☆☆

Roll No._____ *(To be filled in by the candidate)* **(NEW PATTERN)** | Paper Code | 6 | 6 | 4 | 3 |

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. 1. If $A = \begin{bmatrix} 5 & 2 \\ -3 & -5 \end{bmatrix}$ is a matrix of order 2 x 2, then $|A| = ?$

    (A) -19   (B) 19   (C) -31   (D) 31

2. Convert in decimal system to $(1001)_2$.

    (A) 9   (B) 7   (C) 5   (D) 3

3. Number system used in computer is:

    (A) decimal   (B) binary   (C) octal   (D) hexadecimal

4. The comparison of two similar quantities is called:

    (A) Percentage   (B) Ratio   (C) Proportion   (D) Annuity

5. If 2Kg of fruits cost Rs.150/= and 4Kg will cost Rs.300/= is an example of:

    (A) compound proportion   (B) interest   (C) inverse proportion   (D) direct proportion

6. 20% of 400 is:

    (A) 200   (B) 100   (C) 80   (D) 800

7. An other term representing principle is:

    (A) interest   (B) capital   (C) return   (D) price

8. The compound interest for two years at 10% is 4200, the principle is:

    (A) Rs.5000/=   (B) Rs.10,000/=   (C) Rs.15000/=   (D) Rs.20,000/=

9. If $f(x) = x^2 - 4$ then $f(-2)$ is equal to:

    (A) 0   (B) 4   (C) -4   (D) 8

10. The origin is:

    (A) $(0,x)$ (B) $(y,0)$ (C) (x,y) (D) $(0,0)$

11. The solution set of $\sqrt{x} + 3 = 2$ is:

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

12. Discriminant of quadratic equation $x^2 + 4x - 12 = 0$ is:

    (A) 60   (B) 68   (C) 72   (D) 64

13. The solution of simultaneous equations $x + y = 6$, $x - y = 2$ is:

    (A) $x = 5$, $y = 3$ (B) $x = 4$, $y = 2$ (C) $x = 7$, $y = 1$ (D) $x = 8$, $y = 0$

14. If A is a matrix of order 2 x 3 and B is a matrix of order 3 x 2, then order of AB is:

    (A) 3 x 3   (B) 2 x 2   (C) 2 x 3   (D) 3 x 2

15. Transpose of row matrix is:

    (A) row matrix   (B) column matrix   (C) zero matrix   (D) unit matrix

Roll No._____ *(To be filled in by the candidate)* (NEW PATTERN)   Paper Code | .6 | 0 | 6 | 4

Sessions;2012-2014;2013-2015&2014-2016

Business Mathematics (Essay Type)

Time: 2:10 Hours   Marks: 60

Section - I

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

   i. Divide Rs.6400/= in the ratio 5 : 3.
       ii. Find the value of x if $x:250::4:50$.

   iii. Express $\frac{4}{8}$ as %.
       iv. 250 is 20% of what amount?

   v. What is principal?
       vi. Define perpetuity.

   vii. A table cost Rs.225/= and is sold Rs.450/=. Find % of gain.

   viii. Find simple interest on Rs.5000/= for 10 years at 8% per annum.

   ix. Write formula for the amount of an ordinary annuity?

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

   i. If $f(x)=x^2-1$, find $f\left(\frac{1}{\sqrt{2}}\right)$ and $f(x^2)$.
       ii. Define Domain of a function.

   iii. Prove that $f(x)=5-x^2$ is an even function.
       iv. Solve $3(4x-2)=4(2x+3)$.

   v. If $\frac{1}{4}$ of an amount is Rs.60/=,what is the amount?
       vi. Solve $x^2-4x+3=0$ by completing the square.

   vii. Solve $x+2y=2$; $4y-x=10$.
       viii. Find the discriminant of the equation $x^2-5x-6=0$

   ix. Express $\frac{x^2}{2}-\frac{x}{6}=\frac{1}{12}$ is standard quadratic form.

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

   i. What is square matrix?
       ii. Define binary number system.

   iii. Find A if $2A+\begin{bmatrix}1 & 2\\4 & 6\end{bmatrix}=0$.
       iv. Find the value of x if $\begin{bmatrix}2 & x\\5 & 10\end{bmatrix}$ is singular matrix.

   v. Find the inverse of the matrix $\begin{bmatrix}4 & -7\\8 & 11\end{bmatrix}$.
       vi. Expand the determinant $|C|=\begin{vmatrix}10 & 5\\5 & \frac{1}{2}\end{vmatrix}$.

   vii. Find the sum of: $(11)_2$ and $(101)_2$.
       viii. convert into decimal base system $(1110)_2$.

   ix. Convert 786 into binary number.

Section - II

NOTE: Answer any three questions from the following.   8x3=24

5. (a) A man saves 10% of his income. If he spends Rs. 15000/=, find his income.   4

   (b) What must be the rate of simple interest on Rs. 40,000/= to produce Rs.2000/= in 8 months?   4

6. (a) Compute the compound interest on Rs.500/= for $6\frac{1}{2}$ years at $2\frac{1}{2}\%$ compounded semiannually.   4

   (b) If $y=-3x+5$ find y, when $x=-1,-2,-3,-4$.   4

7. (a) Solve for x: $4(2x-5)=3(2x+18)$.   (b) Solve $3(x+1)+x^2=x^2+12$.   4+4=8

8. (a) Find P and q: $\begin{bmatrix}2 & 3\\4 & 5\end{bmatrix}\begin{bmatrix}p & 2\\7 & q\end{bmatrix}=\begin{bmatrix}31 & 1\\55 & 3\end{bmatrix}$ 4

   (b) Solve by Cramer's rule: $2x-3y=1$; $x+4y=6$.   4

9. (a) Simplify $\{(11101111)_2-(10001)_2\}-\{(1111000)_2-(1000)_2\}$ 4

   (b) Evaluate $(101010)_2 \times (111111)_2$.   4

Roll No._____ *(To be filled in by the candidate)*   Paper Code 6 6 4 1

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. 1. The ratio between 3Kg and 27 Kg is:

    (A) 1 : 8   (B) 1 : 3   (C) 1 : 9   (D) 2 : 9

2. If $39 : x :: 18 : 6$, then the value of x is:

    (A) 15   (B) 14   (C) 13   (D) 12

3. What percent Rs. 30 is of Rs.300?

    (A) 30%   (B) 20%   (C) 40%   (D) 10%

4. The money borrowed is called:

    (A) amount   (B) principal   (C) interest   (D) future value

5. If Rs.1000 is borrowed for 5 years and paid Rs.1350 @ of:

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

6. Given that $x + 7 = 12$, then x is:

    (A) 3   (B) 4   (C) 5   (D) 19

7. The graph of a linear equation represents.

    (A) triangle   (B) circle   (C) straight line   (D) parabola

8. 8 time a number is 56, what is the number?

    (A) 5   (B) 20   (C) 6   (D) 7

9. Solution of $(x-4)(x-5) = 0$ is:

    (A) (-4 , -5)   (B) (-4 , 5)   (C) (4 , 5)   (D) (4 , -5)

10. Degree of a quadratic equation is:

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

11. If a matrix has 4 rows and n coloumns, then its order is:

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

12. A matrix $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ is:

    (A) row matrix   (B) square matrix   (C) coloumn matrix   (D) identity matrix

13. If A is a singular matrix then $|A|$ is:

    (A) positive   (B) negative   (C) zero   (D) one

14. Conversion of 37 into binary number is:

    (A) $(10011)_2$ (B) $(11110)_2$ (C) $(11000)_2$ (D) $(100101)_2$

15. For expressing decimal number to binary number we use operation:

    (A) addition   (B) substraction   (C) multiplication   (D) division

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

Business Mathematics (Essay Type)

Time: 2:10 Hours

Marks: 60

Section - I

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

2 x 6 =12

- i. Write two uses of ratio.
- ii. Divide Rs.60,000 in the ratio 5:7.
- iii. What percent of 23000 is Rs.1265?
- iv. Define an interest.
- v. If 5Kg of potatoes cost is Rs.150. How many Kgs of potatoes can be bought for Rs.850.
- vi. Bilal spends on his clothing Rs.560. This is 8% of his monthly income. What is his monthly income?
- vii. What will be invested at 5% (p.a) for 4 years if compound amount will be Rs.14586?
- viii. Write a formula to find accumulated value S of an ordinary simple annuity.
- ix. Define annuity due.

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

2 x 6 =12

- i. Find x and y intercepts of $3y + x = 12$.
- ii. If $f(x) = x^2 - 2x + 3$, then find $f(-1)$ and $f(2)$.
- iii. Find x if $\dfrac{3x}{8} + 5 = 17$.
- iv. Find three consecutive even integers whose sum is 228.
- v. Solve the equation $9^x - 81 = 0$.
- vi. Solve the equation $4x^2 + 4x - 3 = 0$ by factorization.
- vii. Solve the equation $y + \dfrac{1}{y} = -2$.
- viii. Define a function and give example of an explicit function.
- ix. Solve the pair of simultaneous equations $2x + 3y = 19$; $2x + 5y = 31$.

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

2 x 6 =12

- i. Define symmetrix matrix.
- ii. Define binary number system.
- iii. Find A^{-1} if $A = \begin{bmatrix} 8 & 0 \\ 2 & 3 \end{bmatrix}$.
- iv. Find x if $A = \begin{bmatrix} 8 & x \\ 2 & 4 \end{bmatrix}$ is singular matrix.
- v. Change 19 to base 2.
- vi. Evaluate the determinant $\begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$
- vii. Convert $(101110)_2$ into a decimal number.
- viii. Simplify $(101)_2 - (11)_2$ and $(101)_2 + (11)_2$.
- ix. Express the system of equations $3x + 2y = 4$; $x - 3y = 5$ in matrix form.

Section - II

NOTE: Answer any three questions from the following.

8x3=24

5. (a) Divide Rs.2415 among three brother's Ashraf, Aslam and Akram such that Aslam : Ashraf =4:5 and Ashraf : Akram = 9:16.

   4

   (b) What must be the rate of simple interest on Rs.40,000/= to produce Rs.2000/= in 8 months.

   4

6. (a) At what rate Rs.1600 amount to Rs.2950 in 10 years compound interest being added quaterly?

   4

   (b) Find slope and y-intercept of $8x - 3y = 15$.

   4

7. (a) Find x if $\dfrac{1-8x}{5} + \dfrac{2+16x}{4} = \dfrac{7}{2}$.

   (b) Solve $4^{1+x} + 4^{1-x} - 10 = 0$.

   4 + 4=8

8. (a) If $A = \begin{bmatrix} 5 & 4 & 3 \\ 6 & 3 & 1 \\ 8 & 9 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 3 & 4 \\ 2 & 4 & 5 \\ 3 & 1 & 6 \end{bmatrix}$ find $2A + 4B$.

   4

   (b) Solve the equations with the help of matrices $7x - 3y = 3$; $2x + y = 2$.

   4

9. (a) Simplify $(1101)_2 \times (11111)_2$.

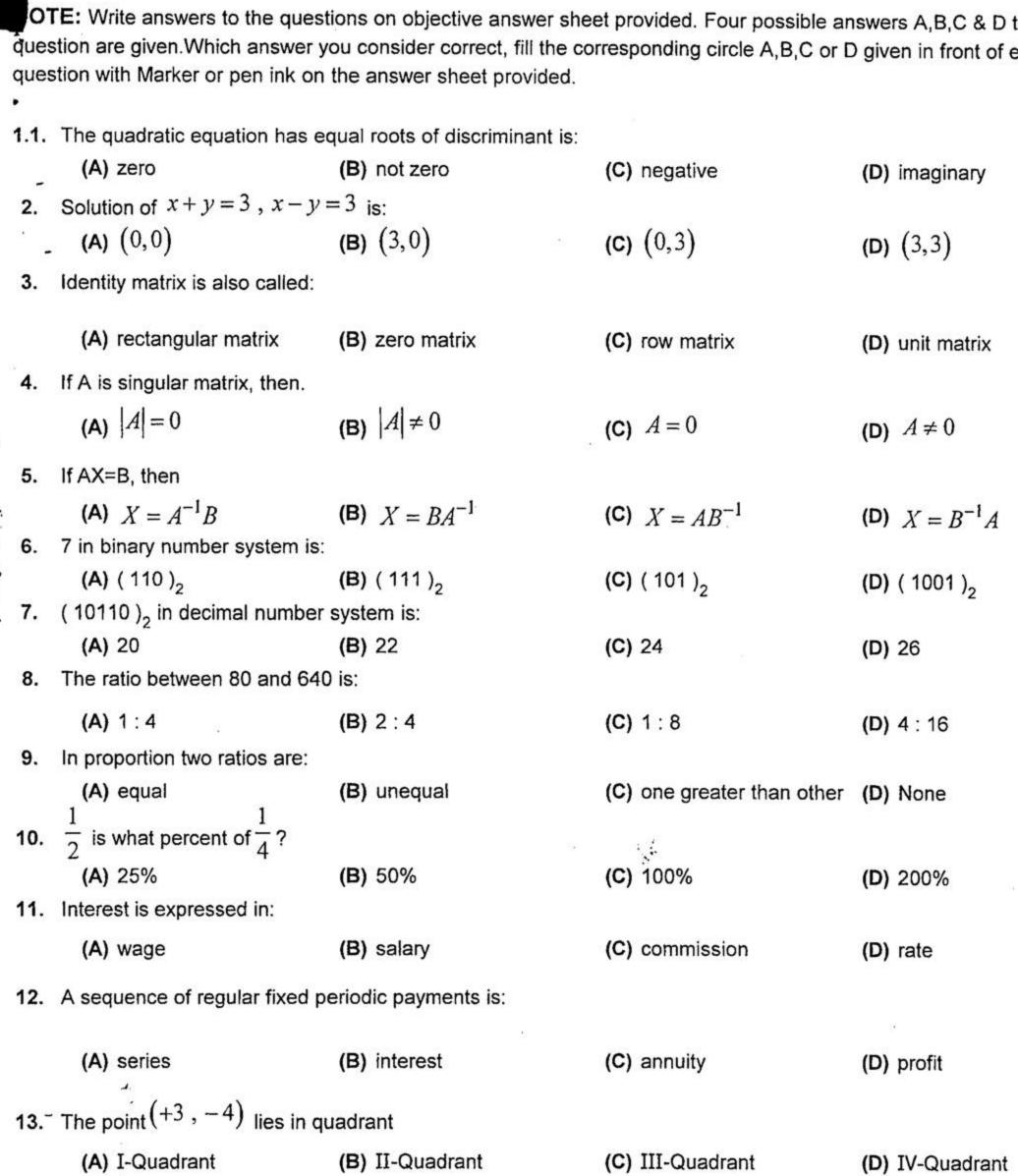   (b) Change into decimal number $(101111001)_2$.

   4+4=8

Session;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.

1.1. The quadratic equation has equal roots of discriminant is:

(A) zero   (B) not zero   (C) negative   (D) imaginary

2. Solution of $x+y=3$, $x-y=3$ is:

(A) $(0,0)$ (B) $(3,0)$ (C) $(0,3)$ (D) $(3,3)$

3. Identity matrix is also called:

(A) rectangular matrix   (B) zero matrix   (C) row matrix   (D) unit matrix

4. If A is singular matrix, then.

(A) $|A|=0$ (B) $|A|\neq 0$ (C) $A=0$ (D) $A\neq 0$

5. If AX=B, then

(A) $X=A^{-1}B$ (B) $X=BA^{-1}$ (C) $X=AB^{-1}$ (D) $X=B^{-1}A$

6. 7 in binary number system is:

(A) $(110)_2$ (B) $(111)_2$ (C) $(101)_2$ (D) $(1001)_2$

7. $(10110)_2$ in decimal number system is:

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

8. The ratio between 80 and 640 is:

(A) 1 : 4   (B) 2 : 4   (C) 1 : 8   (D) 4 : 16

9. In proportion two ratios are:

(A) equal   (B) unequal   (C) one greater than other   (D) None

10. $\frac{1}{2}$ is what percent of $\frac{1}{4}$?

(A) 25%   (B) 50%   (C) 100%   (D) 200%

11. Interest is expressed in:

(A) wage   (B) salary   (C) commission   (D) rate

12. A sequence of regular fixed periodic payments is:

(A) series   (B) interest   (C) annuity   (D) profit

13. The point $(+3 , -4)$ lies in quadrant

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

14. If $f(x)=5$, then function is:

(A) odd function   (B) linear function   (C) constant function   (D) identity function

15. The solution of $ax-b=0$ is:

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

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

Session;2014-2016

Business Mathematics (Essay Type)

Time: 2:10 Hours

Marks: 60

Section - I

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

i. Define direct proportion.

ii. Define extremes and means in proportion.

iii. Find x, if $1:x::15:3$.

iv. 1451 is what percentage of 7255?

v. Find 15.7% of 2200.

vi. Define annuity.

vii. Write the formula for simple interest.

viii. At what rate Rs.7500/= double it in 5 years by simple interest?

ix. Find the simple interest on Rs.50,000/= borrowed for 3 years at 7.5%.

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

i. Find the domain of the function $f(x) = \dfrac{1}{x-1}$.

ii. If $f(x) = x^2 - 2x - 4$, then find $f(0)$ and $f(-1)$.

iii. Define even and odd function.

iv. Solve: $2x + 4 = x + 2$

v. Solve: $3(x-9) = 2(x+1) + 4$

vi. Solve: $2x^2 - 12 = 0$.

vii. Solve the equation $4^x = 8$.

viii. Find roots of quadratic equation. $x^2 + 5x + 4 = 0$.

ix. Solve the simultaneous equations $x - 2y = 4$ and $3x + 2y = 8$.

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

i. Define row matrix.

ii. Define binary number system.

iii. If $A = \begin{bmatrix} 4 & 5 \\ 2 & 3 \end{bmatrix}$, then find A^2.

iv. If $A = \begin{bmatrix} 0 & 2 \\ 3 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ find AB.

v. Convert 17 to binary system.

vi. Expand $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ and find $adj\ A$ and $|A|$

vii. Simplify $(1100)_2 - (111)_2$.

viii. Convert $(1001)_2$ to base 10.

ix. What is formula for the inverse of a square matrix A.

Section - II

NOTE: Answer any three questions from the following.   8x3=24

5. (a) If 15 dozens of eggs cost Rs.750/=. How much 8 dozen of eggs cost?   4

   (b) How long will it take for Rs.5000/= to produce Rs.500/= as simple interest at a rate of 4%?   4

6. (a) At what rate Rs.5000/= double that in 5 years at compound interest?   4

   (b) Write down the equation of straight line having slope $\dfrac{-7}{2}$ and y-intercept 3.   4

7. (a) Solve $2(x+y) - 3(2x-3y) = x + 2y$.   (b) Solve $x + \dfrac{1}{x} = 6$.   4 + 4=8

8. (a) If $A = \begin{bmatrix} 3 & -3 \\ 4 & 1 \end{bmatrix}$, prove that $A\bar{A}^{1} = I_2$.   4

   (b) Solve the system of equations $3x + 2y = 5$; $2x - y = 1$ by Cramer's rule.   4

9. (a) Simplify $\left[(10111011)_2 - (101110)_2\right] + (10101010)_2$ 4+4=8

   (b) Convert $(1111001)_2$ into decimal number system.

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. What is percentage of 560 is 28?

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

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

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

3. Compound amount formula is:

   (A) $p(1+i)^{-n}$ (B) $p(1-i)^{-n}$ (C) $p(1+i)^{n}$ (D) $p(1-i)^{n}$

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

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

5. The degree of quadratic equation is:

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

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

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

7. The horizontal lines of numbers in a matrix are called:

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

8. 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) $A + B$

9. The decimal number system is also called_____system.

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

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

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

| 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 $"x"$ if $3:4:x:12$.

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 $\dfrac{9}{x+4}=\dfrac{5}{x-8}$

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 following system of linear equations:

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

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

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) $A^t = A$ (B) $A^t = -A$ (C) $A^t = |A|$ (D) $A^t = AdJ(A)$

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.

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

iii. Define percentage with example.

iv. Define an ordinary annuity.

v.   Find the simple interest on Rs. 700 invested for 3 years, at 6% per annum.

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

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

viii. Define quadratic equation with an example.

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

2 x 6 = 12

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

i.   Define even function by giving an example.

ii. Discuss the nature of the roots of the equation $x^2 - 8x + 15 = 0$

iii. Convert $(1101.011)_2$ into decimal system.

iv. Evaluate $(1001)_2 \times (101)_2$ without converting into decimal system.

v.   Convert $(32)_{10}$ into binary 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

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

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

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

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 $\left[(111011)_2 \times (110001)_2 \right] - (20)_{10}$ 4

896-11-A-5410