Roll No _____ Lahore Board-2024 _____ (To be filled in by the candidate)

(Academic Sessions 2020 – 2022 to 2023 – 2025)

BUSINESS MATHEMATICS

Q.PAPER (Objective Type) 224-1st Annual-(INTER PART – I) Time Allowed : 15 Minutes
Maximum Marks : 10

PAPER CODE = 6642

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	The ratio between 1.5 cm and 4.5 cm is :			
	(A) 2 : 5	(B) 3 : 1	(C) 1 : 3	(D) 2 : 3
2	If $40 : 30 :: 20 : x$ then $x =$ --- :			
	(A) 15	(B) 10	(C) 20	(D) 25
3	The simple interest on a loan of Rs.300 for 2 years at 7% is :			
	(A) Rs.22	(B) Rs.32	(C) Rs.42	(D) Rs.52
4	If $f(x) = x + 8$ then $f(1)$ is :			
	(A) 7	(B) 9	(C) 8	(D) 6

1-5	If $4x - 6 = 2x + 8$ then $x =$:			
	(A) 4	(B) 5	(C) 6	(D) 7
6	A quadratic equation is also called an equation of degree :			
	(A) 1	(B) 2	(C) 3	(D) 4
7	8 in binary system is : :			
	(A) $(1000)_2$	(B) $(1001)_2$	(C) $(1010)_2$	(D) $(1011)_2$
8	$(1010)_2$ in decimal form is :			
	(A) 10	(B) 12	(C) 8	(D) 14
9	$(AB)^t$ is equal to :			
	(A) A^tB^t	(B) B^tA^t	(C) AB^t	(D) A^tB
10	The order of the matrix [2 5 8] is :			
	(A) 3×3	(B) 1×1	(C) 3×1	(D) 1×3

Roll No:_____ Lahore Board-2024 _____ (To be filled in by the candidate)

(Academic Sessions 2020 – 2022 to 2023 – 2025)

BUSINESS MATHEMATICS

(Essay Type) 224-1st 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) Find the ratio between one hour and 45 minutes.

(ii) Define inverse proportion.

(iii) 270 is what % of 900?

(iv) Find the simple interest on Rs.15000 for one and a half year at 5% annually.

(v) Define an Annuity Certain.

(vi) Solve $4x-3=2x+7$

(vii) Solve the equation $4(3y-9)=7(2-5y)+22y$

(viii) Solve the equation $5x^2+3x=0$

(ix) Write down the quadratic formula.

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

(i) If $f(x)=4x-3$, then find $f(0)$ and $f(1)$.

(ii) Draw the graph of $y=2x-5$

(iii) Find the value in decimal system $(945)_{10}+(111)_2=?$

(iv) Evaluate $(1101)_2-(111)_2=?$

(v) Convert 37 into binary number system.

3. (vi) Find AB if $A=\begin{bmatrix}1\\7\end{bmatrix}$ and $B=[7 \quad 1]$

(vii) Define diagonal matrix, give an example.

(viii) For what value of x the matrix $\begin{bmatrix}2x & -4\\-1 & 2\end{bmatrix}$ will be singular.

(ix) Show that the inverse of matrix $\begin{bmatrix}3 & 6\\7 & 14\end{bmatrix}$ does not exist.

SECTION – II

Note : Attempt any TWO questions.

4. (a) A bus travels 200 km in 3 hours. How much time is needed for a journey of 480 km? 4

(b) The amount of simple interest for Rs.15,000 for 2 years is Rs.1000. Find the rate of interest. 4

5. (a) Draw a graph defined by the function $y=2x+3$ 4

(b) Solve $8x^2-14x-15=0$ by quadratic equation. 4

6. (a) Solve the following system of linear equations by Cramer's rule $3x+2y=5$, $2x-y=1$ 4

(b) Evaluate : $\{(1011)_2+(1101)_2\}+(1001)_2$ 4

54-224-(Essay Type)-23000

Roll No _____ Lahore Board-2023 _____ (To be filled in by the candidate)

(Academic Sessions 2019 – 2021 to 2022 – 2024)

BUSINESS MATHEMATICS

Q.PAPER (Objective Type) 223-1st 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 [1 3 5] is :			
	(A) 1×1	(B) 2×2	(C) 3×1	(D) 1×3
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

Roll No _____ (To be filled in by the candidate)

(Academic Sessions 2019– 2021 to 2022 – 2024)

BUSINESS MATHEMATICS

(Essay Type) 223-1st 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 2 A + 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 Crammer's rule $x + y = 10$, $x - y = 2$ 4

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

54-223-(Essay Type)-20000

Roll No _____ (To be filled in by the candidate)

(Academic Sessions 2018 – 2020 to 2021 – 2023)

BUSINESS MATHEMATICS

Q.PAPER (Objective Type) 222-(INTER PART – I) Time Allowed : 15 Minutes

Maximum Marks : 10

PAPER CODE = 6646

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 2×3 and order of matrix B is 3×7, then order of AB is :			
	(A) 2×7	(B) 3×7	(C) 7×2	(D) 7×3
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

Roll No _____ (To be filled in by the candidate)

(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

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 $(1111)_2\times(11)_2$

3. (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 $\begin{aligned}2x+y&=5\\ x+y&=10\end{aligned}$ 4

6. (a) Use Cramer's rule to solve the system $\begin{aligned}7x+y&=4\\ 3x-6y&=8\end{aligned}$ 4

(b) Without converting into decimal system, simplify :
$\{(1011100)_2-(111100)_2\}-\{(10000)_2-(1111)_2\}$ 4

Roll No _____ (To be filled in by the candidate)

(Academic Sessions 2017 – 2019 to 2020 – 2022)

BUSINESS MATHEMATICS

Q.PAPER (Objective Type) 221-(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	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)

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 $\lvert A \rvert$ 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

Roll No _____ Lahore Board-2021 _____ (To be filled in by the candidate)

(Academic Sessions 2017 – 2019 to 2020 – 2022)

BUSINESS MATHEMATICS

(Essay Type) 221-(INTER PART – I) Time Allowed : 1.45 hours

Maximum Marks : 40

SECTION – I

2. Write short answers to any SIX (6) questions : **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 $2x + 7 = 9$

(ix) Solve the equations
$$x + y = 8$$
$$x - y = 4$$

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 ?

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 $\begin{matrix}2x-5y=1\\3x+4y=36\end{matrix}$ by using Crammer's rule. 4

(b) Evaluate by changing into binary number system : $[(111011)_2+(110001)_2]-(20)_{10}$ 4

Roll No _____ Lahore Board-2019 _____ (To be filled in by the candidate)

(Academic Sessions 2015 – 2017 to 2018 – 2020)

BUSINESS MATHEMATICS

Q.PAPER (Objective Type) 219-(INTER PART – I) Time Allowed : 15 Minutes

Maximum Marks : 10

PAPER CODE = 6648

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	The annuity in which terms of annuity is fixed, is called :			
	(A) Ordinary annuity	(B) Annuity due	(C) Annuity certain	(D) Simple interest
2	A first degree equation is called :			
	(A) Linear	(B) Non-linear	(C) Quadratic	(D) Simultaneous
3	The determinant of an identity matrix is :			
	(A) 0	(B) 1	(C) -1	(D) 2
4	What percentage of 300 is 30 :			
	(A) 3%	(B) 5%	(C) 10%	(D) 15%

(Turn Over)

5	If $x : 4 :: 3 : 2$ then value of x is :			
	(A) 2	(B) 4	(C) 8	(D) 6
6	Formula for simple interest is :			
	(A) Prt	(B) $P(1+i)^n$	(C) $P(1-i)^n$	(D) SRi
7	In the binary system 5 is :			
	(A) $(100)_2$	(B) $(110)_2$	(C) $(11)_2$	(D) $(101)_2$
8	Solve $y - x = 2$ and $y + x = 2$ for y.			
	(A) 4	(B) 2	(C) 0	(D) -2
9	Solution set of $x^2 - 4 = 0$ is :			
	(A) $\{2\}$	(B) $\{-2\}$	(C) $\{2, -2\}$	(D) $\{4\}$
10	If $x + 4 = 12$ then value of x is :			
	(A) 8	(B) 4	(C) 16	(D) 12

Roll No _____ Lahore Board-2019 _____ (To be filled in by the candidate)

(Academic Sessions 2015 – 2017 to 2018 – 2020)

BUSINESS MATHEMATICS

(Essay Type) 219-(INTER PART – I)

Time Allowed : 1.45 hours
Maximum Marks : 40

SECTION – I

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

(i) Define proportion.

(ii) Reduce to its lowest form 60 : 180

(iii) Find 40% of 300.

(iv) Express 25% as a fraction.

(v) Find the simple interest on Rs.2000 for one year at 10%.

(vi) Define principal amount.

(vii) Define ordinary annuity.

(viii) Solve for x $5(x-3)=2(2x+4)$

(ix) Solve for x $4x-7=2x+1$

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

(i) Explain quadratic equation.

(ii) Write the formula of quadratic equation.

(iii) Solve $x+y=40$, $x-y=15$

(iv) Define consistent system of equation.

(v) Define variable and constant.

(Turn Over)

3. (vi) Define number system used in computer.

(vii) Convert $(35)_{10}$ in binary system.

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

(ix) If $A=\begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix}$, find A^{-1}

SECTION – II

Note : Attempt any TWO questions.

4. (a) If the stay of 10 persons for 14 days in a hotel costs Rs.10,000, find the cost of stay of 6 persons for 7 days. 4

(b) Find the compound interest if 50,000 loaned for 6 years @ 12% per annum. 4

5. (a) Solve $8x^2-14x-15=0$ by using quadratic formula. 4

(b) Solve $\begin{matrix} 3x+2y=54 \\ 2x-3y=10 \end{matrix}$ by elimination method. 4

6. (a) Solve $\begin{matrix} 3x+y=5 \\ 6x-y=7 \end{matrix}$ by using Crammer's rule. 4

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

Paper I	(Objective Type)	**Ist– A – Exam 2024**	
Time :	15 Minutes	**Inter (Part – I)**	(Commerce Group)
Marks :	10	Session (2022 – 24) & (2023 – 25)	

Note : Four choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. on the Objective Bubble Sheet. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1 (1)	The Simplest form of 40 : 240 is : (A) 6 : 1 (B) 1 : 6 (C) 2 : 6 (D) 6 : 3
(2)	If $\frac{35}{125} = \frac{7}{x}$; then x = : (A) 25 (B) 30 (C) 35 (D) 40
(3)	Simple Interest is Calculated by Formula : (A) $I = prt$ (B) $I = pt$ (C) $I = \frac{pt}{r}$ (D) $I = \frac{pr}{t}$
(4)	In which quadrant ; (–3 , 2) lies : (A) I (B) II (C) III (D) IV
(5)	If $4x - 6 = 2x + 8$ then value of x : (A) 4 (B) 5 (C) 6 (D) 7
(6)	The Solution Set of $x^2 - 1 = 0$ is : (A) $\{0, 1\}$ (B) $\{0, -1\}$ (C) $\{-1, 1\}$ (D) $\{1, 2\}$
(7)	$(11)_2 + (10)_2 =$: (A) $(100)_2$ (B) $(110)_2$ (C) $(101)_2$ (D) $(111)_2$
(8)	Conversion of $(4)_{10}$ into binary system is : (A) $(10)_2$ (B) $(11)_2$ (C) $(111)_2$ (D) $(100)_2$
(9)	For two matrices $(AB)^t =$ (A) $A^t B^t$ (B) AB^t (C) $B^t A^t$ (D) $A^t B$
(10)	If $A = \begin{bmatrix} 2 & 4 \\ 4 & 8 \end{bmatrix}$; then $\lvert A \rvert =$: (A) 0 (B) 32 (C) 16 (D) 10

		(2022 – 24) & (2023 – 25)	
Business Mathematics (Subjective)	**Ist – A – Exam 2024**	Time : 1 : 45 Hours Marks : 40	(Commerce Group)

Note: It is compulsory to attempt any (6 – 6) Parts each from Q.No. 2 and Q.No.3 while attempt any (2) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Bahawalpur Board-2024

Part - I — 12 x 2 = 24

Q.No.2	(i)	Define Inverse Proportion .
	(ii)	Find x if $x : \frac{1}{4} :: 13 : 2$
	(iii)	15% of the Profit on Investment is Rs. 400/-. Find the Investment.
	(iv)	Find Simple Interest on Rs. 50,000/- invested for 3 years at rate of 4% p.a.
	(v)	A Shirt is sold at Rs. 960/- the shopkeeper lost 20%. Find the cost price of Shirt and loss.
	(vi)	Solve $4x - 2x = 7 + 3$
	(vii)	How many root contain linear equation?
	(viii)	Solve by Factorization $x^2 - 10x + 9 = 0$
	(ix)	Write down the Quadratic Formula.
Q.No.3	(i)	Find the range of relation $\{(1,4),(2,6),(3,12),(4,17)\}$
	(ii)	Draw the graph of $3x - 2y = 6$
	(iii)	Convert $(7777)_{10}$ to Binary Number System.
	(iv)	Convert $(101101)_2$ to Decimal Number System.
	(v)	Evaluate $(1101)_2 + (1111)_2$
	(vi)	Define " Row Matrix "
	(vii)	If $A = \begin{bmatrix} 2 & 4 \\ 3 & 7 \end{bmatrix}$ Find A^t.
	(viii)	If $A = \begin{bmatrix} 1 & 2 \\ -1 & 3 \end{bmatrix}$ Find $\|A\|$.
	(ix)	Find the value of x , if $\begin{bmatrix} 2 & 1 \\ 3 & x \end{bmatrix}$ is a Singular Matrix.

Part - II — 8 x 2 = 16

Q.No.4	(a)	Mr. Khan , Mr . Furqan and Mr. Touseef are three partners , they earn a Profit of Rs. 18000/- . The Profit can be shared in the ratio **A : B = 2 : 5 and B : C = 10 : 4** Find Share of each Partner in Profit.	(4)
	(b)	Find the amount of an annuity of Rs. 1200/- Payable at the end of each year for 15 years at the rate of 8% Compounded annually.	(4)
Q.No.5	(a)	If $f(x) = x^2 - 2x + 1$ find $f(2)$, $f(0)$, $f(-1)$ and $f(3)$	(4)
	(b)	Solve the equation by factorization method $x^2 - 10x = 24$	(4)
Q.No.6	(a)	Solve the system of equations by use of matrices method : $x + 4y = 5$ $3x - 2y = 1$	(4)
	(b)	Simplify $(1001)_2 \times (101)_2$	(4)

Bahawalpur Board-2023

Business Mathematics		L.K.No. 1037	Paper Code No. 6641
Paper I	(Objective Type)	**Ist – A – Exam 2023**	
Time :	15 Minutes	**Inter (Part – I)**	(Commerce Group)
Marks :	10	Session (2020 – 22) to (2022 – 24)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1	1 Hour : 30 Minutes = ?
(1)	(A) 1 : 30 (B) 2 : 30 (C) 2 : 1 (D) 1 : 2
(2)	Rs. 30/- is what percent of 300 : (A) 30 % (B) 10 % (C) 20 % (D) 15 %
(3)	The formula for finding Rate is : (A) $\frac{I \times 100}{P}$ (B) $\frac{I \times 100}{P \times T}$ (C) $\frac{P \times 100}{I \times T}$ (D) $\frac{T \times 100}{P \times I}$
(4)	If $f(x) = 4x - 3$, then $f(1) = ?$: (A) 9 (B) 5 (C) 1 (D) −3
(5)	If $3x + 2 = 2x + 8$, then : (A) $x = 6$ (B) $x = 5$ (C) $x = 4$ (D) $x = 3$
(6)	The solution set of $x^2 + 5x - 6 = 0$ is : (A) $x = -1$, $x = -6$ (B) $x = 1$, $x = -6$ (C) $x = 2$, $x = 3$ (D) $x = -2$, $x = -3$
(7)	5 is equal to the number in Binary System : (A) $(101)_2$ (B) $(100)_2$ (C) $(111)_2$ (D) $(11)_2$
(8)	$(1011)_2$ is equivalent to Decimal Number : (A) 11 (B) 12 (C) 40 (D) 32
(9)	The order of Matrix $\begin{bmatrix} 2 \\ 5 \end{bmatrix}$ is : (A) 2 x 2 (B) 2 x 1 (C) 1 x 2 (D) 1 x 1
(10)	If $A = \begin{bmatrix} 6 & 9 \\ 12 & 15 \end{bmatrix}$ *then* $\begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$ *is* : (A) 3 A (B) A (C) A^{-1} (D) $\frac{1}{3}A$

Roll No.	1037 - 1500	Session (2020 – 22) to (2022 – 24)	Inter (Part – I)
Business Mathematics (Subjective)	Ist – A – Exam 2023	Time : 1 : 45 Hours Marks : 40	(Commerce Group)

Note: It is compulsory to attempt any (6 – 6) Parts each from Q.No. 2 and Q.No.3 while attempt any (2) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Bahawalpur Board-2023

Part - I

12 x 2 = 24

Q.No.2	(i)	What is Inverse Proportion ?
	(ii)	Find ' x ' if 14 : 19 :: x : 38
	(iii)	Find the Simple Interest on Rs. 8000/- at 10 % p.a. for 10 years.
	(iv)	The list price of a shirt is Rs. 2250/- and 35 % discount is offered on payment. Find the sale price of the shirt.
	(v)	Solve the equation : $9x + 4 = 4x + 29$
	(vi)	5 % of an amount is Rs.200/- find the amount.
	(vii)	If $2x - 7 = 13$, find ' x '.
	(viii)	Solve by Quadratic Formula : $x^2 - 3x - 2 = 0$
	(ix)	Solve $x^2 - 5x - 6 = 0$ by factorization.
Q.No.3	(i)	Show that $f(x) = x^4 + x^2$ is an even or odd function.
	(ii)	If $y = 2x + 1$, find slope and y – intercept.
	(iii)	Define Binary Number System.
	(iv)	Simplify : $(1001)_2 + (11)_2$
	(v)	Evaluate : $(1110)_2 - (101)_2$
	(vi)	If $A = \begin{bmatrix} 1 & 2 \\ -1 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} -2 \\ 5 \end{bmatrix}$ then find AB
	(vii)	If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 4 & 3 \\ 5 & 2 \end{bmatrix}$ then find $2A + 3B$
	(viii)	Check the Matrix $\begin{bmatrix} 7 & 2 \\ 4 & 1 \end{bmatrix}$ is Singular or Non – Singular ?
	(ix)	What do you understand by Singular Matrix ?

Part - II

8 x 2 = 16

Q.No.4	(a)	A batsman score 110 runs which included 4 boundaries and 5 sixes. What percent of his total score did he make by running between wickets ?	(4)
	(b)	The compound interest on Rs. 3 , 00 , 000/- at 7 % per annum is Rs.43,470/- find the period in years.	(4)
Q.No.5	(a)	Find the equation of Straight Line when its slope is – 5 and y – intercept is $\frac{4}{5}$	(4)
	(b)	Find the value of x : $\frac{5x-2}{3x+1} = \frac{5x-1}{3x+2}$	(4)
Q.No.6	(a)	Solve $7x - 3y = 3$, $2x + y = 2$ by using Crammer Rule.	(4)
	(b)	Add $(1101)_2$ to $(110)_2$ and subtract $(1111)_2$ from the Sum.	(4)

Business Mathematics		L.K.No. 1135	Paper Code No. 6641
Paper I	(Objective Type)	Inter – A – 2022	
Time :	15 Minutes	Inter (Part – I)	(Commerce Group)
Marks :	10	Session (2020 – 22) to (2021 – 23)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1 (1)	If $x : \frac{1}{4} :: 12 : 3$, then value of 'x' is : (A) 1 (B) 2 (C) 3 (D) 4
(2)	The sum of money paid by the purchaser for any article is called : (A) Cost Price (B) Sale Price (C) Profit (D) Loss
(3)	The Simple Interest on Rs. 5000/- borrowed for 4 years at 11 % per annum is : (A) 2000 (B) 2100 (C) 2200 (D) 2400
(4)	If a line passes through the points A (1 , 2) and B (7 , 8) then its slope is : (A) 0 (B) 1 (C) 2 (D) 3
(5)	If 6 times a number is 240 , then the number is : (A) 10 (B) 20 (C) 30 (D) 40
(6)	If $2x^2 = 32$, then solution set is : (A) $\{-4, 4\}$ (B) $\{2, 4\}$ (C) $\{4, 8\}$ (D) $\{-4, -8\}$
(7)	If $A = \begin{bmatrix} 2 & 4 \\ 6 & x \end{bmatrix}$ is a Singular Matrix, the value of 'x' is : (A) 10 (B) 12 (C) −10 (D) −12
(8)	The order of Matrix $\begin{bmatrix} 2 \\ 3 \end{bmatrix}$ is : (A) 1 x 2 (B) 1 x 1 (C) 2 x 1 (D) 2 x 2
(9)	$(1001)_2$ to its equivalent number in decimal system is : (A) 6 (B) 7 (C) 8 (D) 9
(10)	The sum $(101)_2 + (11)_2$ will be : (A) $(1001)_2$ (B) $(1100)_2$ (C) $(1000)_2$ (D) $(1010)_2$

Roll No.	1135 - 2)08	Session (2020 – 22) to (2021 – 23)	Inter (Part - I)
Business Mathematics (Subjective)	Inter – A –2022	Time 1 : 45 Hours Marks : 40	(Commerce Group)

Note: It is compulsory to attempt any (6 – 6) Parts each from Q.No. 2 and Q.No.3 while attempt any (2) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Bahawalpur Board-2022

Part - I 12 x 2 = 24

Q.No.2	(i)	8 men can dig a trench in 15 hours. How long will 6 men take ?
	(ii)	The State sales tax is 15 %, what is the amount of the sales tax on a purchase of Rs. 5238/- ?
	(iii)	If the amount for 2 years at 6 % is Rs. 3920/- what was the Principal Amount ?
	(iv)	Define Annuity.
	(v)	Solve the equation : $\frac{1}{x+3} - \frac{1}{x-3} = 3$
	(vi)	Find the Sum and Product of the Roots of $4x^2 + 5x - 21 = 0$
	(vii)	Solve the Linear Equation $\frac{3x+2}{4} = \frac{2x+6}{5}$
	(viii)	If the Simple Interest on Rs. 15000/- for 3 years is Rs.900/-, find the Rate of Interest.
	(ix)	Solve by Quadratic Formula : $4x^2 + 5x - 21 = 0$
Q.No.3	(i)	Find the Slope and Y – Intercept of the equation $2y - 3x = 4$
	(ii)	If $f(x) = 2x + 1$, then find $f(-1)$ and $f(0)$
	(iii)	Change $(1110)_2$ into Decimal Number.
	(iv)	Solve : $(111)_2 - (101)_2$
	(v)	Evaluate : $(1101)_2 \times (101)_2$
	(vi)	Find A^{-1} if $A = \begin{bmatrix} 2 & 3 \\ 5 & 4 \end{bmatrix}$
	(vii)	If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 6 & 8 \\ 4 & -4 \end{bmatrix}$ then find $A + B$ and A^2
	(viii)	Differentiate between Row and Column Matrix.
	(ix)	Define Transpose of a Matrix by giving one example.

Part - II 8 x 2 = 16

Q.No.4	(a)	If 20 men can prepare 10 office tables in a day, how many men are required to prepare 25 such office tables in a day ?	(4)
	(b)	Calculate the compound interest earned for Rs.5000/- invested for 6 years at the rate of 7 % per annum.	(4)
Q.No.5	(a)	Solve the equation $x^2 - 3\left(x + \frac{25}{12}\right) = 9x$ by using Quadratic Formula.	(4)
	(b)	Sketch the graph of $y = x^2 - 2x - 8$	(4)
Q.No.6	(a)	Prove that $AB \neq BA$ if $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & 3 \\ 1 & 7 \end{bmatrix}$	(4)
	(b)	Divide $(110110)_2$ by $(1001)_2$	(4)

Business Mathematics | L.K.No. 1148 | Paper Code No. 6641

Paper I (Objective Type) | Inter-A-2019 | New Pattern

Time Allowed : 15 Minutes | Inter (Part - I)

Maximum Marks : 10 | Commerce Group | Session (2015 - 2017) to (2018 - 20)

Note : Four possible choices A, B, C, D to each question are given. Which choice is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question

Q.No.1 (1)	Equality of two ratios is called : (A) Proportion (B) Continued Ratio (C) Mixed Number (D) Conditional Equation
(2)	What Percentage Rs. 84/- is of Rs. 400/- : (A) 22 % (B) 21 % (C) 23 % (D) 40 %
(3)	The Simple Interest on Rs. 1000/- for 3 years @ 10 % is : (A) 300 (B) 200 (C) 3000 (D) 100
(4)	The time between two successive payments of an annuity is called : (A) Payment Period (B) Present Value (C) Interval Value (D) Future Value
(5)	The term Function is introduced by : (A) Plato (B) H.G. Wells (C) Gottfried (D) Fisher
(6)	If $3x + 2 = 2x + 8$ then the value of " x " is : (A) 6 (B) 5 (C) 4 (D) 2
(7)	The equation $4x^2 - x + 6 = 0$ is example of : (A) Linear Equation (B) Quadratic Equation (C) 3rd Degree Equation (D) Exponential Equation
(8)	The system $x - y = 8$ and $x + y = 10$ has solution : (A) (9,1) (B) (1,9) (C) (10,1) (D) (1,10)
(9)	Change of 31 to base 2 is : (A) $(11111)_2$ (B) $(1111)_2$ (C) $(111)_2$ (D) $(10001)_2$
(10)	The order of Matrix $\begin{bmatrix} 1 & 2 & 4 \\ 3 & 0 & -3 \end{bmatrix}$ is : (A) 2 x 3 (B) 3 x 2 (C) 2 x 6 (D) 6 x 2

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Roll No.	1148 - 8520	New Pattern
Business Mathematics (Subjective)	Inter-A-2019	Inter (Part - I)
Time = 1: 45 Hrs Total Marks : 40	Commerce Group	Session (2015 - 17) to (2018 - 20)

Note : It is compulsory to attempt (6 - 6) parts each from Q.No.2 and 3 while attempt any (02) questions from Part II. Write same Question No. and its Part No. as given in the question paper.

Bahawalpur Board-2019 — Part - I — pakcity.org — 12 x 2 = 24

Q.No.2 (i) Divide Rs. 60,000/- in the Ratio 7 : 5

(ii) Define Inverse Proportion.

(iii) 876 is 30 % of what amount ?

(iv) Find 70 % of 6000 .

(v) Define Invoice Price.

(vi) Mr. Akram purchase an item on a discount of 15 % and paid Rs. 1700/- find the List Price.

(vii) Find the Simple Interest on Rs. 50,000/- if invested for 3 - years @ 10 % per annum.

(viii) Define Ordinary Annuity.

(ix) If $9x + 4 = 4x + 29$ find x .

Q.No.3 (i) Solve $x^2 - 81 = 0$

(ii) Solve $3x^2 = 27$

(iii) Solve $2x + y = 12$, $x - 3y = -1$, find value of x.

(iv) Define Function.

(v) Define Singular Matrix.

(vi) Convert 7 into Binary System.

(vii) If $A = \begin{bmatrix} 1 & 2 \\ 4 & 8 \end{bmatrix}$ Find $|A|$

(viii) Convert $(101)_2$ into Decimal Number System.

(ix) If $f(x) = \dfrac{x}{x+1}$ then find $f(1)$

Part - II

Q.No.4 (a) 20 men can finish a job in 13 days. How many more men are required to do the same job in 5 days? (4)

(b) Find the Compound Interest due on Rs. 80,000/- invested for 3 years at $7\frac{1}{2}$ % p.a. (4)

Q.No.5 (a) If $H(S) = S^2 - 4$, find $H(3)$, $H(\sqrt{2})$, $H(-2)$ and $H(0)$. (4)

(b) Solve the equation $x^{2/3} - 2x^{1/3} = 8$ (4)

Q.No.6 (a) If $A = \begin{bmatrix} 2 & 3 & 4 \\ 1 & 0 & 2 \\ -4 & 1 & 3 \end{bmatrix}_{3 \times 3}$ Find A_{11}, A_{22}, A_{33}, A_{12} (4)

(b) Evaluate : $(1110)_2 + (1001)_2$ (4)

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Roll No. of Candidate : _____

BUSINESS MATHEMATICS (Commerce Group) **Intermediate Part-I, Class 11th (1st A 324 - IV)** **Paper: I**

Time: 15 Minutes **OBJECTIVE** **Code: 6647** **Marks: 10**

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

1. 1. If a : b = c : d then

(A) ab = cd (B) ac = bd (C) ad = bc (D) abc = d

2. If three times of a number is 150, then number is

(A) 50 (B) 100 (C) 35 (D) 65

3. Conversion of $(10)_2$ in decimal system is

(A) 2 (B) 3 (C) 4 (D) 5

4. 18 to 30 is same as

(A) 3 : 4 (B) 3 : 5 (C) 6 : 7 (D) 2 : 3

5. If $A = [2 \quad 3 \quad 4]$; then A^t =

(A) $\begin{bmatrix} 3 \\ 2 \\ 4 \end{bmatrix}$ (B) $\begin{bmatrix} 4 \\ 3 \\ 2 \end{bmatrix}$ (C) $[4 \quad 3 \quad 2]$ (D) $\begin{bmatrix} 2 \\ 3 \\ 4 \end{bmatrix}$

6. The value of $f(x) = 4x + 100$ at $x = 2$ is

(A) 104 (B) 106 (C) 108 (D) 110

7. If $X = \begin{bmatrix} 3 \\ 4 \end{bmatrix} + \begin{bmatrix} -8 \\ 5 \end{bmatrix}$, then X =

(A) $\begin{bmatrix} -5 \\ 9 \end{bmatrix}$ (B) $\begin{bmatrix} 9 \\ 5 \end{bmatrix}$ (C) $\begin{bmatrix} -5 \\ -9 \end{bmatrix}$ (D) $\begin{bmatrix} 5 \\ 9 \end{bmatrix}$

8. The solution of $x^2 - x = 0$

(A) 0 , 4 (B) 1 , –1 (C) 0 , 1 (D) 1 , –1

9. If an amount is doubled in 1 year, then rate of simple interest is

(A) 10% (B) 50% (C) 75% (D) 100%

10. $(101)_2 \times (10)_2$ =

(A) $(1000)_2$ (B) $(1010)_2$ (C) $(1001)_2$ (D) $(1111)_2$

247-(IV)-1st A 324-17000

BUSINESS MATHEMATICS **Intermediate Part-I, Class 11th (1st A 324)** **Paper: I**
(Commerce Group)

Time: 1:45 Hours **SUBJECTIVE** **Marks: 40**

Note: Section-I is compulsory. Attempt any TWO (2) questions from Section-II.

SECTION – I

2. Write short answers to any SIX questions. **(2 x 6 = 12)**

i. Distribute Rs 1000 between two students in the ratio of 2 : 3

ii. Find x if 14 : 19 :: x : 38

iii. 250 is 20% of what?

iv. Find simple interest on Rs 8000 at 10% p.a. for 40 days.

v. Define ordinary annuity.

vi. Solve the equation $2x + 3 = 6 - (2x - 3)$

vii. Solve for x : $\frac{5x+4}{3x+2} = \frac{3}{5}$

viii. What are the methods to solve quadratic equation?

ix. Solve $4x^2 + 7x - 1 = 0$ by using quadratic formula.

3. Write short answers to any SIX questions. **(2 x 6 = 12)**

i. Find the domain of function $f(x) = 3x - 7$

ii. Draw the graph of $f(x) = 2x - 3$

iii. Convert $(421)_{10}$ to Binary Number System.

iv. Convert $(11111)_2$ to Decimal Number System

v. Add $(1011)_2$, $(1100)_2$

vi. Define "Matrix"

vii. If $A = \begin{bmatrix} 1 & 2 \\ -3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 3 \\ 5 & -2 \end{bmatrix}$. Find A + B

viii. If $A = \begin{bmatrix} 4 & -4 \\ -6 & -5 \end{bmatrix}$. Find |A|.

ix. Find the value of x , if $\begin{bmatrix} 2 & x \\ 5 & 10 \end{bmatrix}$ is a singular matrix.

SECTION – II

4. (a) A family spends Rs 4004 for food out of total income of Rs 15400. How much money is needed for food if such family earns Rs 18000? **4**

(b) Find compound amount of Rs 10,000 payable at the end of 8 years at the rate of 6% compounded annually. **4**

5. (a) Find x-intercept, y-intercept and draw the graph of $f(x) = 3x - 5$ **4**

(b) Solve $\frac{3}{x-2} + \frac{1}{x+2} = 5$ **4**

6. (a) Solve the system by Crammer's Rule : **4**

$$3x + y = 1$$
$$x - 2y = -2$$

(b) Simplify $(11011)_2 \times (11110)_2$ **4**

Roll No._____

Business Mathematics (Commerce Group) **(INTER PART – I Class 11th) 322** **PAPER: I**

Time: 15 Minutes **OBJECTIVE** **Marks: 10**

Code: 6641

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting of filling two more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank.

1- 1- In the proportion $a : b :: c : d$ the means are _____.

(A) a, b (B) b, c (C) c, d (D) a, d

2- 20 % of 12000 is = _____.

(A) 2400 (B) 3600 (C) 240 (D) 360

3- Formula for simple interest is I = _____.

(A) $\frac{P}{R \times T}$ (B) $\frac{T}{R \times P}$ (C) $\frac{R}{P \times T}$ (D) $P \times R \times T$

4- If $f(x) = 4x^2 - 5x + 1$ then the value of $f(-2)$ is = _____.

(A) 3 (B) 6 (C) 27 (D) 25

5- If $ax + b = c$ then the value of x is = _____.

(A) $\frac{b+c}{a}$ (B) $\frac{c-b}{a}$ (C) $\frac{b-c}{a}$ (D) $\frac{a+b}{c}$

6- Discriminant of $2x^2 - 3x + 2 = 0$ is _____.

(A) 7 (B) 8 (C) 9 (D) –7

7- Additive inverse of $\begin{bmatrix} -7 & 2 \\ 1 & 5 \end{bmatrix}$ is = _____.

(A) $\begin{bmatrix} -7 & -2 \\ 1 & 5 \end{bmatrix}$ (B) $\begin{bmatrix} 7 & -2 \\ -1 & -5 \end{bmatrix}$ (C) $\begin{bmatrix} 7 & 2 \\ 1 & 5 \end{bmatrix}$ (D) $\begin{bmatrix} 7 & -2 \\ 1 & -5 \end{bmatrix}$

8- Number of digits in decimal system is = _____.

(A) 10 (B) 8 (C) 9 (D) 2

9- Sum of $(111)_2$ and $(10)_2$ is = _____.

(A) $(1010)_2$ (B) $(1110)_2$ (C) $(1001)_2$ (D) $(1100)_2$

10- If order of a matrix B is 3 x 4, then order of B^t is = _____.

(A) (3 x 3) (B) (3 x 4) (C) (4 x 4) (D) (4 x 3)

245-322-17000

Business Mathematics (Commerce Group) **(INTER PART – I Class 11th) 322** **PAPER: I**

Time: 1:45 hours **SUBJECTIVE** **Marks: 40**

Note: Section I is compulsory. Attempt any two (2) questions from Section II.

SECTION I

2. Write short answers to any SIX questions: **(2 x 6 = 12)**

i- Reduce the ratio 48 : 120 to its lowest form.
ii- Find the value of x if, 2 : 4 :: 8 : x
iii- What percentage is 285 of 800?
iv- Define ordinary annuity and how it is different from annuity due.
v- Rs.15000 deposited for 3 years at 10 % per annum. Calculate simple interest.
vi- Solve the equation: $7x + 10 = 3x + 22$
vii- Four times a number is 160. What is number?
viii- Solve by factorization $x^2 - 10x + 24 = 0$
ix- Define quadratic equation and write the quadratic formula.

3. Write short answers to any SIX questions: **(2 x 6 = 12)**

i- Explain the domain and range of a function.
ii- Find g(2x) & g(–y) for the function $g(x) = x^2 - x$
iii- Change 5 into binary number.
iv- Simplify $(1001)_2 \times (101)_2$
v- Convert $(1110)_2$ into decimal number system.
vi- Define square matrix and give its example.
vii- If $A = \begin{bmatrix} 3 & -1 \\ 2 & 1 \end{bmatrix}$, $B = \begin{bmatrix} -2 & 3 \\ 4 & 5 \end{bmatrix}$ then find $(A + B)^t$
viii- If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, find A^2
ix- If $A = \begin{bmatrix} 4 & 1 \\ 5 & 8 \end{bmatrix}$, then find $|A|$ and adj, A

SECTION II

4- **(a)** The price of a radio set is raised from RS.600 to Rs.624. Find the price percentage increase. **4**

(b) Calculate compound interest when Rs.750 invested for 8 years at 12 % per annum. **4**

5- **(a)** Solve the following equation $\frac{2x-4}{5x+2} = \frac{4x-8}{10x+3}$ **4**

(b) Draw the graph of the function: $y = x + 3$ **4**

6- **(a)** If $A = \begin{bmatrix} -2 & 6 \\ 4 & 7 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix}$ Prove the $(AB)^t = B^t A^t$ **4**

(b) Evaluate $(11110)_2 \times (1011)_2$ **4**

245-322-17000

Gujranwala Board-2019

Roll No. of Candidate: _____

Business Math (Commerce Group) (INTERMEDIATE PART-I) 319 **Paper: I**
(New Scheme)
Time: 15 Minutes **OBJECTIVE** **Marks: 10**
Code: 6641

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave other blank.

1. 1. The missing term in the proportion: $x : 5 :: 15 : 25$ is

A) 3 B) 5 C) 15 D) 25

2. 160 is 20% of what number

A) 80 B) 800 C) 8000 D) 80000

3. Interest is classified in classes:

A) five B) four C) three D) two

4. Annuity is used in:

A) equation B) function C) mathematics of finance D) interest

5. If $6x - 3 = 0$ what will be the value of 'x' ?

A) 2 B) 9 C) 18 D) $\frac{1}{2}$

6. The roots of Quadratic equation are equal if:

A) $b^2 - 4ac = 0$ B) $b^2 - 4ac > 0$ C) $b^2 - 4ac < 0$ D) $b^2 + 4ac < 0$

7. If $f(x) = c$ then 'f' is called:

A) implicit function B) identity function C) quadratic function D) constant function

8. If $x + y = 6$, $x - y = 10$ then the values of 'x' and 'y' are:

A) $x = 6$, $y = 10$ B) $x = 4$, $y = 6$ C) $x = 6$, $y = 4$ D) $x = 8$, $y = -2$

9. The order of the matrix $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$ is:

A) 1×2 B) 2×1 C) 2×2 D) 2×3

10. $(111)_2$ in decimal number system is:

A) 7 B) 6 C) 5 D) 8

Business Math (Commerce Group) (INTERMEDIATE PART-I) 319 **Paper: I**
(New Scheme)
Time: 1:45 Hours **SUBJECTIVE** **Marks: 40**
Note: Section I is compulsory. Attempt any TWO (2) questions from Section II.

(SECTION – I)

2. Write short answers to any SIX questions. **(2 × 6 = 12)**

i. Express in reduced form; 24 : 64
ii. If x : 4 :: 9 : 12 Find value of 'x'
iii. 72 is what percentage of 360.
iv. 600 is 10% of what amount.
v. Define simple interest and write its formula.
vi. Define principal.
vii. Write any two types of annuity.
viii. Solve for x, $3(4x-2) = 4(2x+3)$
ix. Solve the equation: $\frac{2x}{7} + 2 = 0$

3. Write short answers to any SIX questions. **(2 × 6 = 12)**

i. If $3x^2 - 5x + 2 = 0$. Find $b^2 - 4ac$
ii. Solve: $3x^2 - 10x + 3 = 0$
iii. Solve the equation: $2x - y = 7$ and $x + y = 4$
iv. Define constant function.
v. Find the equation of the line if $m = 2$ and $c = 5$
vi. Define Scalar Matrix.
vii. If $A = \begin{bmatrix} -2 & 6 \\ 4 & 7 \end{bmatrix}$. Find A^T
viii. Convert 19 into binary system.
ix. Convert $(11101)_2$ into decimal system.

(SECTION – II)

4. (a) If a television is purchased for Rs. 7000 and sold for Rs. 7500. Find the profit %age. 4

(b) Find the present value of an Annuity of Rs. 400 paid at the end of each year for 5 years, if the interest rate is 5% compounded Annually. 4

5. (a) Solve $4x^2 + 7x - 1 = 0$, by using Quadratic formula. 4

(b) A manufacturer produces items at a daily cost Rs. 10 and sells these for Rs. 20 per item. His expenditure is Rs. 500. What is his break-even point? 4

6. (a) Solve: $2x_1 - 3x_2 = 1$, $x_1 + 4x_2 = 6$ by Cramer's Rule. 4

(b) Simplify: $[(10111011)_2 - (101110)_2] + (10000000)_2$ 4

☆☆	Roll No._____

HSSC - (Part-I) A / 2024

(For All Sessions)

Paper Code	6	9	8	3

Business Mathematics (Commerce)

(Objective)

Time: 15 Minutes **Marks : 10**

Note:- Write answers to the questions on the objective answer sheet provided. Four possible answers are given. Which answer you consider correct fill the corresponding circle A,B,C or D in front of each question with marker or ink on the answer sheet provided.

MCQS

1.1 A square matrix A is said to be Skew-symmetric if :

(A) $A^t = A$ (B) $A^t = A^2$ (C) $A^t = 2A$ (D) $A^t = -A$

2. If order of matrix A = 3 × 5, order of matrix B = 5×4, then order of AB =

(A) 3 × 3 (B) 3 × 4 (C) 5 × 5 (D) 5 × 3

3. The decimal number 9 in binary system =

(A) $(1000)_2$ (B) $(1011)_2$ (C) $(1001)_2$ (D) $(1100)_2$

4. 30 seconds : 5 minutes

(A) 1 : 10 (B) 6 : 1 (C) 1 : 6 (D) 10 : 1

5. 20% of 9000 is :

(A) 1500 (B) 2000 (C) 1800 (D) 1900

6. If 11x – 9 = 9x – 3, then x =

(A) 2 (B) 3 (C) 5 (D) 4

7. Compound interest after n years computed on the principal amount P at the rate of R per annum is :

(A) $P[(1+R)^n - 1]$ (B) $P[(1+R)^n + 1]$ (C) $P[(1-R)^n + 1]$ (D) $p[(1+R)^n - 1]$

8. Roots of the quadratic equation $x^2 + 3x + 2 = 0$ *are* :

(A) $-1, 2$ (B) $-1, -2$ (C) $1, -2$ (D) $1, 2$

9. $(1111)_2 - (11)_2$ =

(A) $(10010)_2$ (B) $(11010)_2$ (C) $(10100)_2$ (D) $(11011)_2$

10. The point $(5, -3/2)$ lies in :

(A) Ist - quadrant (B) 2nd - quadrant (C) 3rd - quadrant (D) 4th - quadrant

Roll No _____

HSSC - (Part-I) Annual / 2024
(For All Sessions)

Business Mathematics (Subjective)

Time: 1:45 Hours | Marks : 40

Section - I

2. Attempt any six parts from the following:- (2x6=12)

(i) Define proportion.

(ii) Divide 5000 in ratio 2 : 3

(iii) 600 is 10% of what number?

(iv) Find simple interest on Rs. 5000 @ 6% for 4 years.

(v) Define Annuity.

(vi) Solve $\frac{7x+8}{3x+1} = \frac{5}{3}$

(vii) Five times of a number is 150. What is the number?

(viii) Find the sum and product of the quadratic equation $x^2 - 5x + 6 = 0$

(ix) Solve $x^2 - 5x + 6 = 0$ by factrorization.

3. Attempt any six parts from the following:- (2x6=12)

(i) If $f(x) = 3x + 9$, find $f\left(\frac{1}{2}\right)$.

(ii) Sketch the graph of $f(x) = x + 3$

(iii) Convert $(1101)_2$ into decimal system.

(iv) Convert 25 into binary system.

(v) Find the sum of $(1001)_2$ and $(111)_2$.

(vi) What is transpose of a matrix?

(vii) Find AB if $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$.

(viii) Find value of x, when $\begin{bmatrix} 8 & x \\ 2 & 4 \end{bmatrix}$ is singular matrix.

(ix) Find the adjoint of matrix $\begin{bmatrix} -1 & -2 \\ 3 & 4 \end{bmatrix}$

Section - II

Note:- Attempt any two question from the following:- (8x2=16)

4. (a) If 20 men can construct a housing unit in 60 days. How many men are required to construct such housing unit in 48 days.

(b) Rs 3000 amounts to Rs. 6843.70 in 17 years compounded annually, what is the interest rate?

5. (a) Find $x - intercept$ and $y - intercept$ of $f(x) = 2x - 1$. Also draw the graph of $f(x) = 2x - 1$.

(b) Solve the equation : $\frac{1}{x} + \frac{1}{x+1} = \frac{2}{x+3}$

6. (a) Solve the system of linear equations by Cramer rule:

$$2x - 3y = 1$$
$$x + 4y = 6$$

(b) Evaluate: $[(1011)_2 \times (111)_2] - (101)_2$

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Roll No _____ to be filled in by the candidate

HSSC - (Part-I) A / 2023

(For All Sessions)

Paper Code	6	9	8	8

Business Mathematics (Commerce)

(Objective)

Time: 15 Minutes

Marks : 10

Note:- Write answers to the questions on the objective answer sheet provided. Four possible answers are given. Which answer you consider correct fill the corresponding circle A,B,C or D in front of each question with marker or ink on the answer sheet provided.

MCQS

1.1 If $2x - 3 = x + 4$, then value of x is:

(A) 5 (B) 7 (C) 1 (D) 4

2. In quadratic equation the highest degree of variable is:

(A) 1 (B) 2 (C) 3 (D) 4

3. Conversion of $(7)_{10}$ into binary system is :

(A) $(110)_2$ (B) $(100)_2$ (C) $(111)_2$ (D) $(101)_2$

4. $(10110)_2$ in decimal number is:

(A) 20 (B) 22 (C) 24 (D) 26

5. A rectangular array of elements is called:

(A) Vector (B) Row Matrix (C) Columns (D) Matrix

6. The determinant Matrix $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ is:

(A) Zero (B) One (C) Two (D) Three

7. The ratio between 3.5 and 7 is:

(A) 5 : 1 (B) 1 : 5 (C) 1 : 2 (D) 2 : 1

8. 25 % of Rs 500 is:

(A) 75 (B) 100 (C) 125 (D) 150

9. Loan is Rs 1000/- for 5 years @ 5 % p. a. Simple interest is:

(A) 200 (B) 250 (C) 300 (D) 350

10. The function $f(x) = \frac{1}{x}$ is not defined as:-

(A) 1 (B) -1 (C) 0 (D) 2

Roll No _____ to be filled in by the candidate

HSSC - (Part-I) Annual / 2023
(For All Sessions)

Business Mathematics (Subjective) Time: 1:45 Hours Marks : 40

Section - I

2. Attempt any six parts from the following:- (2x6=12)

(i) Find the ratio between one hour and 30 minutes.

(ii) Find the value of x, if $x : 250 :: 4 : 50$

(iii) Calculate 5 % of Rs 5000.

(iv) Find the simple interest on Rs 5000 invested for 3 years at 12 % per annum.

(v) Define compound interest.

(vi) Solve the equation: $9x + 4 = 4x + 29$

(vii) Find x, if $2x - 7 = 13$

(viii) Solve the Quadratic equation by factorization: $x^2 - 4x - 32 = 0$

(ix) Write down the two methods to solve the quadratic equation.

3. Attempt any six parts from the following:- (2x6=12)

(i) If $f(x) = x^2 + 5x - 4$, then find $f(-1)$, $f(1)$

(ii) Draw the graph of $f(x) = -x + 5$

(iii) Convert $(11001)_2$ into decimal number system.

(iv) Simplify $(1100)_2 - (111)_2$

(v) Convert 241 into binary system.

(vi) Find AB if $A = [3 \quad 4]$ and $B = \begin{bmatrix} 4 \\ 5 \end{bmatrix}$

(vii) If $A = \begin{bmatrix} 2 & -3 \\ -7 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 2 & -6 \end{bmatrix}$ Find $(A + B)^t$

(viii) Find value of x, the matrix $\begin{bmatrix} x & 2 \\ 3 & 4 \end{bmatrix}$ has no inverse ?

(ix) Find determinant $\begin{bmatrix} -7 & 5 \\ -2 & 3 \end{bmatrix}$

Section - II

Note:- Attempt any two question from the following:- (8x2=16)

4. (a) Twenty men complete the construction of bridge in 7 days. How many men are required to complete the construction work in 5 days.

   (b) If Rs 3000 are invested at 6 % interest compounded semi-annually. What would it amount at the end of 8 years.

5. (a) Draw the graph of $4x + 2y = 10$

   (b) Salve $x^2 - 5x + 2 = 0$ by completing square.

6. (a) Solve by using inverse of a matrix

$$5x - 4y = -8$$
$$-3x + 5y = 7$$

   (b) Simplify $\{(10111011)_2 - (101110)_2\} + (1000000)_2$

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Inter (Part-I) A-2019

Roll No. (To be filled in by the candidate)	(For all sessions)	Paper Code	6	6	4	7

Business Mathematics (Objective Type)

Time: 15 Minutes **Marks: 10**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given. Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1. 1. The degree of quadratic equation is:

(A) one (B) three (C) two (D) four

2. The solution set of $4x^2 + 5x - 1 = 0$ is.

(A) $\{1, \frac{1}{4}\}$ (B) $\{1, 4\}$ (C) $\{-1, -4\}$ (D) $\{-1, -\frac{1}{4}\}$

3 The horizontal lines of numbers in a matrix are called:

(A) columns (B) rows (C) scalars (D) vectors

4. For two matrices A & B of same orders, $(A + B)^t$ is equal to

(A) $A^t + B^t$ (B) $A^t + B$ (C) $A + B^t$ (D) $A + B$

5 The decimal number system is also called_____system

(A) Denary (B) Binary (C) Greek (D) Spanish

6. In decimal system, $(110)_2$ is equal to:

(A) 8 (B) 2 (C) 4 (D) 6

7 What is percentage of 560 is 28?

(A) 20% (B) 15% (C) 10% (D) 5%

8. Total amount is Rs:700000. then commission @ 2% is

(A) 14,000 (B) 12,000 (C) 10,000 (D) 21,000

9. Compound amount formula is

(A) $P(1+i)^n$ (B) $P(1-i)^n$ (C) $P(1+i)$ (D) $P(1-i)$

10. The set of all values of y is called:

(A) Domain (B) Range (C) Co-domain (D) Power set

Inter (Part-I)-A 2019

Roll No. _____ (To be filled in by the candidate)

(For all sessions)

Business Mathematics (Essay Type)

Time: 1:45 Hours Marks: 40

Section - I

2- Write short answers of any six parts from the following. 2 x 6 =12

i. Define proportion.

ii. Find the value of "x" in $3:4::x:12$

iii. 525 is what percentage of 10,000?

iv. Express common fraction "$\frac{3}{5}$" as percentage.

v. Find simple interest on Rs 500 for 4 years at 11% p.a.

vi. What is meant by annuity?

vii. Convert $2x-3y=6$ into intercepts form.

viii. If $f(x)=10x+5$, find $f(0)$ and $f(1)$

ix. Find compound amount when Rs.750 in invested for 8 years at 12% p.a.

3- Write short answers of any six parts from the following. 2 x 6 =12

i. Solve the equation $\frac{9}{x+4}=\frac{5}{x-8}$

ii. Solve by factorization $x^2-7x+12=0$

iii. Solve the equation by quadratic formula $2x^2-3x-6=0$

iv. Define symmetric matrix

v. Find two consecutive odd integers whose sum is 16.

vi. If $A=\begin{bmatrix}2 & 3\\ 1 & 5\end{bmatrix}$, $B=\begin{bmatrix}2 & 3 & 1\\ 1 & 1 & 1\end{bmatrix}$ then find AB.

vii. If $A=\begin{bmatrix}4 & -4\\ -6 & -5\end{bmatrix}$, then find $|A|$

viii. Find the sum of $(10101)_2 + (1101)_2$.

ix. Convert into binary numbers system, when 49 is decimal number.

Section - II

NOTE: Attempt any two questions from the following. 8x2=16

4. (a) A soap factory makes 600 units in 9 days with the help of 20 machines. How many units be made in 12 days with the help of 18 machines?

   (b) How long will it take to earn Rs.15000 simple interest on a deposit of Rs 750000 at the rate of 10% annually?

5. (a) If $f(x)=2x^2-1$ then find $f(0), f(-2), f(\sqrt{3}), f(4)$

   (b) Solve the equation by completing the square $3x^2-2x=12$

6. (a) Using Cramer's Rule solve the follcwing system of linear equations.

$$2x-3y=1$$
$$x+4y=6$$

   (b) Evaluate $(1111)_2 \times (1001)_2$.

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1124 Warning:- Please write your Roll No. in the space provided and sign. Roll No----------

(Inter Part – I) **(Session 2020-22 to 2023-25)** Sig. of Student ----------

Business Mathematics (Objective) **(Commerce Group)** **Paper (I)**

Time Allowed:- 15 minutes **PAPER CODE 2641** Maximum Marks:- 10

Note:- You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write **PAPER CODE**, which is printed on this question paper, on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q. 1

1) 25 seconds : 2 minutes =

(A) 5 : 12 (B) 24 : 5 (C) 5 : 24 (D) 12 : 5

2) Formula for compound interest is

(A) $P(1+R)^n$ (B) $P[(1+R)^n-1]$ (C) PRT (D) $P(1-R)^n$

3) Commission on the deal of Rs. 8000 @ 5% =

(A) Rs. 400 (B) Rs. 250 (C) Rs. 500 (D) Rs. 300

4) If $4x - 5 = 5x - 6$, then x =

(A) 1.5 (B) 2.5 (C) 2 (D) 1

5) Roots of the quadratic equation $3x^2 + 2x - 1 = 0$ are

(A) $-1, \frac{1}{3}$ (B) $-1, -\frac{1}{3}$ (C) $1, \frac{1}{3}$ (D) $1, -\frac{1}{3}$

6) $(1111)_2 - (101)_2$ =

(A) $(1000)_2$ (B) $(1001)_2$ (C) $(1010)_2$ (D) $(111)_2$

7) Point (-5 , -6) lies in quadrant

(A) I (B) III (C) II (D) IV

8) A square matrix B is said to symmetric. If

(A) $B^t = B$ (B) $B^t = -B$ (C) $B^t = B^2$ (D) $B^t = 2B$

9) If order of matrix A = 3×4, order of matrix B = 4×3 , then order of BA =

(A) 3×3 (B) 4×3 (C) 3×4 (D) 4×4

10) The decimal number 13 is equal to

(A) $(1011)_2$ (B) $(1101)_2$ (C) $(1001)_2$ (D) $(1110)_2$

124 **Warning:- Please, do not write anything on this question paper except your Roll No.**

(Inter Part - I) **(Session 2020-22 to 2023-25)**

Business Mathematics (Subjective) Paper (I)

Time Allowed: 1.45 hours **(Commerce Group)** Maximum Marks: 40

Section ---------- I

2. Answer briefly any Six parts from the followings:- **6 × 2 = 12**

(i) Divide Rs 60000 in the ratio 5 : 7 **(ii)** Define inverse proportion.

(iii) What percentage of Rs 120 is 84.

(iv) What is the Simple interest on Rs 8000 for two year's at 5%.

(v) Define Annuity due.

(vi) Find the value of x if $\frac{3x-1}{2-x}=2$ **(vii)** Solve the equation $\frac{1}{X}+\frac{2}{X}=15$

(viii) Find the Discriminant of $x^2+7x+10=0$

(ix) Solve $3x^2-9x+5=0$ by using Quadratic formula.

3. Answer briefly any Six parts from the followings:- **6 × 2 = 12**

(i) If $f(x)=3x^2+4x$ find f(-1) and f(2).

(ii) Find x – intercept and y – intercept of the line $x+3y=9$

(iii) Convert into decimal system $(10001)_2$ **(iv)** Convert 15 into base 2.

(v) Simplify $(10110)_2+(1000)_2$ **(vi)** If $A=\begin{bmatrix}1 & 5\end{bmatrix}$, $B=\begin{bmatrix}1\\5\end{bmatrix}$ *Find AB*

(vii) Find transpose of $A=\begin{bmatrix}1 & 2 & 3\\4 & 5 & 6\end{bmatrix}$ **(viii)** Find x so that $\begin{bmatrix}1 & -2\\-3 & x\end{bmatrix}$ *is singular*

(ix) Find inverse of A if $A=\begin{bmatrix}3 & 2\\1 & 2\end{bmatrix}$

Section ---------- II

Note: Attempt any TWO questions. **(8 × 2 = 16)**

4. (a) 14 Cows consumes 630 Kgs of hay in 18 days. How many cows will eat 770 Kgs of hay in 28 days at the same rate.

(b) Find the Present value of an amount of Rs. 12,000 at the end of 5 Years at 5% per year compounded annually.

5. (a) Find the domain and Range of $x=y+5$ and draw the graph

(b) Solve the equation $x^{1/3}-2x^{1/3}=8$

6. (a) Solve the system of equations by matrices $\begin{aligned}2x+5y&=30\\3x-2y&=7\end{aligned}$

(b) Evaluate $(1010111)_2 \times (11011)_2$

1190 -- 1124 -- 2500

1123 Warning:- Please write your Roll No. in the space provided and sign. Roll No----------

(Inter Part – I) **(Session 2019-21 to 2022-24)** Sig. of Student ----------

Business Mathematics (Objective) **(Commerce Group)** **Paper (I)**

Time Allowed:- 15 minutes **PAPER CODE 2641** Maximum Marks:- 10

Note:- You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write **PAPER CODE**, which is printed on this question paper, on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q. 1

1) The ratio between 7.5 kg and 3.5 kg is.

(A) 7:15 (B) 7 to 15 (C) $7 \div 15$ (D) $15/7$

2) Rs 88 is what percent of Rs. 400?

(A) 22% (B) 21% (C) 23% (D) 25%

3) Simple interest on Rs 10,000 at the rate of 10% in 10 years is:

(A) 100 (B) 1000 (C) 10000 (D) 100000

4) A First degree equation is called.

(A) Quadratic Equation (B) Linear Equation (C) Non-Linear Equation (D) Constant

5) Discriminant of a quadratic equation is

(A) $b^2 + 4ac$ (B) $b^2 - 4ac$ (C) $-b^2 - 4ac$ (D) $-b^2 + 4ac$

6) The point (-2,-3) lies in the quadrant:

(A) III (B) II (C) I (D) IV

7) In binary number system '2' is equal to:

(A) $(10)_2$ (B) $(11)_2$ (C) $(101)_2$ (D) $(110)_2$

8) $(100)_2 + (10)_2 = ?$

(A) $(111)_2$ (B) $(011)_2$ (C) $(110)_2$ (D) $(100)_2$

9) If $A = \begin{bmatrix} 2 & -1 \\ 4 & 3 \end{bmatrix}$ then $|A| = ?$

(A) 11 (B) 10 (C) 6 (D) 8

10) The matrix $\begin{bmatrix} 2 & 0 \\ 0 & 3 \end{bmatrix}$ is

(A) Scalar (B) Diagonal (C) Identity (D) Null

1123 Warning:- Please, do not write anything on this question paper except your Roll No.

(Inter Part - I) **(Session 2019-21 to 2022-24)**

Business Mathematics (Subjective) Paper (I)

Time Allowed: 1.45 hours **(Commerce Group)** Maximum Marks: 40

Section ---------- I

2. Answer briefly any Six parts from the followings:- **6 × 2 = 12**

(i) Divide 20 pens between Ahmad and Ali in the ratio 3:2 **(ii)** Define direct proportion.

(iii) A radio was sold for Rs. 400 on 10% loss. Find the cost price of radio.

(iv) What must be rate of interest on Rs 4000 to produce Rs 200 in 8 months?

(v) 320 is what % of 800?

(vi) Define linear equation. **(vii)** Solve for x $\frac{3x}{4} - 2 = \frac{x}{3} + 3$.

(viii) The sum of a number and its reciprocal is 20. Find the quadratic equation in standard form.

(ix) Solve $5x^2 + 3x = 0$.

3. Answer briefly any Six parts from the followings:- **6 × 2 = 12**

(i) Define 'Domain' of function y=f(x).

(ii) Draw the graph of $f(x) = 2x - 1$.

(iii) Convert 32 into binary number system. **(iv)** Simplify $(1110)_2$-$(101)_2$

(v) Convert $(101)_2$ into Decimal base system. **(vi)** Define Column Matrix.

(vii) If $A=\begin{bmatrix} 2 & -1 \\ 2 & 1 \end{bmatrix}$ and $B=\begin{bmatrix} 1 & 2 \\ 1 & 1 \end{bmatrix}$ Find A+B. **(viii)** If $A=\begin{bmatrix} 3 & 4 \\ 5 & 6 \end{bmatrix}$, *find* $\frac{1}{2}|A|$.

(ix) Find A^{-1}, *if* $A=\begin{bmatrix} 1 & 2 \\ -1 & 2 \end{bmatrix}$.

Section ---------- II

Note: Attempt any TWO questions. **(8 × 2 = 16)**

4. (a) Rs. 4000 are sufficient for a family of 4 members for 40 days. For how many days Rs. 15000 will be sufficient for a family of 5 members.

(b) Compute compound interest on Rs. 5000 for $6\frac{1}{2}$ years at $2\frac{1}{2}$% compounded semi-annually.

5. (a) If $y = 3x - 6$ then find x − intercept and y −intercept and draw the graph.

(b) Solve $\frac{x+2}{x-3} + \frac{x-3}{x+2} = \frac{5}{2}$ for $x \neq 3, -2$.

6. (a) Solve by Crammer's rule $4x - y = 13$

$3x - 2y = 6$

(b) Evaluate $(100111)_2 \times (111)_2$

1176 -- 1123 -- 2500

1122 Warning:- Please write your Roll No. in the space provided and sign. Roll No----------

(Inter Part – I) **(Session 2018-20 to 2021-23)** Sig. of Student ----------

Business Mathematics (Objective) **(Commerce Group)** **Paper (I)**

Time Allowed:- 15 minutes **PAPER CODE 2641** Maximum Marks:- 10

Note:- You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write **PAPER CODE**, which is printed on this question paper, on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q. 1

1) The simplify form of the ratio 12 : 9 is

(A) 4 : 3 (B) 3 : 3 (C) 3 : 2 (D) 2 : 1

2) The 5% of 200 is

(A) 8 (B) 9 (C) 10 (D) 11

3) The formula for simple interest is

(A) $I = \frac{p \times r \times t}{100}$ (B) $I = \frac{p \times r}{100}$ (C) $I = \frac{p \times r \times t}{10}$ (D) $I = \frac{r \times t}{100}$

4) If $P = R\left[\frac{1-(1+i)^n}{i}\right]$ is the formula for

(A) Annuity (B) Sum of Annuity (C) Perpetuity (D) Present Value

5) The graph of a linear equation y = mx + c represents.

(A) Parabola (B) Stright line (C) Parabola open down (D) Line passing from origen

6) If 5 is subtracted from 2 times a number then the result is 5. The unknown number is.

(A) 2 (B) 3 (C) 5 (D) 7

7) The degree of the Quadratic equation is

(A) 1 (B) 3 (C) 2 (D) 4

8) The binary form of a decimal number 3 is

(A) $(10)_2$ (B) $(111)_2$ (C) $(11)_2$ (D) $(101)_2$

9) If A is a square matrix of any order then AA^{-1} =

(A) $-A$ (B) A^{-1} (C) $\frac{1}{A}$ (D) I

10) If $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ then Adj(A) =

(A) $\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$ (B) $\begin{bmatrix} -d & -b \\ -c & a \end{bmatrix}$ (C) $\begin{bmatrix} a & -b \\ -c & d \end{bmatrix}$ (D) $\begin{bmatrix} d & -b \\ c & a \end{bmatrix}$

1122 Warning:- Please, do not write anything on this question paper except your Roll No.

(Inter Part - I) (Session 2018-20 to 2021-23)

Business Mathematics (Subjective) Paper (I)

Time Allowed: 1.45 hours (Commerce Group) Maximum Marks: 40

Section ---------- I

2. Answer briefly any Six parts from the followings:- $6 \times 2 = 12$

(i) Define Ratio. what is its unit? (ii) Find 10% of 1500.

(iii) Define Direct proportion and give its example. (iv) What do you know about Annuity Due?

(v) Find simple interest on Rs. 5000 for 10 years at 8% rate.

(vi) Solve $\frac{1}{2x}+\frac{1}{4x}=4$ (vii) Write down the standard form of linear equation in one and two variables.

(viii) Factorize $2x^2-x-6=0$

(ix) Find Discriminant of $x^2-6x-7=0$

3. Answer briefly any Six parts from the followings:- $6 \times 2 = 12$

(i) If $f(x)=3x^2+2x-1$ then find $f(-2)$ and $f(0)$

(ii) Define an even and odd function.

(iii) Convert into decimal system $(101010)_2$ (iv) Convert 32 into binary system.

(v) Evaluate $(1011)_2 \times (1001)_2$ (vi) Define an identity matrix with one example.

(vii) Find A if $2A+\begin{bmatrix}1 & 2\\ 4 & 6\end{bmatrix}=0$ (viii) If $A=\begin{bmatrix}4 & 5\\ 2 & 3\end{bmatrix}$ find A^2

(ix) If $A=\begin{bmatrix}3 & 1\\ 2 & 0\end{bmatrix}$, $B\begin{bmatrix}4 & -1\\ 2 & 3\end{bmatrix}$ then find AB.

Section ---------- II

Note: Attempt any TWO questions. $(8 \times 2 = 16)$

4. (a) A factory makes 560 units in 7 days with the help of 20 machines. How many units can be made in 10 days with the help of 18 machines.

(b) Rs. 3000 amounts to Rs. 5843.70 in 17 days compounded annually what is the interest rate.

5. (a) Draw the graph of function $f(x)=10-4x$

(b) Solve $\begin{aligned} x+5y&=14\\ 2x-5y&=10\end{aligned}$

6. (a) If sum of two numbers is 180 and difference is 20, then find the two number by using Crammer's Rule.

(b) Give the answer in decimal number of the sum. $(86)_{10}+(1111)_2-(101)_2$

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Sahiwal Board-2023

Roll No. | | | | | | | (To be filled in by the candidate)

Business Mathematics
(Commerce Group)

H.S.S.C (11th) 1st Annual 2023

Time : 15 Minutes

Paper : I

Objective

Marks : 10

Paper Code	6	6	4	1

Note: - You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number in your answer book. Use marker or pen to fill the circles. Cutting or filling up two or more circles will result no mark.

SECTION-A

Q.1	Questions	A	B	C	D
1.	The ratio between 2.5 kg and 4.5 kg is:	2:5	5:9	9:5	2:3
2.	Rs.250 is what percent of Rs.1000?	1.5%	2.5%	3.5%	25%
3.	The formula for finding rate%:	$\frac{I\times100}{P}$	$\frac{I\times100}{P\times T}$	$\frac{P\times100}{I\times T}$	$\frac{T\times100}{P\times I}$
4.	If $f(x)=\sqrt{x+9}$, then $f(x^2-9)=$	$x+9$	x^2-9	x^2	x
5.	If $x-3=2x+9$, then:	$x=-12$	$x=12$	$x=6$	$x=-6$
6.	The solution set of $3x^2+4x+1=0$ is:	$\left\{\frac{1}{3},1\right\}$	$\left\{\frac{-1}{3},1\right\}$	$\left\{\frac{-1}{3},-1\right\}$	$\left\{\frac{1}{3},-1\right\}$
7.	Conversion of 4 into binary system is:	$(10)_2$	$(11)_2$	$(101)_2$	$(100)_2$
8.	$(10000)_2$ in decimal system is equal to:	18	20	17	16
9.	If order of matrix A is 2×3 and order of matrix B is 3×4, then order of AB is:	2×2	2×4	3×3	3×4
10.	If $A=\begin{bmatrix}8 & 9\\12 & 15\end{bmatrix}$, then order of A^{-1} is:	1x1	2x3	2x2	3x3

229-323-1A-2000

Roll No. | | | | | | | (To be filled in by the candidate)

Business Mathematics **H.S.S.C (11th) 1st Annual 2023** Time : 1:45 Hours

(Commerce Group)

Paper : I **Subjective** Marks : 40

Note :- Section **B** is compulsory. Attempt any **Two** Questions from Section **C**.

SECTION-B

2. Write short answers to any Six parts. **(6 x 2 = 12)**

i. Distribute Rs.15000 in the ratio 3:2.

ii. Find the missing term from the proportion 2:3: :□:15

iii. A dealer bought a bicycle for Rs.15500 and sold for Rs.16740. Find profit percentage.

iv. Find the simple interest on Rs.5000 invested for 6 months at the rate 8% per annum.

v. Define the term 'ordinary annuity'.

vi. Solve $4(x-7) = 3(2x+1) - 5$.

vii. Find two consecutive integers whose sum is 29.

viii. Solve $4x^2 - 11x + 6 = 0$ by completing square.

ix. Discuss the nature of the roots of $x^2 - 5x + 6 = 0$.

3. Write short answers to any Six parts. **(6 x 2 = 12)**

i. Define profit function.

ii. Sketch the graph of $4x + 2y = 10$

iii. Subtract $(1101)_2$ from $(10011)_2$.

iv. Evaluate $(100111)_2 \times (111)_2$.

v. Convert $(10110011)_2$ into decimal system.

vi. If $A=\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$; $B=\begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$, then find AB.

vii. If $A=\begin{bmatrix} 2 & 5 \\ x & -10 \end{bmatrix}$ is a singular matrix, then find the value of x.

viii. Define skew symmetric matrix.

ix. If $A=\begin{bmatrix} 1 & 2 \\ 4 & 9 \end{bmatrix}$; find the value of $|2A|$.

SECTION-C

Note: Attempt any Two questions. Each question carries 4+4=8 marks. (8x2=16)

4.(a) If 15 workers paint 5 houses in a day, then how many workers are required to paint 3 houses in a day.

(b) Find the compound amount at the end of one year if Rs.10,000 are invested at 10% interest compounded annually.

5.(a) Draw the graph of function $y = x^2 + 2x - 3$

(b) Solve the equations:

$2x - y = 11$

$x + 4y = 1$

6.(a) If $A=\begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix}$ and $B=\begin{bmatrix} 2 & -1 \\ 1 & 1 \end{bmatrix}$ then show that $(AB)^t = B^t A^t$.

(b) Multiply $(11011)_2$ and $(101)_2$.

Roll No. | | | | | | | (To be filled in by the candidate)

Business Math **H.S.S.C (11th)-A-2022** Time : 15 Minutes

Paper : I **Objective** Marks : 10

Paper Code	6	6	4	1

Note: - You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number in your answer book. Use marker or pen to fill the circles. Cutting or filling up two or more circles will result no mark.

SECTION-A

Q.1	Questions	A	B	C	D
1.	The ratio $\frac{4}{9}:\frac{1}{3}$ in lowest term is:	4:3	3:4	9:3	3:1
2.	20% of 1250 is:	25	250	350	200
3.	The simple interest of Rs.500 borrowed for 4 Years @10% per annum is:	Rs. 720	Rs. 200	Rs. 450	Rs. 350
4.	If $f(x)=4x-3$ then $f(2)$ is equal to:	9	5	1	-3
5.	If $3x+2=2x+8$ then	$x=6$	$x=5$	$x=4$	$x=3$
6.	The roots of the equation $x^2+2x=0$ are :	$0,-2$	$0,2$	$2,-2$	$0,1$
7.	Conversion of 13 into binary number is:	$(1110)_2$	$(1010)_2$	$(1101)_2$	$(1001)_2$
8.	21 in binary system is:	$(1011)_2$	$(10110)_2$	$(1001)_2$	$(10101)_2$
9.	A square matrix A is called singular if:	$\|A\|\neq 0$	$\|A\|=0$	$\|A\|<0$	$\|A\|>0$
10.	if $\begin{vmatrix} k-2 & 1 \\ 5 & k+2 \end{vmatrix}=0$ then k is equal to :	3	-3	± 3	0

226-322-A-1500

Roll No. | | | | | | | (To be filled in by the candidate)

Business Math | **H.S.S.C (11th)-A-2022** | Time : 1:45 Hours

Paper : I | **Subjective** | Marks : 40

Note :- Section **B** is compulsory. Attempt any **Two** Questions from Section **C**.

SECTION-B

2. Write short answers to any Six parts. (6 x 2 = 12)

i. Define inverse proportion and give an example.

ii. What is simplest ratio between 24 and 64.

iii. Find the amount whose 20% is Rs. 500.

iv. Define ordinary annuity and write its formula.

v. Find the 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 the equation $2(x+4)=5x-28$

viii. Find the quadratic equation whose roots are -9 and 7

ix. What is a quadratic equation? Give an example.

3. Write short answers to any Six parts. (6 x 2 = 12)

i. Define even function and give an example.

ii. Define domain and range of a function.

iii. Convert $(1101)_2$ into decimal system.

iv. Add $(1111)_2$ and $(1010)_2$

v. Subtract $(111001)_2$ and $(1001)_2$

vi. Define scalar matrix and give an example.

vii. Find value of x if the matrix $A=\begin{bmatrix}1 & 2\\ 2 & x\end{bmatrix}$ *is* singular

viii. Find AB if, $A=[3 \quad 2]$ and $B=\begin{bmatrix}5\\3\end{bmatrix}$

ix. Define non-singular matrix and give one example.

SECTION-C

Each question carries 4 + 4 = 8 Marks

4.(a) Find the net amount to be paid, when a discount of 3% was allowed on amount Rs. 10200/=

(b) Calculate the compound interest earned for Rs. 5000/= invested for 6 years @7% per annum.

5.(a) The sum of two numbers is 12 and twice the first is 6 greater than four times of the second. Find the two numbers.

(b) Find the slope and angle of inclination joining the points $P_1(-2,4)$ and $P_2(5,11)$

6.(a) Solve the following system by using matrix method:

$$2x+y=25$$
$$x-y=5$$

(b) Solve the following by changing into decimal system:

$$\{(101111)_2+(111000000)_2\}-(39)_{10}$$

PAPER CODE – 6641

11th CLASS – 1st Annual 2023

BUSINESS MATHEMATICS

ME: 15 MINUTES
MARKS: 10

OBJECTIVE

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

Sr.No	QUESTIONS	A	B	C	D
1	The ratio between 1.5 cm and 4.5 cm is	2 : 5	3 : 1	1 : 3	2 : 3
2	If 7% of the amount is Rs 490, then what is the amount ?	Rs. 4000	Rs. 5000	Rs. 6000	Rs. 7000
3	A fee which is paid for having the use of money is called	Interest	Principal	Percentage	Annuity
4	If $f(x) = 4x^2 - 5x + 1$, then $f(-x) =$	$4x^2 - 5x - 1$	$4x^2 + 5x + 1$	$4x^2 + 5x - 1$	$4x^2 - 5x + 1$
5	The solution set of $\sqrt{x} + 3 = 4$ is	$\{1\}$	$\{\ \}$	$\{-1\}$	$\{\pm 1\}$
6	The solution set of $8x^2 - 14x15 = 0$	$\left\{\frac{5}{2}, \frac{-3}{4}\right\}$	$\left\{\frac{-5}{2}, \frac{-3}{4}\right\}$	$\{-1, -3\}$	$\left\{\frac{-5}{2}, \frac{3}{4}\right\}$
7	8 in binary system is equal to	$(1001)_2$	$(1010)_2$	$(1000)_2$	$(1011)_2$
8	$(1111)_2$ in decimal system is equal to	23	13	25	15
9	If order of matrix A is 3 x 4 and order of matrix B is 4 x 2, then order of AB is	2 x 3	3 x 4	4 x 2	3 x 2
10	If $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$ then $A^t =$	$\begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$	$\begin{bmatrix} 1 & 3 \\ 2 & 4 \\ 5 & 6 \end{bmatrix}$	$\begin{bmatrix} 1 & 4 \\ 2 & 5 \\ 3 & 6 \end{bmatrix}$	$\begin{bmatrix} 1 & 2 \\ 3 & 5 \\ 4 & 8 \end{bmatrix}$

BUSINESS MATHEMATICS

TIME : 1.45 HOURS
MARKS : 40

SUBJECTIVE
SECTION-I

QUESTION NO. 2 Write short answers of any Six (6) parts of the following 12

i	Divide Rs 750 in the ratio 3 : 2
ii	Find x *if* $x : \frac{1}{4} :: 12 : 3$
iii	A dealer buys a bicycle for Rs 1200 and sells it for Rs 1500. Find percentage profit.
iv	Find the simple interest to Rs 6000 borrowed for 3 years at the rate 8 % per annum.
v	Define the term " simple annuity ".
vi	Solve $\frac{12x-5}{3} = \frac{4x+8}{4}$
vii	Find two consecutive integers whose sum is 43.
viii	Solve $3x^2 - 9x + 5 = 0$ by completing square.
ix	Discuss the nature of the roots of $x^2 + 6x + 9 = 0$

QUESTION NO. 3 Write short answers of any Six (6) parts of the following 12

i	Show that $f(x) = x^5 + x^3$ is an odd function
ii	Sketch the graph of the function $f(x) = x^2 + 4$
iii	Find the sum of $(23)_2 + (111)_2$
iv	Evaluate $(11011)_2 - (1101)_2$
v	Evaluate $(10101)_2 \times (111)_2$
vi	Find $\|A\|$ Given that $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \\ 1 & 3 & 2 \end{bmatrix}$
vii	Find the inverse of A , where $A = \begin{bmatrix} 5 & 3 \\ 4 & 2 \end{bmatrix}$
viii	Find the value of x, $A = \begin{bmatrix} 3 & 2 \\ 4 & 6x \end{bmatrix}$ if $\|A\| = 0$
ix	Find AB if $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$

SECTION-II

Note: Attempt any Two questions from this section 8 x 2 = 16

Q.4 (A)	If 6 pumps raise 108 liters of water in 12 minutes, how long will 4 pumps take to raise 96 liters of water?
(B)	Find the compound interest due in case of Rs 1000 loaned for 5 years at 6 % annually.
Q.5 (A)	If $f(x) = x^2 - 2x + 1$, find $f(-1)$, $f(0)$, $f(2)$ *and* $f(3)$
(B)	Solve $x^2 - 3x + 8 = 0$ using Quadratic Formula
Q.6 (A)	Find x and y If $\begin{bmatrix} x+3 & 1 \\ -3 & 3y-4 \end{bmatrix} = \begin{bmatrix} y & 1 \\ -3 & 2x \end{bmatrix}$
(B)	Multiply $(11111)_2$ *and* $(1111)_2$

DG Khan Board-2022

PAPER CODE - 6641

11th CLASS – 12022

BUSINESS MATHEMATICS

TIME: 15 MINUTES
MARKS: 10

OBJECTIVE

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

Sr.No	QUESTIONS	A	B	C	D
1	2 : 7 :: x : 14 , then value of x is	2	4	6	8
2	20 percent of 200 is	80	60	40	20
3	Formula for simple interest is	Prt	$P(1+i)^n$	P(1+i)	SRi
4	If f(x) = c for all x , then f(x) is called ..... function	Linear	Quadratic	Identity	Constant
5	If 5x + 50 = 0 , then value of x is	-5	-10	-15	-20
6	Product of roots of equation $x^2 - 3x + 5 = 0$	5	-5	3	-3
7	Base of binary system is	10	5	2	3
8	In binary system 3 is equal to	$(101)_2$	$(100)_2$	$(10)_2$	$(11)_2$
9	A square matrix A is called symmetric if A^t equals	A	-A	A^2	$-A^2$
10	The determinant of identity matrix is equal to	2	0	-1	1

11th CLASS - 12022

BUSINESS MATHEMATICS

TIME : 1.45 HOURS
MARKS : 40

SUBJECTIVE
SECTION-I

QUESTION NO. 2 Write short answers of any Six (6) parts of the following **12**

i	Find third proportional to the numbers 4 , 42
ii	Mr. Zahid paid zakat of Rs 3700 at the rate of $2\frac{1}{2}\%$. Find value of his wealth
iii	Divide Rs 96 in the ratio 3:1
iv	Define annuity due
v	Define simple interest and write its formula
vi	Find two consecutive integers whose sum is 41
vii	Solve the equation $4(x-7)=3(2x+1)-5$
viii	Solve the Quadratic equation by Factorization $x^2-4x-32=0$
ix	If $2^x=16$, find value of x

QUESTION NO. 3 Write short answers of any Six (6) parts of the following **12**

i	Define domain and range
ii	Give two applications of functions in Business
iii	Find the sum of $(1010111)_2+(11011)_2$
iv	Find the product of $(111)_2 \times (101)_2$ give the answer in decimal form
v	Define the order of a matrix with example
vi	Show that $A=\begin{bmatrix}0 & -2 & 3\\ 2 & 0 & 4\\ -3 & -4 & 0\end{bmatrix}$ is a skew – symmetric matrix
vii	If $A=\begin{bmatrix}4 & 9\\ 7 & 6\end{bmatrix}$, $B=\begin{bmatrix}1 & 2\\ 3 & 0\end{bmatrix}$ then find $\lvert AB\rvert$
viii	If $f(x)=2x+5$ then find $f(2)$, $f(3)$
ix	If $A=\begin{bmatrix}4 & 2 & 10\\ 2 & 8 & 0\\ 1 & 2 & 1\end{bmatrix}$ find A^2

SECTION-II

Note: Attempt any Two questions from this section **8 x 2 = 16**

Q.4 (A)	15 men can finish a job in 8 days. How many men are required to do the same job is 5 days
(B)	Find the compound interest on Rs 2500 invested at 6 % per annum. Compounded semi-annually for 8 years
Q.5 (A)	Draw a graph as defined by the function $y=2x+3$
(B)	Solve simultaneously $x-y=2$, $3x+4y=7$
Q.6 (A)	Use Cramer's rule to solve the system $3x+y=1$, $x-2y=-2$
(B)	Without converting into decimal system , simplify

DG Khan Board-2019

11th CLASS – 12019

BUSINESS MATHEMATICS

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TIME: 15 MINUTES
MARKS: 10

OBJECTIVE

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

Sr.No	QUESTIONS	(A)	(B)	(C)	(D)
1	Reduced form of 27:54 is	2:1	3:4	3:1	1:2
2	25 is what percentage of 500 ?	20%	15%	5%	10%
3	Simple interest on Rs. 1600 @ 5% annually in 2 years is	Rs.160	Rs.100	Rs.200	Rs.80
4	Sum of annuity is called	Present value	Future value	Current value	Compound amount
5	Degree of a Linear Equation is	Three	Two	One	Zero
6	Solution set of $x^2 - 49 = 0$ is	{3,-3}	{5,-5}	{6,-6}	{7,-7}
7	If $2x + y = 3$ & $x + 5y = 6$ then	$x = 0 , y = 3$	$x = 4 , y = 1$	$x = 2 , y = 0$	$x = 1 , y = 1$
8	If $f(x) = x^2 + 3$, then f is	Old function	Even function	Constant function	Identity function
9	A square matrix is symmetric if $A^t =$	A^2	A^3	-A	A.
10	In the binary system 5 is	$(11)_2$	$(100)_2$	$(101)_2$	$(110)_2$

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BUSINESS MATHEMATICS

TIME : 1.45 HOURS
MARKS : 40

SUBJECTIVE

SECTION-I

QUESTION NO. 2 Write short answers any Six (6) questions of the following **12**

(1) Find the ratio between one hour and 30 minutes.
(2) Find x if $x : \frac{1}{4} = 12 : 3$
(3) Find 55% of 800
(4) 670.8 is what percentage of 1300.
(5) Find simple interest on Rs. 7000/= for 5 years at rate of 11% p.a.
(6) Define compound interest.
(7) Define annuity.
(8) Solve $3x - 3 = 6$
(9) Solve $9x + 4 = 4x + 29$

QUESTION NO. 3 Write short answers any Six (6) questions of the following **12**

(1) Solve $x^2 - x - 6 = 0$ by factorization:
(2) Write the names of the methods used to solve Quadratic Equation.
(3) Solve $x + y = 8$, $x - y = 4$
(4) If $g(x) = 2x + 1$ then find g(0) and g(-3)
(5) Define odd function.
(6) Define Rectangular matrix.
(7) Find the ad-joint of the matrix $\begin{bmatrix} -1 & -2 \\ 3 & 4 \end{bmatrix}$
(8) Add $(101)_2 + (111)_2$ in binary number system.
(9) Convert $(15)_{10}$ into binary number system

SECTION-II

Note: Attempt any Two questions from this section **8 x 2 = 16**

Q.4. (a) 15 men can finish a job in 8 days, How many men are required to do the same job in 5 days .
(b) Find the compound interest on Rs 2500 invested at 6 % per annum for 3 years.

Q.5. (a) Solve for x. $\frac{5x+4}{3x+2} = \frac{3}{5}$
(b) Solve the equations $x + y = 2$ and $2x - y = 7$

Q. 6. (a) Simplify the following $\{(10111011)_2 - (101110)_2\} \div (10000000)_2$

(b) Solve the equation by using the inversion method $4x_1 + 3x_2 = 5$
$3x_1 + x_2 = 7$

Paper Code Number: **2647**	**2024 (1st-A) INTERMEDIATE PART-I (11th Class)**	**Roll No: _____**

BUSINESS MATHEMATICS (COMMERCE GROUP) PAPER-I

TIME ALLOWED: 15 Minutes	**OBJECTIVE**	**MAXIMUM MARKS: 10**

Q.No.1 **You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.**

S.#	QUESTIONS	A	B	C	D
1	The simple interest on a loan of Rs.3000 for 2 years at 7% is:	Rs.220	Rs.320	Rs.520	Rs.420
2	If $f(x) = x^2 - 4$, then $f(-2)$ is equal to:	0	4	-4	8
3	If 5 times a number of 190, then the number will be:	40	39	38	36
4	The solution set of the equation $2x^2 + 11x + 5 = 0$ is:	$\left\{\frac{1}{2}, 5\right\}$	$\left\{-\frac{1}{2}, -5\right\}$	$\{1, 5\}$	$\{-1, -5\}$
5	21 in binary number system is:	$(1011)_2$	$(10111)_2$	$(10001)_2$	$(10101)_2$
6	$(1101)_2 \times (10)_2 =$ _____	$(11010)_2$	$(10110)_2$	$(10011)_2$	$(101011)_2$
7	The value of λ if $A = \begin{bmatrix} \lambda & 4 \\ 3 & 2 \end{bmatrix}$ is singular:	$\lambda = 2$	$\lambda = 4$	$\lambda = 6$	$\lambda = 8$
8	If $A = \begin{bmatrix} -1 & -2 \\ 3 & 4 \end{bmatrix}$ then Adjoint of A is:	$\begin{bmatrix} 3 & 4 \\ -1 & -2 \end{bmatrix}$	$\begin{bmatrix} 4 & 2 \\ -3 & -1 \end{bmatrix}$	$\begin{bmatrix} -4 & -2 \\ 3 & 1 \end{bmatrix}$	$\begin{bmatrix} 4 & 2 \\ -3 & 1 \end{bmatrix}$
9	The ratio between 3.5kg and 10.5kg is:	1 : 8	1 : 3	1 : 21	3 : 4
10	Using fundamental principle of proportion, what is value of x in $12 : x :: 28 : 21$	12	10	9	16

2024 (1^{st}-A)
INTERMEDIATE PART-I (11^{th} Class)

Roll No: _____

BUSINESS MATHEMATICS (COMMERCE GROUP) PAPER-I

TIME ALLOWED: 1.45 Hours	**SUBJECTIVE**	**MAXIMUM MARKS: 40**

NOTE: Write same question number and its parts number on answer book, as given in the question paper.

SECTION-I

2. Attempt any six parts. **$6 \times 2 = 12$**

(i)	If 15 dozens of eggs cost Rs.600. How much will cost 5 dozens of eggs?
(ii)	The ratio of boys and girls in a school is 9 : 5. If total number of students is 1050. Find the number of boys.
(iii)	Calculate Zakat on an amount of Rs.2500000?
(iv)	Define Annuity due.
(v)	Solve $\frac{3x+2}{4}=\frac{2x+6}{5}$
(vi)	Find the domain and range of $y=2x+3$
(vii)	Solve by factorization $4x^2+4x-3=0$
(viii)	Find the discriminant of $4x^2-13x+3=0$
(ix)	What is the simple interest on Rs.180000 for two years at 5%?

3. Attempt any six parts. **$6 \times 2 = 12$**

(i)	Define odd function.
(ii)	If $f(x)=\frac{x^2+3x-2}{x+4}$, find $f(0)$.
(iii)	Convert $(35)_{10}$ into binary system.
(iv)	Convert $(1011)_2$ into decimal system.
(v)	Simplify $(1011)_2-(1000)_2$
(vi)	Find AB if $A=\begin{bmatrix}2 & 1\\ 3 & 1\end{bmatrix}$, $B=\begin{bmatrix}2\\ 1\end{bmatrix}$
(vii)	Define rectangular matrix.
(viii)	Find the value of x if $A=\begin{bmatrix}2 & 1\\ 3 & x\end{bmatrix}$ is singular.
(ix)	If $A=\begin{bmatrix}4 & -4\\ 6 & -5\end{bmatrix}$, then find $\lvert A\rvert$ and $Adj\,A$.

SECTION-II

NOTE: Attempt any two questions. **$2 \times 8 = 16$**

4.(a)	15 men can finish a job in 8 days. How many men are required to do the same job in 5 days?
(b)	Find the compound interest if Rs.10000 loaned for 5 years @ 8% per annum.
5.(a)	Draw the graph of $y=x^2$
(b)	Solve the equation by using quadratic formula $x^2-3\left(x+\frac{25}{12}\right)=9x$
6.(a)	Simplify $\{(100111)_2+(10101)_2\}-(10111)_2$
(b)	If $\begin{bmatrix}1 & 5\\ 3 & y\end{bmatrix}\begin{bmatrix}z\\ 7\end{bmatrix}=\begin{bmatrix}35\\ 14\end{bmatrix}$ Find y and z.

Paper Code Number: 2643	2023 (1st-A) INTERMEDIATE PART-I (11th Class)	Roll No: _____
BUSINESS MATHEMATICS (COMMERCE GROUP) PAPER-I		
TIME ALLOWED: 15 Minutes	OBJECTIVE	MAXIMUM MARKS: 10

Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.

S.#	QUESTIONS	A	B	C	D
1	$(101)_2 + (11)_2$ is equal to:	$(101)_2$	$(111)_2$	$(110)_2$	$(1000)_2$
2	If $A = \begin{bmatrix} 1 & 2 & 4 \\ 3 & 1 & 0 \end{bmatrix}$ then order of A' will be:	3×2	2×3	3×3	2×2
3	Inverse of the matrix will be possible if the matrix is:	Singular	Null matrix	Non-singular	Row matrix
4	The missing term x in the proportion $x : 5 :: 15 : 25$ is:	3	5	15	25
5	What percent Rs.50 is of Rs.250?	5%	50%	10%	20%
6	In which case more interest is earned if interest rate is compounded?	Annually	Monthly	Quarterly	Semi-annually
7	A cubic function is of degree:	2	1	3	0
8	The graph of a linear function is:	Parabola	Straight line	Circle	Curve
9	The quadratic formula for $ax^2 + bx + c = 0$ is:	$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	$\frac{-b \pm \sqrt{c^2 - 4ac}}{2a}$	$\frac{-b \pm \sqrt{b^2 - 4bc}}{2a}$	$\frac{-b \pm (b^2 - 4ac)^2}{2a}$
10	A binary number $(101)_2$, in decimal number system is equal to:	4	5	6	3

2023 (1st-A)

INTERMEDIATE PART-I (11th Class) Roll No:

BUSINESS MATHEMATICS (COMMERCE GROUP) PAPER-I

TIME ALLOWED: 1.45 Hours	**SUBJECTIVE**	**MAXIMUM MARKS: 40**

NOTE: Write same question number and its parts number on answer book, as given in the question paper.

SECTION-I

2. Attempt any six parts. **6 × 2 = 12**

(i)	Define Ratio with example.
(ii)	Define Proportion.
(iii)	300 is what percentage of 1000.
(iv)	Find the simple interest on Rs.5000 for 10 years at 8% per annum.
(v)	Write the formula of compound interest.
(vi)	Solve for x: $2x + 20 - 5x = x - 6 + 9x$
(vii)	Solve the equation $x + 2[3x + 8] - 7 = 16$
(viii)	Solve $9x^2 = 81$
(ix)	Solve by factorization $x^2 + 9x + 18 = 0$

3. Attempt any six parts. **6 × 2 = 12**

(i)	Differentiate between Even and Odd function.
(ii)	Draw the graph of liner equation $\frac{x}{2} + \frac{y}{4} = 1$
(iii)	Convert 35 into binary system.
(iv)	Convert $(10001)_2$ into decimal number.
(v)	Solve $(10000) - (1011)_2$.
(vi)	Define Column Matrix.
(vii)	Find AB if $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 2 \\ 4 \end{bmatrix}$
(viii)	Find $\lvert A \rvert$ if $A = \begin{bmatrix} 1 & 5 \\ 3 & 2 \end{bmatrix}$
(ix)	Find $B - A$ if $A = \begin{bmatrix} 1 & 2 \\ 3 & 2 \end{bmatrix}$, $B = \begin{bmatrix} -3 & -2 \\ 4 & 2 \end{bmatrix}$

SECTION-II

NOTE: Attempt any two questions. **2 × 8 = 16**

4.(a)	15 men can finish a job in 8 days. How many men are required to do the same job in 5 days?	4
(b)	Calculate compound interest when Rs.750 invested for 8 years at 12% per annum.	4
5.(a)	If $f(x) = ax + 12$ and $f(-3) = 0$ then find the value of 'a'.	4
(b)	Solve the equation $\frac{1}{x} - \frac{1}{x-2} = 3$ $x \neq 0, 2$ by using quadratic formula.	4
6.(a)	Solve the system by Crammer's rule. $2x + 3y = 5$, $x + 2y = 3$	4
(b)	Simplify $(11111)_2 - [(1011)_2 + (1111)_2]$	4

Paper Code Number: 2641

2019 (A)

Roll No._____

INTERMEDIATE PART-I (11th CLASS)

BUSINESS MATHEMATICS & STATISTICS (COMMERCE GROUP)

PAPER-I (NEW SCHEME)

TIME ALLOWED: 15 Minutes

OBJECTIVE

MAXIMUM MARKS: 10

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) The ratio between 850grms and 1.70kg is:

(A) 5 : 1 (B) 1 : 2 (C) 1 : 5 (D) 2 : 1

(2) What percent Rs.30 is of 300?

(A) 30% (B) 20% (C) 10% (D) 15%

(3) The amount paid to an agent as remuneration for his services is called:

(A) Salary (B) Commission (C) Rent (D) Profit

(4) An ordinary annuity which never stopped is called:

(A) Annuity (B) Compound interest (C) Compound amount (D) Perpetuity

(5) If three times a number is 150, then the number is:

(A) 25 (B) 40 (C) 50 (D) 60

(6) Number of ways to solve a quadratic equation are:

(A) Two (B) Three (C) Four (D) Five

(7) The solution of $2x + y = 6$, $x - y = 2$ is:

(A) $\left(\frac{8}{3}, \frac{2}{3}\right)$ (B) $\left(\frac{3}{8}, \frac{3}{2}\right)$ (C) $\left(\frac{-3}{8}, \frac{3}{2}\right)$ (D) $\left(\frac{-8}{3}, \frac{-2}{3}\right)$

(8) If $f(x) = \frac{x+5}{x-5}$, then $f(0)$ is:

(A) 1 (B) 10 (C) 0 (D) -1

(9) The determinant of an identity matrix is equal to:

(A) 0 (B) -1 (C) 1 (D) 2

(10) $(1001)_2$ in decimal system is:

(A) 9 (B) 7 (C) 13 (D) 11

2019 (A) Roll No: _____

INTERMEDIATE PART-I (11th CLASS)

BUSINESS MATHEMATICS & STATISTICS PAPER-1 (NEW SCHEME)

(COMMERCE GROUP) TIME ALLOWED: 1.45 Hours

SUBJECTIVE MAXIMUM MARKS: 40

NOTE: - Write same question number and its part number on answer book, as given in the question paper.

SECTION-I

2. Attempt any six parts. $6 \times 2 = 12$

(i) Find the ratio between 5 minutes and 30 seconds.

(ii) If $45 : 60 :: 900 : x$ then find the value of x.

(iii) 160 is 20% of what number?

(iv) Define Percentage.

(v) Find simple interest on an amount of Rs.20000 invested for 4 years at the rate of 2½% annually.

(vi) Define Compound Interest.

(vii) Write any two types of annuity.

(viii) Solve the equation $\frac{2x}{7} + 1 = 0$

(ix) Solve the equation $3x + 2 = 2x + 6$

3. Attempt any six parts. $6 \times 2 = 12$

(i) Find x and y if $x - 2y = 1;\ 3x + 2y = 7$

(ii) Find x if $x^2 - (a + b)x + ab = 0$

(iii) Write quadratic equation and quadratic formula.

(iv) Write the domain and range of the relation $\{(1, 3), (3, 3), (5, 1), (6, 1)\}$

(v) $f(x) = \sqrt{x^2 - 3x}$, find $f(3)$ and $f(4)$

(vi) Define order of a matrix with an example.

(vii) Show that $A = \begin{bmatrix} 0 & 3 \\ -3 & 0 \end{bmatrix}$ is a skew symmetric.

(viii) Convert 26 into binary system.

(ix) Evaluate $(10101)_2 - (1111)_2$

SECTION-II

NOTE: - Attempt any two questions.

4.(a) 60 men can build a house in 44 days. How many days will 40 men take to build the same house? 4

(b) Calculate the present value of an annuity of Rs.400 each month for 4 years at 6% compounded monthly. 4

5.(a) The area of room is 120 square metres. If the length is 2 metres more than breadth, find the length and breadth of room. 4

(b) Solve the equations $465x + 75y = 615,\quad 75x + 465y = 1005$ 4

6.(a) Solve $2x - 5y = 1;\ 3x + 4y = 16$ by using matrices. 4

(b) Evaluate $[(1011)_2 \times (111)_2] - (101)_2$ 4

Faisalabad Board-2024

Roll No. : _____

Objective
Paper Code
6641

Intermediate Part First

Business Mathematics (Objective)

Time: 15 Minutes Marks: 10

Q.No.1 **You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.**

S.#	Questions	A	B	C	D
1	The simplest form of ratio $\frac{4}{9}$ to $\frac{1}{3}$:	4 to 1	1 to 3	3 to 1	4 to 3
2	In 10 : x :: 8 : 4 , x is equal to:	5	6	4	2
3	The simple interest on Rs. 4800 for 2 years at 6% per annum is:	476	576	676	657
4	If $G(x) = x^2 + 4$ then $G(\sqrt{3})$ is:	1	-1	7	-7
5	If $\frac{3x}{8} + 5 = 17$ then x = ?	$x = 32$	$x = 23$	$x = 34$	$x = 43$
6	$x^2 - 8x + 15 = 0$ can be factorize as:	$(x+5)(x-3)$	$(x-5)(x+3)$	$(x-5)(x-3)$	$(x+5)(x+3)$
7	8 in binary system is:	$(10)_2$	$(100)_2$	$(1011)_2$	$(1000)_2$
8	$(1101)_2 + (110)_2 =$ _____ .	$(11001)_2$	$(10011)_2$	$(10101)_2$	$(10001)_2$
9	A square matrix A is said to be singular if:	$\lvert A \rvert = 0$	$\lvert A \rvert \neq 0$	$\lvert A \rvert = 1$	$\lvert A \rvert < 1$
10	If $A=\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$, $B=\begin{bmatrix}2 & 3\\ 4 & 5\end{bmatrix}$ then A + B is equal to:	$\begin{bmatrix}-1 & -1\\ -1 & -1\end{bmatrix}$	$\begin{bmatrix}1 & 1\\ 1 & 1\end{bmatrix}$	$\begin{bmatrix}3 & 5\\ 7 & 9\end{bmatrix}$	$\begin{bmatrix}2 & 8\\ 6 & 3\end{bmatrix}$

Faisalabad Board-2024

Intermediate Part First Roll No. _____

pakcity.org

Business Mathematics (Subjective)

Time: 01:45 Hours Marks: 40

SECTION – I

2. **Write short answers to any SIX parts.** 12

(i) If a pole of height 20 feet cast a shadow 24 feet, how long a shadow would be for a pole of height 30 feet?
(ii) Express in reduced form 24 : 48
(iii) Zahid has Rs. 500000 at the end of a year, what is the amount of Zakat?
(iv) How long will it take for Rs. 5000 to earn simple interest as Rs. 1000 invested at 10% per annum?
(v) The price of shoes was Rs. 350, which is 30% less of the actual price. Find the original price.
(vi) Find the two consecutive integers whose sum is 99.
(vii) Find x if : $100 - 7[3x - 3(4 - 3)] = x$
(viii) Reduce $x^4 - 10x^2 + 9 = 0$ into quadratic form.
(ix) Solve $y^2 - 10y + 9 = 0$ by factorization.

3. **Write short answers to any SIX parts.** 12

(i) If $f(x) = x^2 - \frac{1}{x^2} + 3$; then find $f(\sqrt{2})$
(ii) Draw the graph of the function $f(x) = x$
(iii) Convert $(99)_{10}$ to binary system.
(iv) Convert $(10100)_2$ into decimal system.
(v) Simplify $(10000)_2 - (1011)_2$
(vi) Find value of λ if $A = \begin{bmatrix} \lambda & 4 \\ -2 & 2 \end{bmatrix}$ is singular.
(vii) Find A^{-1}, if $A = \begin{bmatrix} 5 & 3 \\ 4 & 2 \end{bmatrix}$
(viii) If $A = \begin{bmatrix} 1 & -2 \\ 3 & -4 \end{bmatrix}$; then compute A^2
(ix) Define non-singular matrix.

SECTION – II Attempt any TWO questions. Each question carries 08 marks.

4. (a) A train travels 144 km distance in 2 hours. What will be travel in 50 minutes with same? 04
(b) Calculate the compound interest earned for Rs. 5000 invested for 6 years at 7% per annum. 04

5. (a) If $f(t) = 6t + 4$. Find $f(\frac{-1}{2})$, $f(\frac{1}{2})$, $f(\frac{3}{2})$, $f(-4)$ 04
(b) Find solution set of $3x^2 + 4x - 5 = 0$ by quadratic formula. 04

6. (a) Solve the system of linear equations $2x - y = -2$, $x + 2y = 3$ by inversion matrix method. 04
(b) Simplify: $[(100111)_2 + (10101)_2] - (10111)_2$ by changing into decimal system. 04

Faisalabad Board-2022

Roll No. :

Objective
Paper Code
6641

Intermediate Part First

Business Mathematics (Objective)

Time: 15 Minutes Marks: 10

Q.No.1 **You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.**

S.#	Questions	A	B	C	D
1	The fourth proportional to 1 : 2 : : 3 is:	2	3	6	5
2	What is the 10% of 40 ?	4	6	5	10
3	The formula to calculate compound interest is:	$P[(1+r)^n - 1]$	$P(1+r)^n + 1$	$P(1-r)^n - 1$	$P(1+r)^n$
4	The reverse of sum of an annuity is called:	Present value	Perpetuity	Ordinary annuity	Future value
5	If $f(x) = 2x^2 + 1$ then $f(x)$ is an:	Odd function	Even function	Constant	Neither even nor odd
6	If eight times a number is 48. What is the number?	4	5	6	3
7	The solution set of an equation $ax + b = 0$ is:	$\frac{b}{a}$	$-\frac{b}{a}$	$\frac{a}{b}$	$\pm\frac{a}{b}$
8	If $ax^2 + bx + c = 0$ then discriminant is:	$b^2 - 4ac$	$4ac - b^2$	$b^2 + 4ac$	$b^2 - 4a$
9	The binary number $(11)_2$ is equal to the decimal number:	5	3	2	7
10	If the order of a matrix A is 2×3 and of a matrix B is 3×2. What is the order of AB?	3×2	3×3	2×3	2×2

49-XI122-5000

Intermediate Part First Roll No. _____

pakcity.org

Business Mathematics (Subjective)

Time: 01:45 Hours Marks: 40

SECTION – I

2. **Write short answers to any SIX parts.** 12

(i) What is antecedent and consequent of a ratio?
(ii) Define inverse proportion and give its example.
(iii) What do you know about annuity?
(iv) Find 5% of 200.
(v) What sum would borrow in Rs. 200 as interest at 5% in 2 years?
(vi) Solve for 'x' $\frac{9}{x+4} = \frac{5}{x-8}$
(vii) Solve the equation $2x + 8 = 24$
(viii) Factorize $2x^2 + x - 1 = 0$
(ix) Find solution of $x^2 - 3x - 18 = 0$ by completing square method.

3. **Write short answers to any SIX parts.** 12

(i) Find the x-intercept and y-intercept of the line $x + 3y = 9$
(ii) If $f(x) = 3x^2 + 2x - 1$ then find $f(-2)$ and $f(2)$
(iii) Convert $(1101)_2$ into decimal system.
(iv) Convert 73 into binary system.
(v) Simplify $(101)_2 \times (1101)_2$
(vi) Define rectangular matrix. Also give an example.
(vii) If $A = \begin{bmatrix} 4 & 3 \\ 2 & 5 \end{bmatrix}$ find A^2
(viii) Find the value of x when $\begin{bmatrix} 8 & x \\ 2 & 4 \end{bmatrix}$ is a singular matrix.
(ix) Find inverse of A where $A = \begin{bmatrix} 4 & 9 \\ 7 & 6 \end{bmatrix}$

SECTION – II

Attempt any TWO questions. Each question carries 08 marks

4. (a) If stay of 14 men for 8 days in a hotel cost Rs. 22400. Then find the cost for stay of 7 men for 13 days. 04
(b) At what rate of compound interest will Rs. 60180 amount to Rs. 100000 in 4 years? 04

5. (a) Find the solution set of the equation by using quadratic formula $x^2 + 11x + 3 = 0$ 04
(b) Sketch the graph of $4x + 2y = 10$ 04

6. (a) If $A = \begin{bmatrix} 3 & 1 \\ 2 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 4 \\ 8 & 6 \end{bmatrix}$, then find (i) $B + A$ (ii) AB 04
(b) Simplify: $\{(111000)_2 + (101010)_2\} - (1011)_2$ 04

Answer Sheet No. _____ **Business Mathematics (OBJECTIVE)** Roll No. _____

PART – I **021/1** (Smart Syllabus)

(INTERMEDIATE)

Sign. Dy. Supdnt. Fictitious Roll No. (For Office Use) Sign. Candidate

Business Mathematics (INTERMEDIATE)

(PART – I) **021/1** (Smart Syllabus)

(OBJECTIVE PART) Marks : 10

Time : 15 Minutes

Note:- Write your Roll No. in space provided. Over writing, cutting, using of lead pencil will result in loss of marks. All questions are to be attempted.

1- Each question has four possible answers, Tick (√) the correct answer. (10)

1)	What percent of Rs 400 is 40;							
	A	30 %	B	20 %	C	15 %	D	10 %
2)	Comparison between two quantities of same units is known as;							
	A	Ratio	B	Proportion	C	Percentage	D	Intrest
3)	Intrest is classified in ------ classes;							
	A	Five	B	Four	C	Two	D	Three
4)	The value of $f(x) = 4x + 100$ at $x = 2$ is;							
	A	110	B	108	C	106	D	104
5)	Degree of quadratic equation is;							
	A	One	B	Two	C	Three	D	Four
6)	$5x + 70 = 0$ then $x = ?$							
	A	-14	B	-13	C	-12	D	-11
7)	A Matrix which has only one row is called ---------- Matrix;							
	A	Square	B	Column	C	Row	D	Singular
8)	$\begin{vmatrix} 3 & 4 \\ 2 & 1 \end{vmatrix}$ = ----------							
	A	0	B	-1	C	2	D	-2
9)	Base of binary number system is ----------;							
	A	10	B	8	C	4	D	2
10)	In binary system, 5 is equal to;							
	A	$(111)_2$	B	$(110)_2$	C	$(101)_2$	D	$(11)_2$

(The End)

Business Mathematics 021/1 (Smart Syllabus)

PAPER : PART – I INTERMEDIATE

MARKS: 40

TIME : 1:45 Hours (SUBJECTIVE PART)

Note:- Attempt any twelve (12) short parts selecting at least six questions from Q. 2, Q. 3. (12 x 2 = 24)

SECTION – I

2- Write short answers of any six parts. (2 x 6 = 12)

i	Define ratio.	ii	Distribute Rs. 15000 in the ratio 3:2.
iii	160 is what percent of 80.	iv	If the simple interest on Rs. 15000 for 3 years is Rs. 900, find the rate of interest.
v	How long will it take for Rs. 35000 to produce Rs. 3500 as interest at the rate of 4%.	vi	Solve $3(x+1)+x^2=x^2+12$.
vii	Find three consecutive odd integers whose sum is 225.	viii	Solve by the method of factorization $2x^2+15x+18=0$
ix	Solve by using quadratic formula $x^2-4x-8=0$		

3- Write short answers of any six parts. (2 x 6 = 12)

i	Define slope of line.	ii	If $Z = x^2 - y^2$ find the value of Z when $x = 1$ and $y = -5$.
iii	If $A=\begin{bmatrix}3 & 4\\ -2 & 3\end{bmatrix}$ and $B=\begin{bmatrix}2 & 3\\ 4 & 5\end{bmatrix}$ Find A + B	iv	Find the value of 'x' when $A=\begin{bmatrix}2x & -4\\ -1 & 5\end{bmatrix}$ and $\lvert A\rvert = 16$
V	If $A=\begin{bmatrix}3 & 2\\ 1 & 4\end{bmatrix}$ and $B=\begin{bmatrix}2 & 0\\ 5 & 7\end{bmatrix}$ then find AB.	vi	If $A=\begin{bmatrix}3 & 2\\ 1 & 4\end{bmatrix}$ Find A^{-1}
vii	Convert '13' into Binary number system.	viii	Evaluate $(100)_2 - (11)_2$
ix	Evaluate $(101)_2 \times (11)_2$		

SECTION – II

Note:- Attempt any two questions. (8 x 2 = 16)

4- (a) A watch was sold for Rs. 850 on 4½ % loss. Find the cost of the watch. (04)

(b) Calculate the compound interest earned for Rs. 5000 invested for 6 years at the rate of 7% per annum. (04)

5- (a) Solve $\frac{1}{x+3} - \frac{1}{x-3} = 3$ by using quadratic formula. (04)

(b) Find domain and range of the function $f(x) = \frac{x^3-8}{x-2}$, $x \neq 2$ (04)

6- (a) Find 2A + 4B if $A=\begin{bmatrix}1 & 2\\ -3 & 4\end{bmatrix}$, $B=\begin{bmatrix}0 & 3\\ 5 & -2\end{bmatrix}$ (04)

(b) Simplify by changing into decimal system. (04)

$[(100111)_2 + (10101)_2] - (10111)_2$

Answer Sheet No. | **Business Mathematics (OBJECTIVE)** | Roll No.

PART – I **019/1**

(INTERMEDIATE)

AJK Board-2019

Sign. Dy. Supdnt. | Fictitious Roll No. (For Office Use) | Sign. Candidate

Business Mathematics (INTERMEDIATE)

(PART – I) **019/1** **Marks : 10**

(OBJECTIVE PART) **Time : 15 Minutes**

Note:- Write your Roll No. in space provided. Over writing, cutting, using of lead pencil will result in loss of marks. All questions are to be attempted.

1- Each question has four possible answers, Tick (√) the correct answer. (10)

1)	Ratio between 6 kg and 42 kg is;							
	A	1 : 7	B	7 : 1	C	6 : 7	D	7 : 6
2)	60 % of 200 is;							
	A	110	B	120	C	150	D	180
3)	It 5 : 10 : : 20 : x. then x is;							
	A	60	B	80	C	40	D	30
4)	Formula for simple interest;							
	A	$\frac{p \times r}{t \times 100}$	B	$\frac{p \times t}{r \times 100}$	C	$\frac{p \times r \times 100}{t}$	D	$\frac{p \times r \times t}{100}$
5)	If $4x - 5 = 2x + 7$. Then x is;							
	A	6	B	12	C	4	D	3
6)	Solution set of $x^2 + 5x + 6 = 0$ is;							
	A	{2 , 3}	B	{– 2 , – 3}	C	{– 2 , 3}	D	{2 , 1}
7)	It $x + y = 7$ and $x - y = 5$. Then x is;							
	A	2	B	4	C	6	D	8
8)	It f : x ⟶ y. Then x is called;							
	A	Range	B	Constant function	C	Onto function	D	Domain
9)	It $A = \underset{1\times3}{[1 \quad 2 \quad 3]}$, $B = \begin{bmatrix} 4 \\ 5 \\ 6 \end{bmatrix}_{3\times1}$ Then order of AB is;							
	A	1 x 1	B	2 x 2	C	3 x 3	D	2 x 3
10)	$(1001)_2$ into base 10 is							
	A	8	B	9	C	10	D	12

(The End)

Business Mathematics 019/1

PAPER : PART – I INTERMEDIATE

MARKS: 40

TIME : 1:45 Hours (SUBJECTIVE PART)

SECTION – I

2- Write short answers of any six parts. (2 x 6 = 12)

i	Write different types of proportion.	ii	Define ratio and how it is expressed.
iii	What is the relationship among %age, base and rate?	iv	500 is what %age of 10000.
v	Write formula of simple interest.	vi	What will be simple interest on Rs. 700 borrowed for 5 years @ 9% p.a.
vii	Write formula for Amount of an Annuity due.	viii	Solve $3(4x - 2) = 4(2x + 3)$.
ix	Define the degree of an equation.		

3- Write short answers of any six parts. (2 x 6 = 12)

i	Solve $x^2 + 7x + 12 = 0$, by factorization.	ii	Define an irrational equation.
iii	Solve by elimination Method $x + y = 12$ & $x - y = 8$.	iv	Define an even function.
v	If $2x - y = 5$, then find slope and y – intercept.	vi	If $A = \begin{bmatrix} 11 & 7 \\ 6 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 5 & 2 \\ 3 & 1 \end{bmatrix}$, then find A + B & A – B.
vii	Define skew-symmetric and symmetric matrices.	viii	Convert 17 into Binary number system.
ix	Convert $(1101)_2$ into decimal number system.		

SECTION – II

Note:- Attempt any two questions. (8 x 2 = 16)

4- (a) Divide Rs. 750 in the ratio 3 : 2 (04)

(b) How long will it take for Rs. 50000 to earn simple interest as Rs. 10,000 at 10% per Annum. (04)

5- (a) Solve by completing square $x^2 + 18x - 40 = 0$ (04)

(b) If $G(y) = y2 - 2y + 1$ then find $G(-1)$, $G(1)$, $G(-2)$, $G(-3)$ (04)

6- (a) Find the values of x if $\begin{vmatrix} 3 & 1 & x \\ -1 & 3 & 4 \\ x & 1 & 0 \end{vmatrix} = -30$ (04)

(b) Evaluate $(11011)_2 \times (11110)_2$ (04)

(The End)