Class –XII   **Time : 40 Min**
Sub. – Applied Maths   **F.M. - 20**

Section - A (2 × 5=10)

1. Find the present value of perpetuity of ₹18000, payable at the end of 6 months, if the money is worth 8% p.a. compounded semi annually.

2. A person invested ₹200000 in a fund for one year. At the end of the year the investment was worth ₹216000. Calculate his rate of return.

3. Assume an investment's starting value is ₹20,000 and it grows to ₹50,000 in 3 years Calculate Compound Annual Growth Rate. [use $(2.5)^{1/3} = 1.355$].

4. Minimize $Z = 3x + 5y$ subject to the constraints $x + 3y \geq 3$, $x + y \geq 2$, $x \geq 0$, $y \geq 0$.

5. An asset the life of which is estimated to be 8 years costs ₹80,000. If annual depreciation is ₹9000. Find its scrap value using linear method.

Section - B (5 × 2=10)

6. A manufacturer produces nuts and bolts. It takes 1 hour of work on machine A and 3 hours on machine B to produce a package of nuts. It takes 3 hours on machine A and 1 hour on machine B to produce a package of bolts. He earns a profit of ₹17.50 per package on nuts and ₹7 per package on bolts. How many packages of each should be produced each day, so as to maximize his profit, if he operates his machines for atmost 12 hours a day.

7. Utkarsh purchased a laptop worth ₹80,000. He paid ₹20,000 as cash down and balance in equal monthly installments in 2 years. If bank charges 9% p.a. compounded monthly. Calculate the EMI. (Given $1.0075^{24} = 1.1964$).

***