Q.1 Choose the correct alternative.   [3]

1.   An agent who gives guarantee to his principal that the party will pay the sale price of goods is called

  a. Auctioneer   b. Del Credere Agent
  c. Factor   d. Broker

2.   Insurance companies collect a fixed amount from their customers at a fixed interval of time. This amount is called

a.   EMI   b. Installment
c.   Contribution   d. Premium

3.   Objective function of LPP is

a)   a constraint   c) a relation between the decision
b)   a function to be maximized or   variables
     minimized   d) a feasible region.

Q.2 State whether each of the following is True or False.   [2]

1.   General insurance covers life, fire, and theft.
2.   Cash discount is allowed on list price.

Q.3 (A) Attempt any two of the following questions   [6]

1.   Find the rate of interest compounded annually if an immediate annuity of Rs.20,000 per year amounts to Rs.41,000 in 2 years.

2. Prakash gets a commission at 10% on cash sales and 8% on credit sales. If he receives Rs 4,400 as commission on the total sales of Rs 50,000. Find the sales made by him in cash and on credit

3. Minimize Z = 7x + y , Subject to 5x + y $\geq$ 5 , x + y $\geq$ 3 , x $\geq$ 0 , y $\geq$ 0

Q.3 (B) Attempt any two of the following questions   [8]

1. A cargo valued at Rs.10,00,000 was insured for Rs.7,00,000 during a voyage. If the rate of premium is 0.4%. find (i) the amount of premium, (ii) The amount that can be claimed if the cargo worth Rs.6,00,000 is destroyed, (iii) the amount that can be claimed, if cargo worth Rs.6,00,000 is destroyed completely and the remaining cargo is so damaged that its value is reduced by 40%.

2. Solve the following LPP by graphical method
   Maximize z = 3x + 5y Subject to x + 4y $\leq$ 24, 3x + y $\leq$ 21, x + y $\leq$ 9, x $\geq$ 0, y $\geq$ 0.

3. A Company manufactures two types of fertilizers F1 and F2 . Each type of fertilizer requires two raw materials A and B. The number of units of A and B required to manufacture one unit of fertilizer F1 and F2 and availability of the raw materials A and B per day are given in the table below

Fertilizer Raw Materials	F_1	F_2	Availability
A	2	3	40
B	1	4	70

By selling one unit of F1 and one unit of F2 , company get a profit of Rs. 500 and Rs. 750 respectively. Formulate the problem as LPP to maximize the profit

Q.4 Attempt any two of the following questions (Activity)   [6]

1.)Shraddha wants to invest at most 25,000/- in savings certificates and fixed deposits. She wants to invest at least Rs. 10,000/- in savings certificate and at least Rs. 15,000/- in fixed deposits. The rate of interest on saving certificate is 5% per annum and that on fixed deposits is 7% per annum. Formulate the above problem as LPP to determine maximum yearly income.

Solution: Let x_1 amount (in Rs.) invest in saving cerficate

x_2: amount (in Rs.) invest in fixed deposits.
$x_1 \geq 0, x_2 \geq 0$
From given conditions $x_1 + x_2 \boxed{} 25,000$
She wants to invest at least Rs. 10000/- in saving certificate
$\therefore x_1 \boxed{} 10,000$
Shradha want to invest at least Rs. 15,000/- in fixed deposits.
$x_2 \boxed{} 15,000$
Total interest $= z = $ ....
Maximize $z = $ ....   Subject to.
....
....

2.) The value of the goods sold = Rs. x

Commission @ 7.5% on first Rs.10,000

= Rs. $\boxed{}$

Commission @ 5% on the balance

$Rs.(x - 10,000) = \dfrac{5}{100} \times \boxed{}$

$= Rs. \boxed{}$

An Agent remits Rs.33950 to his Principal

$\therefore \quad x - \boxed{} - \boxed{} = 33,950$

$\dfrac{95x}{100} = 33950 + \boxed{}$

$\dfrac{19x}{\boxed{}} = 34,200$

$x = \text{Rs.} \boxed{}$

3.) Policy value = Rs. 70,000

Period of policy = 15 years

Rate of premium = Rs. 56.50 per thousand p.a.

$\therefore$ Amount of premium $= \dfrac{56.50}{1000} \times \boxed{}$

$= \text{Rs.3955}$

$\therefore$ Total premium paid $= 3955 \times \boxed{}$

$= \text{Rs.59,325}$

Rate of bonus = Rs. 6 per thousand p.a.

$\therefore \quad$ Amount of bonus $= 6 \times \boxed{}$

$= \text{Rs.420}$

$\therefore \quad$ Bonus for 15 years $= 420 \times \boxed{}$

$= \text{Rs.6,300}$

$\therefore \quad$ The person gets Rs. $= \boxed{} + 6300$

$= \text{Rs.76,300}$

$\therefore \quad$ Benefit $= \boxed{} - 59,325$

$= \text{Rs.16,975.}$