



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

(OLD PATTERN)

Paper Code 2 8 0 3

Business Mathematics (Objective Type) Session; 2011-2013

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. If $A = \begin{bmatrix} 5 & 6 \\ 8 & 9 \end{bmatrix}$, then $|A|$ is:
(A) 3 (B) 24 (C) -3 (D) 21
2. 5 in binary number system is:
(A) $(11)_2$ (B) $(101)_2$ (C) $(110)_2$ (D) $(111)_2$
3. Ratio between 6 Kg and 54 Kg is:
(A) 1 : 8 (B) 1 : 3 (C) 1 : 9 (D) 9 : 1
4. 160 is what percentage of 80?
(A) 50% (B) 200% (C) 100% (D) 300%
5. Formula for finding rate is:
(A) $\frac{I \times 100}{P \times r}$ (B) $\frac{I \times 100}{P \times t}$ (C) $\frac{P \times 100}{I \times t}$ (D) $\frac{t \times 100}{P \times I}$
6. Annuity is classified into categories.
(A) 4 (B) 3 (C) 2 (D) 5
7. $f(x) = x + 8$, then value of $f(1)$ is:
(A) 7 (B) 8 (C) -8 (D) 9
8. The degree of equation $2x + 5 = 0$ is:
(A) 0 (B) 1 (C) 2 (D) 3
9. Solution of $(x - 4)(x - 5) = 0$ is
(A) (4, 5) (B) (-4, -5) (C) (-4, 5) (D) (4, -5)
10. If $A = \begin{bmatrix} 3 & 4 \\ 6 & 9 \end{bmatrix}$, then $AdjA$ is:
(A) $\begin{bmatrix} 9 & -4 \\ -6 & 3 \end{bmatrix}$ (B) $\begin{bmatrix} 3 & 6 \\ 4 & 9 \end{bmatrix}$ (C) $\begin{bmatrix} 9 & -4 \\ 6 & 3 \end{bmatrix}$ (D) $\begin{bmatrix} 9 & 4 \\ -6 & 3 \end{bmatrix}$

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

(OLD PATTREN)

Paper Code 2 8 0

Session; 2011-2013

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 compound interest.
- ii. What is $13\frac{1}{2}\%$ of 98?
- iii. Define ordinary annuity.
- iv. What is the commission on Rs.6000@ $22\frac{1}{2}\%$.
- v. Rs. 2500 has to be distributed between the two boys in the ratio 2 : 3. How many Rs does each student receive?
- vi. A company has 400 male and 150 female employees. Find the ratio of male employees.
- vii. If the simple interest on Rs.15000/= for 3 years is Rs.900/=. Find the rate of interest.
- viii. If $f(x) = \sqrt{3x-5}$, find $f(x^2)$ and $f\left(\frac{5}{3}\right)$.
- ix. Give the domain of the function $f(x) = \frac{2x+1}{x+2}$.

3- Write short answers of any six parts from the following.

2 x 6 = 12

- i. Write $\frac{2}{x+1} + \frac{3}{x+2} = 2$ in the quadratic form.
- ii. Solve the linear equation $4x - 9 = 0$.
- iii. Find two consecutive odd integers whose sum is 16.
- iv. Find the sum of $(101)_2$ and $(11)_2$.
- v. If $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ find A^2 .
- vi. If $A = \begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix}$, find $|A|$.
- vii. Convert 22 into binary number system.
- viii. Define a scalar matrix.
- ix. Convert $4^{1+x} + 4^{1-x} = 10$ to a quadratic form by suitable substitution.

Section - II

NOTE: Attempt any two questions from the following.

8x2=16

4. (a) Find the cost price if sales price is Rs. 140 and loss is 20%.
(b) Find the amount of an annuity of Rs. 12000/= payable at the end of each year for 10 years at the rate of 5% compounded annually.
5. (a) If $f(x) = \frac{x^2}{x^2+1}$, then find $f(\sqrt{2})$ and $f\left(\frac{1}{\sqrt{2}}\right)$.
(b) Solve $5(x-7) - 2x = 1 - 3[(4x+7) - 2(x-3)]$.
6. (a) If $A = \begin{bmatrix} 4 & 9 \\ 7 & 6 \end{bmatrix}$, then prove that $AA^{-1} = I_2$.
(b) Evaluate $(945)_{10} + (1111)_2$ by changing into binary system.



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

Paper Code 2 8 0 1

Session; 2015-2017

Business Mathematics (Objective Type)

Marks: 10

Time: 15 Minutes

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. The simplest ratio of 18 to 30 is:

(A) 3 : 4

(B) 3 : 5

(C) 6 : 9

(D) 6 : 7

2. 160 is 20% of what number?

(A) 8000

(B) 80000

(C) 800

(D) 80

3. 30% simple interest on Rs.500 in 2 years is:

(A) Rs.150

(B) Rs.300

(C) Rs.600

(D) Rs.900

4. Type of annuity are:

(A) 5

(B) 4

(C) 3

(D) 2

5. Value of $f(x) = x^2 + 2x + 1$ at $x = 2$ is:

(A) 4

(B) 6

(C) 8

(D) 9

6. If $2x - 5 = 3$ the value of x is:

(A) 9

(B) 6

(C) 4

(D) 16

7. Quadratic equation has at the most:

(A) one root

(B) two roots

(C) three roots

(D) four roots

8. Order of the matrix $\begin{bmatrix} 2 & 3 & 4 \end{bmatrix}$ is:(A) 3×1 (B) 1×3 (C) 1×1 (D) 3×3 9. If $A = \begin{bmatrix} 5 & -2 \\ 3 & 1 \end{bmatrix}$, then $|A|$ is:

(A) 11

(B) -1

(C) 13

(D) 17

10. 7 in binary number system is:

(A) $(11)_2$ (B) $(101)_2$ (C) $(110)_2$ (D) $(111)_2$

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

Paper Code 2 8 0

Business Mathematics (Essay Type) **Session; 2015-2017**

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 ratio.
- ii. Divide 6000 in the ratio 5 : 7.
- iii. Define percentage.
- iv. Calculate 45% of 900.
- v. Explain simple interest.
- vi. Find domain of $f(x) = \frac{5}{x-2}$.
- vii. Write at least two key points of compound interest.
- viii. If $f(x) = x^2 - x + 5$, whether $f(x)$ is even or odd.
- ix. If $y = 2x + 1$ find slope and y- intercept.

3- Write short answers of any six parts from the following.

2 x 6 = 12

- i. Define reciprocal equation.
- ii. Define an equation.
- iii. Define irrational equation.
- iv. Define identity matrix.
- v. If $A = \begin{bmatrix} 1 & 4 \\ 2 & 8 \end{bmatrix}$, then find $|A|$.
- vi. Define inverse of a matrix.
- vii. Find $(11101)_2 + (111)_2$.
- viii. Convert 27 into binary system.
- ix. If seven times a number is 49 find number.

Section - II

NOTE: Attempt any two questions from the following.

8x2=16

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.
(b) In what time will Rs.100000 be Rs.197400 at 12% on compound interest?
5. (a) If $f(x) = \frac{x}{x+1}$, find $f(-2)$, $f(1)$, $f(-1)$ and $f(2)$.
(b) Solve $2^x + 2^{-x+6} - 20 = 0$.
6. (a) Expand $\begin{vmatrix} 3 & -1 & 4 \\ 2 & 7 & 3 \\ 5 & 1 & 2 \end{vmatrix}$.
(b) Simplify $[(100111)_2 + (10101)] - (10111)_2$.



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

Paper Code	6	6	4	1
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Sessions;2012-2014;2013-2015&2014-2016

Business Mathematics (Objective Type)

Time: 20 Minutes

Marks: 15

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. The ratio between 80 and 640 is:

- (A) 1 : 10 (B) 1 : 8 (C) 1 : 4 (D) 1 : 2

2. If $A : B = 2 : 3$ and $B : C = 3 : 5$ Hence $A : B : C$ would be:

- (A) 2 : 3 : 5 (B) 1 : 2 : 3 (C) 1 : 3 : 5 (D) 1 : 2 : 5

3. 10% of 300 is:

- (A) 10 (B) 30 (C) 100 (D) 150

4. Principal amount remain constant for calculation of interest for every period in _____

- (A) simple interest (B) compound interest (C) rent (D) investment

5. Principal = Rs.5000, interest rate = 10%, period = $\frac{1}{2}$ year, interest =?

- (A) 1000 (B) 500 (C) 250 (D) 100

6. If $f(x) = 2x + 26$, then $f(20)$.

- (A) 63 (B) 64 (C) 65 (D) 66

7. If $f(-x) = f(x)$, the function is:

- (A) even (B) odd (C) linear (D) quadratic

8. Given that $x + (x + 8) = 20$, then value of x is equal to _____.

- (A) 4 (B) 6 (C) 8 (D) 10

9. In quadratic equation, the variable has degree _____.

- (A) 0 (B) 1 (C) 2 (D) none

10. Given $x = y$ and $2x + y = 3$, then solution set is:

- (A) $\{(1,1)\}$ (B) $\{(1,2)\}$ (C) $\{(2,1)\}$ (D) $\{(2,2)\}$

11. $\begin{bmatrix} 2 & -1 & 3 & 4 \end{bmatrix}$ is a _____ matrix.

- (A) row (B) column (C) null (D) none

12. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ is identity matrix of order.

- (A) 0×0 (B) 1×1 (C) 2×2 (D) none

13. If $\begin{vmatrix} 3 & 4 \\ 3 & x \end{vmatrix} = 0$, then x is:

- (A) 2 (B) 3 (C) 0 (D) 4

14. The number system used in computer.

- (A) binary (B) decimal (C) English (D) none

15. convert $(6)_{10}$ into binary number.

- (A) $(1001)_2$ (B) $(1000)_2$ (C) $(111)_2$ (D) $(110)_2$

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

Paper Code	6	0	6	4
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Sessions;2012-2014;2013-2015&2014-2016

Business Mathematics (Essay Type)

Time: 2:10 Hours

Marks: 60

Section - I

2 x 6 = 12

2- Write short answers of any six parts from the following.

- i. Write the two uses of ratio.
- ii. What is amount or maturity value?
- iii. Define Annuity.
- iv. A T.V was sold for Rs.4,000 on 5% loss. Find the cost of T.V.
- v. If the price of 50 shirts is Rs.3652/=. What will be the price of 80 such shirts?
- vi. The cash prize of Rs.5000 has to be distributed between two students in the ratio 2:3. How many does each student receive?
- vii. Find the simple interest on Rs.3000/= at the rate of 8% per year for 5 years?
- viii. Ali got 900 marks out of 1100 marks. Find his percentage of marks.
- ix. How long will it take to earn Rs. 11250/= as simple interest on the deposit of Rs.75000/= at 5% annually?

2 x 6 = 12

3- Write short answers of any six parts from the following.

- i. If $f(x) = x^2 + 3$, then find $f(2)$, $f(3)$.
- ii. Define Explicit function with one example.
- iii. Solve $2x^2 - 10x + 5 = 0$.
- iv. Find the domain and range of $f(x) = \frac{1}{x-3}$.
- v. Express $\frac{1}{x+4} - \frac{1}{x-4} = 4$ in standard form.
- vi. Eight times of a number is 480. What is the number?
- vii. Find two consecutive integers whose sum is 101.
- viii. Find x -intercept and y -intercept of the function $2x + 3y = 5$.
- ix. Write formula of discriminant of the quadratic equation $ax^2 + bx + c = 0$, $a \neq 0$.

2 x 6 = 12

4- Write short answers of any six parts from the following.

- i. Define transpose of a matrix.
- ii. If $A = \begin{bmatrix} 1 & 2 & 3 \end{bmatrix}$, $B = \begin{bmatrix} -4 & 5 & 6 \end{bmatrix}$, then find $3A - 2B$.
- iii. Find adjoint of matrix $A = \begin{bmatrix} 1 & 0 \\ 0 & 3 \end{bmatrix}$.
- iv. If $A = \begin{bmatrix} 3 & 1 \\ 2 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 4 & -1 \\ 2 & 3 \end{bmatrix}$, then find BA .
- v. Find determinant of $A = \begin{bmatrix} -3 & -2 \\ 4 & 5 \end{bmatrix}$.
- vi. Convert $(11111)_2$ to base 10
- vii. What is the base of binary number system?
- viii. Convert $(1100011)_2$ to base 10.
- ix. Convert $(27)_{10}$ to base two.

Section - II

8x3=24

NOTE: Answer any three questions from the following.

- 5. (a) A is half as old as B and B is half as old as C. The sum of their ages is 105 years. Find their ages separately. 4
- (b) How long will it take for Rs.9800/= amounting to Rs.12650 at 3% p.a. as simple interest? 4
- 6. (a) Find the compound interest on Rs.2500 invested at 6% per annum, compounded semi-annually for 8 years. 4
- (b) If $f(x, y) = 3x\sqrt{y} - 1$ find $f(0, 9)$. 4
- 7. (a) Solve by quadratic formula $5x^2 - 13x + 6 = 0$. 4
- (b) Solve by elimination method $2x + y = 4$; $x - 2y = 7$ 4
- 8. (a) If $P = \begin{bmatrix} 2 & 1 \\ 3 & 1 \end{bmatrix}$, $Q = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, $S = \begin{bmatrix} 1 & -2 \\ -6 & 3 \end{bmatrix}$ and $aP + bQ = S$. Find the value of a and b. 4
- (b) Solve the system of linear equations by Cramer's rule $3x + 2y = 12$, $x + 5y = 17$. 4
- 9. (a) Convert 1453 into binary system. 4
- (b) Convert $(1001111)_2$ into decimal form. 4



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

Paper Code 2 8 0 1

Business Mathematics (Objective Type) **Session; 2015-2017 & 2016-2018**

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. What percentage of 560 is 28?

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

2. $-2:7::x:49$; the missing term be:

- (A) 8 (B) 12 (C) 14 (D) 16

3. Principal amount = 5000 rupees; rate = 10% period = 1 year; profit is:

- (A) 425 rupees (B) 500 rupees (C) 675 rupees (D) 600 rupees

4. The interval between two successive payments of an annuity remain.

- (A) constant (B) variable (C) fixed (D) both A and B

5. The y-co-ordinate of a point is called:

- (A) abscissa (B) ordinate (C) independent of x (D) range of x

6. The graph of $ax^2 + bx + c = 0$ is:

- (A) elliptic (B) parabolic (C) hyperbolic (D) circle

7. The slope intercept form be:

- (A) $y = mx + c$ (B) $\frac{x}{a} + \frac{y}{b} = 1$ (C) $y - y_1 = m(x - x_1)$ (D) $x \cos \alpha + y \sin \alpha = p$

8. If $A = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 5 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ then such matrix is called:

- (A) scalar matrix (B) diagonal matrix (C) identity matrix (D) rectangular matrix

9. $(AB)^t =$

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

10. $(1011)_2$ in decimal system is:

- (A) 12 (B) 15 (C) 28 (D) 11

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

Business Mathematics Session; 2015-2017 & 2016-2018

(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 percentage.
- ii. Define selling price.
- iii. 400 is 10% of what amount?
- iv. Find the value of x if $x:5::13:2$.
- v. Define ordinary annuity.
- vi. Define sum of an annuity.
- vii. Find principal if simple interest is Rs.20 @5% for 2 years.
- viii. Define revenue function.

ix. Define independent variable.

3- Write short answers of any six parts from the following.

2 x 6 = 12

- i. Solve $x^2 - 7x - 13 = 0$ by completing the square.
- ii. Solve $\frac{3x}{8} + 5 = 17$.
- iii. Solve the equations $5x + y = 22$ and $7x - y = 2$.
- iv. Define upper triangular matrix.
- v. If $A = \begin{bmatrix} 2 & 1 \\ 6 & 3 \end{bmatrix}$, then find A^{-1} .
- vi. Convert $(1101)_2$ into a decimal number.
- 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. Simplify $(1111)_2 - (1010)_2$.
- ix. If $\frac{1}{4}$ of an amount is Rs.160. Find the total amount.

Section - II

NOTE: Attempt any two questions from the following.

8x2=16

4. (a) Aslam sold a plot for 900000 and received 2% commission. Find amount received by Aslam.
 (b) Find compound interest at end of 5 years Rs.200000 borrowed at 13% compound annually.

5. (a) Solve $\frac{1}{x+1} + \frac{2}{x+2} = \frac{4}{x+4}$.

- (b) Convert $5x + 2y = 10$ it into intercepts form and identify the intercepts.

6. (a) If $4x + 7y = 140$ and $3x - 2y = 100$, find x and y by matrix approach.

(b) Simplify $[(100111)_2 + (10101)] - (10111)_2$.



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

Paper Code 2 8 0 5

Business Mathematics Sessions; 2015-2017 ; 2016-2018 & 2017-2019
(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. A first degree equation is called:

- (A) Linear (B) Non-linear (C) Quadratic (D) Non-quadratic

2. $2x^2 + 3x + 1 = 0$ is a:

- (A) linear equation (B) Exponential equation (C) cubic equation (D) quadratic equation

3. A matrix, which has only one column is called:

- (A) column matrix (B) singular matrix (C) square matrix (D) row matrix

4. The determinant of a matrix $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ is:

- (A) zero (B) negative (C) one (D) two

5. A decimal number system is also called:

- (A) Binary (B) Greek (C) Octal (D) Denary

6. The relation between two homogeneous quantities is called:

- (A) proportion (B) Annuity (C) Ratio (D) percentage

7. What percentage of 560 is 28?

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

8. Interest is classified into:

- (A) two classes (B) three classes (C) four classes (D) five classes

9. Monthly installment of a motorcar on lease can be found by using:

- (A) compound interest method (B) simple interest method (C) annuity method (D) proportion method

10. The concept of function was introduced in:

- (A) 16th century (B) 17th century (C) 18th century (D) 19th century

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

Sessions; 2015-2017 ; 2016-2018 & 2017-2019

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. Simplify the ratio $\frac{0.5}{0.06} : \frac{7}{8}$ in reduced form.
- ii. Define quantity discount.
- iii. Prove that $f(x) = x^2 + 4$ is an even function.
- iv. Define annuity due.
- v. If $f(x) = x^2 - 2x + 1$ then find $f(-1)$ and $f(-2)$.
- vi. 670.8 is what percentage of 13000?
- vii. Write the formula for (a) "compound amount" (b) "compound interest"
- viii. If $x : \frac{1}{4} :: 12 : 3$ then write this in form of equation and find value of x .

ix. Find simple interest on Rs.5000/= invested for 4 years at the rate 9% annually.

3- Write short answers of any six parts from the following.

2 x 6 = 12

- i. What is discriminant of $4x^2 - 13x + 3 = 0$.
- ii. Define linear equation.
- iii. Solve $\frac{3x}{8} + 5 = 17$.
- iv. Solve $9x^2 = 81$.
- v. If $A = \begin{bmatrix} 1 & 2 \\ -1 & 3 \end{bmatrix}$, $B = \begin{bmatrix} -3 \\ 4 \end{bmatrix}$, find AB
- vi. Define order of a matrix.
- vii. Define transpose of a matrix.
- viii. Define decimal number system.
- ix. Find $(11011)_2 + (11111)_2$.

Section - II

NOTE: Attempt any two questions from the following.

8x2=16

4. (a) A T.V set of price 10,000/= is available for sale and discount of Rs.500/= Give the purchase price, also the discount price.
(b) In what amount Rs.30,000/= to Rs.42,348 at 9% on compound interest?
5. (a) Find the slope and y-intercept of the line. If its equation is $x - y + 4 = 0$
(b) Solve the equation by completing square $3x^2 + 6x - 8 = 0$.
6. (a) If $A = \begin{bmatrix} 1 & -1 & 2 \\ 0 & 3 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 1 \\ 3 & 2 \\ 0 & -1 \end{bmatrix}$ prove that $(AB)^t = B^t A^t$
(b) Evaluate $(1010111)_2 \times (11011)_2$.



Roll No. _____ to be filled in by the candidate

(For All Sessions)

Paper Code 6 6 4 1

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 ratio between 3Kg and 27Kg is:
(A) 1 : 8 (B) 1 : 3 (C) 1 : 9 (D) 2 : 9
2. 10% of 50 is:
(A) 20 (B) 15 (C) 10 (D) 5
3. Interest is classified in:
(A) Two classes (B) Three classes (C) Four classes (D) Five classes
4. The point $(-a, -b)$ lies in the quadrant:
(A) First (B) Second (C) Third (D) Fourth
5. 8 times of a number is 56 what is number?
(A) 6 (B) 7 (C) 8 (D) 9
6. The quadratic equation $x^2 + 4x + 3 = 0$ can be factorized as:
(A) $(x+1)(x+3)$ (B) $(x-1)(x-3)$ (C) $(x-1)(x+3)$ (D) $(x+1)(x-3)$
7. Conversion of 7 into a binary system is:
(A) $(11)_2$ (B) $(100)_2$ (C) $(101)_2$ (D) $(111)_2$
8. The decimal number of $(1001)_2$ is:
(A) 7 (B) 9 (C) 11 (D) 13
9. A matrix A is said to be skew symmetric if:
(A) $A' = A$ (B) $A' = -A$ (C) $A' = |A|$ (D) $A' = AdJ(A)$
10. Transpose of row matrix is :
(A) Column matrix (B) Row matrix (C) Identity matrix (D) Square matrix

Roll No. _____ to be filled in by the candidate

(For All Sessions)

Business Mathematics (Essay Type)

Time: 1:45 Hours

Section - I

Marks:40

2 x 6 = 12

2- Write short answers of any six parts from the following.

- i. Find the ratio of 2 hours to 50 minutes.
 iii. Define percentage with example.
 v. Find the simple interest on Rs. 700 invested for 3 years, at 6% per annum.

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

ix. Solve the equation by factorization. $9x^2 - 6x - 8 = 0$

3- Write short answers of any six parts from the following.

- i. Define even function by giving an example.
 iii. Convert $(1101.011)_2$ into decimal system.
 v. Convert $(32)_{10}$ into binary system.

vii. Find A if $2A + \begin{bmatrix} 1 & 2 \\ 4 & 6 \end{bmatrix} = 0$

ix. Find A^2 if $A = \begin{bmatrix} 5 & 4 \\ 3 & 2 \end{bmatrix}$

ii. Divide Rs. 3600 between A and B in the ratio 3 : 2

iv. Define an ordinary annuity.

vi. Solve for $x : 2x + 20 - 5x = x - 6 + 9x$

viii. Define quadratic equation with an example.

2 x 6 = 12

ii. Discuss the nature of the roots of the equation $x^2 - 8x + 15 = 0$ iv. Evaluate $(1001)_2 \times (101)_2$ without converting into decimal system.vi. If $A = \begin{bmatrix} 3 & 1 \\ 2 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & -1 \\ 2 & 3 \end{bmatrix}$ then find BA

viii. Define triangular matrix. Give example of a triangular matrix of order 2.

Section - II

8 x 2 = 16

NOTE : Answer any two questions from the following.

- 4.(a) A man paid Zakat of Rs. 30,000 at the rate of $2\frac{1}{2}\%$ p.a of his wealth. What is the value of his wealth? 4
- (b) If Rs. 55000 are invested at 8% p.a compounded semi-annually for 5 years. Calculate compound interest. 4
- 5.(a) If $f(x) = \frac{1}{2}x + \frac{4}{5}$, then find $f(0), f\left(\frac{1}{4}\right), f\left(\frac{1}{\sqrt{2}}\right), f(-2)$ 4
- (b) Draw the graph of function $f(x) = 10 - 3x$ 4
- 6.(a) Solve the system of equations by using Cramer's Rule. 4
- $2x + 5y = 9$
 $x + 2y = 4$
- (b) Evaluate $[(111011)_2 \times (110001)_2] - (20)_{10}$ 4

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