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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) The price rated on the body of share or debenture is called.....

(Cash value, Net asset value, Face value)

b) If the value of objective function Z can be increased or decreased indefinitely, such a solution is called.....

(Unbounded solution, Bounded solution, feasible solution)

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

(Cost, Selling, Marked)

d) If the payment of the annuity is made at the end of interval of time is called ....

(Deferred annuity, Annuity due, Ordinary annuity)

e) A TV purchased at Rs 5000 and sold at Rs 4000, the percentage loss is .....

(10%, 20%, 25%)

P. T. O.

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

a) For the arrangement of objects combination is required.

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

c) For the multiplication of two matrices size of matrices must be same.

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

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

b) What is transportation problem? Explain the method to solve by North-West corner method

c) What is 20% of 150?

d) A man purchases eggs at Rs. 65 per dozen and sells them at Rs. 7 per egg. Find his gain or loss percent

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

f) Define: i) Unit matrix ii) Square matrix,
iii) Symmetric matrix iv) Non-singular matrix.

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

a) A forex agent purchased pounds at Rs. 78 per pound worth Rs. 14,040 and sold it at Rs. 81 per pound. He got 2% commission in both transactions. What is the total commission he earned?

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

c) Find the rate of compound interest at which sum of money triples itself in 10 years.

P.T.O

d) A and B two type of fertilizers available at ` 30 and ` 50 per kg respectively. Fertilizer A contains 20 units of potash, 10 units of nitrogen and 40 units of phosphorus. Fertilizer B contains 15 units of potash, 20 units of nitrogen and 10 units of phosphorus. The requirement of potash, nitrogen and phosphorus is at least 1800, 1700, 1600 units. Formulate the problem as L.P.P. in order to minimize the total cost.

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 $A - 2X = \begin{bmatrix} 2 & 3 \\ 7 & 5 \end{bmatrix}$

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

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

b) Solve the system by matrix method.

$$2x - y = 4$$

$$x + 3y = -5.$$

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) Obtain the inverse of the following matrix by adjoint method :

$$A = \begin{bmatrix} 3 & 3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$$

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

P.T.O

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

a) Solve the following L.P.P. using graphical method :

Maximize: $Z = x + 2y$

Subject to the condition: $x + y \leq 10$

$0 \leq x \leq 75$

$0 \leq y \leq 60$

b) Solve the following transportation problem by North-west corner method:

Sources	Destinations					Supply
	D1	D2	D3	D4	D5	
S1	3	5	8	9	11	20
S2	5	4	10	7	10	40
S3	2	5	8	7	5	40
Demand	10	15	25	20	30	

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