SEAT No. :

F.Y. B.B.A.(CA)
CA 203 : BUSINESS MATHEMATICS
(2019 Pattern) (Semester - II)

[Time : 2½ Hours]   [Max. Marks : 70]

Instructions to the candidates:
1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Notations and abbreviations have their usual meaning.
4) Simple calculator is allowed.

Q1) A) Fill in the blanks: [2x5=10]

a) If the payment of the annuity is made at the end of interval of time is

   called ....

   (Deferred annuity, Annuity due, Ordinary annuity)

b) The variable that help to decide the outcome are called ....

   (Decision variable, Dependent variable)

c) The column which is introduced in the transportation matrix to balance

   the rim requirements, is known as ....

   (Key column, Idle column, Dummy column)

d) If A, B and C matrices of same order and (A+B) + C = A+(B+C), this

   law is known as ....

   (Commutative law, Associative law, Cramer's law)

e) The price at which the articles are purchased is called the .... price.

   (Cost, Selling, Marked)

P. T. O.

B) State whether the following statement are true OR False.   [3×2=6]

    a) In matrix minima method, allocation is started from top left hand corner of the transportation table.

    b) The NAV represents market value of a unit of the fund.

    c) The inverse ratio is the ratio in reverse order of the original ratio.

Q2) Attempt any FOUR of the following.   [4x4=16]

    a) Pragat invested Rs. 13,568/- in 7% shares at Rs. 106/-. Find his profit at the end of the year. {F.V. 100].

    b) What is the transportation problem? Define unbalanced transportation problem. Write the methods of solving balanced transportation problem.

    c) Find the compound interest on Rs. 5000 for 3 years at 5% p. a. compounded half yearly.

    d) Write the general formulation of LPP. Define Decision variable, Objective function, feasible solution in LPP.

    e) What is percentage and how it is calculated?

    f) If $A = \begin{bmatrix} 4 & 5 \\ 3 & 7 \end{bmatrix}$, find a matrix X such that $A - 2X = \begin{bmatrix} 2 & 3 \\ 7 & 5 \end{bmatrix}$

Q3) Attempt any FOUR of the following.   [4x4=16]

    a) Find the fourth proportional to 7, 21 and 25.

    b) What are the components of linear programming?

    c) What is 45% of 482?

    d) A scooter costing Rs. 12,000 was sold for Rs. 10,400 after two years. Find the percentage loss.

    e) Find the simple interest on Rs. 40,000 for 5 years at 12% p.a.

    f) Define: i) matrix,   ii) Square matrix,

        iii) Diagonal matrix   iv) Skew-symmetric matrix.

P. T. O.

Q4) Attempt any FOUR of the following.   [4x4=16]

a)   Explain the matrix minima method used to solve the transportation problem.

b)   Solve the following LPP by graphical method:

$$Maximize\ Z = 20x + 17y$$

$$Subject\ to: 2x + 2y \leq 22$$

$$12x + 10y \leq 120$$

$$x \geq 0, y \geq 0$$

c)   A person invested Rs. 7000 in 8% shares at Rs 140. How much dividend will he get?

d)   The price of an article was Rs. 500 and a year later the price increased to Rs 750. By how much percent has the value increased?

e)   Cost price of an article is Rs. 20,000. What should be the marked price in order to earn 20% profit after allowing 4% discount?

f)   Find the difference between compound interest and simple interest on Rs. 500 for 2 years at 10% p. a. (compounded yearly).

Q5) Attempt any ONE of the following.   [1x6=6]

a)   Find the inverse of matrix A.

$$A = \begin{bmatrix} 28 & 45 & 63 \\ 20 & 34 & 48 \\ 21 & 36 & 51 \end{bmatrix}$$

b)   Solve the following transportation problem by matrix minima method:

Plant	Ware houses				Supply
	1	2	3	4	
P1	3	4	9	2	23
P2	6	5	8	8	27
Demand	12	13	15	10	50

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