

Roll No \_\_\_\_\_ ( To be filled in by the candidate)

(Academic Sessions 2019 – 2021 to 2022 – 2024 )

**BUSINESS MATHEMATICS**

LHR-11-23

Q.PAPER ( Objective Type )

223-1<sup>st</sup> Annual-(INTER PART – I)

Time Allowed : 15 Minutes

Maximum Marks : 10

**PAPER CODE = 6644**

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	Solution set of $x^2 + x - 12 = 0$ is : (A) $\{3, -4\}$ (B) $\{-3, 4\}$ (C) $\{3, 4\}$ (D) $\{-3, -4\}$
2	The order of a matrix $\begin{bmatrix} 1 & 3 & 5 \end{bmatrix}$ is : (A) $1 \times 1$ (B) $2 \times 2$ (C) $3 \times 1$ (D) $1 \times 3$
3	The term "function" was introduced by : (A) Newton (B) Cauchy (C) Leibniz (D) Lagrange
4	In a binary system, digits used : (A) $(1, 2)$ (B) $(0, 2)$ (C) $(0, 1)$ (D) $(1, 10)$
5	160 is 20% of what number : (A) 800 (B) 8000 (C) 80 (D) 80000
6	Degree of linear equation is : (A) One (B) Two (C) Three (D) Four
7	Ratio between 10 minutes and 30 minutes is : (A) 2 : 3 (B) 1 : 3 (C) 2 : 4 (D) 1 : 5
8	The determinant of an identity matrix is equal to : (A) 0 (B) 1 (C) -1 (D) 2
9	The number '4' in a binary system is : (A) $(101)_2$ (B) $(100)_2$ (C) $(111)_2$ (D) $(1010)_2$
10	Simple interest on Rs.400 @ 9% annually in 2 years is : (A) 36 (B) 360 (C) 72 (D) 720

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(Academic Sessions 2019– 2021 to 2022 – 2024 )

**BUSINESS MATHEMATICS**

( Essay Type )

223-1<sup>st</sup> Annual-(INTER PART – I)

Time Allowed : 1.45 hours

Maximum Marks : 40

**SECTION – I**

2. Write short answers to any SIX (6) questions :

12

(i) Divide Rs.7500 in ratio 3 : 2.

(ii) Find the mean proportional between 4 and 9

(iii) A chair that costs Rs.190 is sold for Rs.250. Find the percentage of profit.

(iv) Find the simple interest on Rs.80000 invested for three years at 9% per annum.

(v) Define annuity due.

(vi) Solve  $\frac{3x}{8} + 5 = 17$

(vii) Solve  $3x + 2 = 2x + 6$

(viii) Solve by factorization  $x^2 + 9x + 18 = 0$

(ix) Solve by completing square method  $x^2 - 9x + 4 = 0$

3. Write short answers to any SIX (6) questions :

12

(i) If  $f(x) = x^2 - 5x + 6$ , find  $f(1), f(0)$

(ii) Find the slope and y-intercept of the equation  $y = \frac{3}{2}x + 2$

(iii) Convert  $(23)_{10}$  into binary number system.

(iv) Convert  $(10011)_2$  into decimal system.

(v) Evaluate  $(1101)_2 - (11)_2$

3. (vi) Define transpose of a matrix.

(vii) Find AB if  $A = \begin{bmatrix} 2 & 1 \\ 3 & 1 \end{bmatrix}, B = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$

(viii) If  $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}, B = \begin{bmatrix} 4 & 3 \\ 5 & 2 \end{bmatrix}$ , then find  $2A + 3B$

(ix) Find the value of  $x$  when  $A = \begin{bmatrix} 2x & -4 \\ -1 & 5 \end{bmatrix}$  and  $|A| = 16$

**SECTION – II**

**Note : Attempt any TWO questions.**

4. (a) 16 men complete a job in 10 days. How long would it take 32 men to complete the same job? 4

(b) Find the compound amount at the end of one year if Rs.2000 are invested at 10% interest compounded annually. 4

5. (a) A firm sells a single product as Rs.65 per unit and variable cost is Rs.47.50 and fixed cost is Rs.10000. Find the profit function in terms of 'x' No. of units produced and sold. 4

(b) Find the value of  $x$   $\frac{x+2}{x-3} + \frac{x-3}{x+2} = \frac{5}{2}$  4

6. (a) Solve by Cramer's rule  $x + y = 10$   
 $x - y = 2$  4

(b) Simplify :  $\{(100111)_2 + (10101)_2\} - (10111)_2$  4

Koll No \_\_\_\_\_

(To be filled in by the candidate)

(Academic Sessions 2017 – 2019 to 2020 – 2022)

## BUSINESS MATHEMATICS

# UJR-21

Q.PAPER ( Objective Type )

221-(INTER PART -I)

Time Allowed : 15 Minutes

PAPER CODE = 6644

Maximum Marks : 10

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	If $f(x) = 3x - 6$ , then $f(0)$ is :	(A) 6	(B) -6	(C) 3	(D) -3
2	In the binary system digits used :	(A) 1, 2	(B) 0, 2	(C) 1, 0	(D) 1, 10
3	If $x + 9 = 15$ then value of $x$ is :	(A) 6	(B) -6	(C) 7	(D) 24
4	If matrices A and B are non-singular then $(AB)^{-1} = :$	(A) $A^{-1}B^{-1}$	(B) $AB$	(C) $B^{-1}A^{-1}$	(D) $BA$

( Turn Over )

(2)

**MSR-21**

5	30% of 300 is :	(A) 80	(B) 90	(C) 70	(D) 60
6	Which value of $x$ is the root of the equation $11x - 22 = 11$ :	(A) $x = 3$	(B) $x = -3$	(C) $x = 4$	(D) $x = 33$
7	Ratio between 10 minutes and 30 minutes is :	(A) 2 : 3	(B) 1 : 3	(C) 2 : 4	(D) 1 : 5
8	The number 4 in binary system is :	(A) $(101)_2$	(B) $(100)_2$	(C) $(111)_2$	(D) $(1010)_2$
9	If matrix $A = \begin{bmatrix} 2 & 1 \\ 2 & 1 \end{bmatrix}$ , then $ A $ is :	(A) 4	(B) 0	(C) $-4$	(D) $-8$
10	The simple interest on Rs.700/- borrowed for one year at the rate of one percent per annum is :	(A) Rs.7	(B) Rs.70	(C) Rs.700	(D) Rs.80

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(Academic Sessions 2017 – 2019 to 2020 – 2022 )

**BUSINESS MATHEMATICS**

( Essay Type )

221-(INTER PART – I)

Time Allowed : 1.45 hours

Maximum Marks : 40

**2. Write short answers to any SIX (6) questions :**

**SECTION – I WR-2**

**12**

- (i) Find the value of  $x$ , if  $x : 250 :: 4 : 50$
- (ii) Find 10% of 15000.
- (iii) If cost of a bag is Rs.120 and selling price is Rs.150, what is the profit or loss?
- (iv) What is the "Principal" amount?
- (v) Find simple interest on Rs.5000 for 10 years at 8% per annum.
- (vi) Solve the equation  $\frac{9}{x+4} = \frac{5}{x-8}$
- (vii) Solve by factorization  $x^2 - 5x + 6 = 0$
- (viii) Find the value of  $x$ , if  $2x + 7 = 9$   
 $x + y = 8$
- (ix) Solve the equations  
 $x - y = 4$

**3. Write short answers to any SIX (6) questions :** **12**

- (i) If  $f(x) = x^2 - 4$  then find the value of  $f(4)$  and  $f(\sqrt{2})$ .
- (ii) Write the domain and range of the relation  $\{ (1, 3), (3, 3), (5, 1), (6, 1) \}$
- (iii) Define matrix.
- (iv) If  $A = \begin{bmatrix} 6 & 3 \\ 4 & x \end{bmatrix}$  is a singular matrix, then what will be the value of  $x$ ?

(Turn Over)

(2)

**44R-21**

3. (v) Find the value of  $x$  from  $X + \begin{bmatrix} 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 5 \\ 3 \end{bmatrix}$
- (vi) Find the inverse of  $\begin{bmatrix} 3 & -1 \\ 4 & 5 \end{bmatrix}$
- (vii) Simplify  $(111)_2 + (100)_2$
- (viii) Convert  $(101)_2$  into decimal number system.
- (ix) Multiply the binary number's  $(111)_2 \times (1110)_2$

### SECTION - II

**Note :** Attempt any **TWO** questions.

4. (a) A bus travels 200 km in 3 hours. How much time is needed for journey of 450 km? 4
- (b) At what rate Rs. 1000 double itself in 5 years? 4
5. (a) Solve  $\frac{y^2}{2} - \frac{y}{6} = \frac{1}{12}$  by using quadratic formula. 4
- (b) Find domain and range of the function  $f(x) = \frac{x^2 - 16}{x - 4}$ ,  $x \neq 4$  4
6. (a) Solve the system of equations  $2x - 5y = 1$  by using Cramer's rule. 4
- $3x + 4y = 36$
- (b) Evaluate by changing into binary number system :  $[(111011)_2 + (110001)_2] - (20)_{10}$  4

**54-221-(Essay Type)-28000**

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(Academic Sessions 2018 – 2020 to 2021 – 2023 )

**BUSINESS MATHEMATICS**

Q.PAPER ( Objective Type )

222-(INTER PART – I)

Time Allowed : 15 Minutes

*LHR-22*  
PAPER CODE = 6646

Maximum Marks : 10

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	$\begin{vmatrix} 3 & 4 \\ 2 & 2 \end{vmatrix} = ?$	(A) 0	(B) -1	(C) 2	(D) -2
2	The value of $f(x) = 4x^2 + 100$ at $x = 2$ is :	(A) 116	(B) 108	(C) 106	(D) 104
3	Sum of roots of equation $x^2 - 2x + 3 = 0$ is :	(A) 3	(B) -3	(C) 2	(D) -2
4	$(11)_2$ is equal to :	(A) 2	(B) 5	(C) 4	(D) 3
5	Interest is classified in --- classes :	(A) Two	(B) Three	(C) Four	(D) Five
6	If order of matrix A is $2 \times 3$ and order of matrix B is $3 \times 7$ , then order of AB is :	(A) $2 \times 7$	(B) $3 \times 7$	(C) $7 \times 2$	(D) $7 \times 3$
7	40 is what percent of 400 :	(A) 40%	(B) 30%	(C) 20%	(D) 10%
8	Degree of linear equation is :	(A) 1	(B) 2	(C) 3	(D) 4
9	In binary system 4 is equal to :	(A) $(10)_2$	(B) $(100)_2$	(C) $(11)_2$	(D) $(101)_2$
10	Number of types of proportion is :	(A) Two	(B) Three	(C) Four	(D) Five

54-222-(Objective Type)- 7000 (6646)

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(Academic Sessions 2018 – 2020 to 2021 – 2023 )

**BUSINESS MATHEMATICS**

( Essay Type )

222-(INTER PART – I)

Time Allowed : 1.45 hours

Maximum Marks : 40

**SECTION – I**

*LMR-22*

2. Write short answers to any SIX (6) questions :

12

- (i) Write two uses of ratio.
- (ii) Find mean proportional between 48 and 12.
- (iii) What is difference between cost price and sale price?
- (iv) Write any two applications of annuity in business.
- (v) Find simple interest on Rs.20000 invested for 4 years at the rate  $2\frac{1}{2}\%$  annually.
- (vi) Find two consecutive odd integers whose sum is 80.
- (vii) Solve the equation  $\frac{3x+2}{4} = \frac{2x+6}{5}$
- (viii) Define reciprocal equation.
- (ix) Solve the quadratic equation by factorization  $x^2 - 7x + 12 = 0$

3. Write short answers to any SIX (6) questions :

12

- (i) Define function with example.
- (ii) State the linear equation in standard form with example.
- (iii) Find the sum  $(1111)_2 + (1001)_2$
- (iv) Change into decimal form  $(1100011)_2$
- (v) Find the product  $(1111)_2 \times (11)_2$
- (vi) If  $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}, B = \begin{bmatrix} 4 & 3 \\ 5 & 7 \end{bmatrix}$ , find  $2A+B$
- (vii) Define skew-symmetric matrix.
- (viii) If  $A = \begin{bmatrix} 4 & 9 \\ 7 & 6 \end{bmatrix}$ , find  $A^{-1}$
- (ix) If  $A = \begin{bmatrix} 3 & 1 \\ 2 & 0 \end{bmatrix}, B = \begin{bmatrix} 4 & -1 \\ 2 & 3 \end{bmatrix}$  prove that  $AB \neq BA$

**SECTION – II**

**Note : Attempt any TWO questions.**

- 4. (a) The sides of a triangle are proportional to 5 cm, 7 cm and 8 cm. If the perimeter is 270 cm, find the length of each side. 4
- (b) Calculate compound interest when Rs.750 invested for 8 years at 12% per annum. 4
- 5. (a) Draw the graph of the function  $y = 3x - 5$  4
- (b) Solve simultaneous linear equations  $2x + y = 5$  4  
 $x + y = 10$
- 6. (a) Use Cramer's rule to solve the system  $7x + y = 4$  4  
 $3x - 6y = 8$
- (b) Without converting into decimal system, simplify : 4  
 $\{(1011100)_2 - (111100)_2\} - \{(10000)_2 - (1111)_2\}$