment. Prepare a table showing the loan schedule. What will be the principal and interest contained in each of the 5 installments?
21. What is the object of constructing a mortality table? Explain the general procedures and stages in the construction of a mortality table.
22. Derive expressions for the present value for the following, using commutation functions:
  - (i) Temporary assurance
  - (ii) Endowment assurance

&&&&&&&&&&