

PGDM (IBM), 2020-22
Elements of Actuarial Science
INS-202
Trimester-II, End-Term Examinations: January 2021

Time Allowed : 2½ hrs.

Roll No.: _____

Marks: 50

Instruction: Students are required to write Roll No. on every page of the question paper. Writing anything except the Roll No will be treated as **Unfair Means**. All other instructions on the reverse of Admit Card should be followed meticulously.

Sections	No. Of Questions to attempt	Marks	Total Marks
A	3 questions with choice	3*10	30
B	Compulsory Case Study with Choice	20	20
			50

Section-A

- A1. Construct a Loan Schedule for a Loan of Rs 5500000 (fifty five lac. The Loan is to be repaid in 10 years with annual installments in arrear at 8% p.a rate of interest.

[10]

Or

- A1 1) Calculate the accumulated value of INR 60000 at the end of year 3

- (a) A simple rate of interest of 8.5% per annum [1]
(b) A compound rate of interest of 7% per annum convertible quarterly [2]
(c) A compound rate of interest of 7% per annum convertible monthly [2]

- 2) Find the present value at the rate of 8% p.a of 4 annual payments of Rs. 20000/- p.a. followed by 7 annual payments of Rs. 35000/- p.a., the first payment being made at the end of 1st year. [5]

- A2. State the advantages to the life insured and risks to the life insurance company in writing the following Products

- i. Regular premium Term Insurance [3]
ii. Immediate Annuity [3]
iii. With Profit Savings [4]

[10]

- A3. (i) Define Asset Share. How Asset share is used by LI companies? [5]

- (ii) ABC Life insurance Company India Ltd is selling with-out profit endowment product List the factors the company should consider in setting the surrender value.[5]

OR

- (1) What do you understand by paid up value and surrender value {3}
- (2) For a non profit regular endowment policy of term 25 years and sum assured 50,00000 (fifty lac). The premium has been paid for full 5 years. Calculate the paid up value. [3]
- (3) For a non profit limited pay 10 years endowment policy of term 25 years and sum assured 50,00000 (fifty lac). The premium has been paid for full 5 years. Calculate the paid up value. [4]

Section-B

Case Study - Compulsory: -

You have been asked by your reporting manager to speak in a off-site of the Company on topic- Interest rate theory. The topic to be covered following;

- ✓ What is simple rate of interest. Show by example what is the interest amount earned in 2 years on principle 5000 at 5% p.a.
- ✓ What is relationship between Amount and Principle.
- ✓ Show by example what is the compound interest earned in 2 years on principle 5000 at 5% p.a.
- ✓ Show relationship between 'I' and 'd' in usual interest rate theory.
- ✓ What is present value of 250 due in 1 year at 5%.
- ✓ What is present value of 250 due in 20 year at 5%.
- ✓ If a customer approaches you with sum 250000 (2.5 lac) to invest at 6% for 25 years. What is the amount you shall show him what he will get at end of 25 years.
- ✓ He also want to know that if he would pay 2.5 lac each year in future also every year upto end of 24 years (beginning of 25th year), then what would be accumulated amount and the interest he will get.
- ✓ Out of 100000, persons at beginning of a year, 60 die during the year. Calculate probability of death. How many persons are alive at end of year. Calculate probability of survival and show that sum of probability of death and probability of survival is equal to 1.