Code No: A109100203 **Set No. 1**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid-Term Examinations, February – 2012

MATHEMATICAL METHODS

Objective Exam

Name: _____ Hall Ticket No. | | | | | | A | | | | |

Answer All Questions. All Questions Carry Equal Marks.Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. The diagonal elements of a skew symmetric matrix are [ ]
   (a) real (b) imaginary (c) 1 (d) 0

2. The symmetric matrix associated with the quadratic form $x^2 + y^2 + z^2 - 2xy + 4xz + 6yz$ is [ ]
   (a) $\begin{bmatrix} 1 & 1 & 2 \\ 1 & 1 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -1 & 2 \\ -1 & 1 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & -1 & 2 \\ -1 & 2 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & 1 & -2 \\ 1 & 1 & -3 \\ -2 & -3 & 1 \end{bmatrix}$

3. If x_0 and x_1 are the first two approximations for the roots of $x^3 - 2x - 5 = 0$ are 2.08125 and 3 by Regula falsi method then x_3 is [ ]
   (a) 2.5 (b) 2.0896 (c) 2.412 (d) 2.214

4. If f(0)=10, f(1) = 20 and f(2) = 44, then $\Delta^2 f_0$ is [ ]
   (a) 14 (b) 10 (c) 24 (d) 12

5. The singular values of A = $\begin{bmatrix} 4 & 0 \\ 3 & -5 \end{bmatrix}$ ar [ ]
   (a) 6, 4 (b) $\sqrt{10}$, $\sqrt{50}$ (c) $\sqrt{10}$, $2\sqrt{10}$ (d) $\sqrt{10}$, $\sqrt{40}$

6. A square matrix A is unitary if [ ]
   (a) $A^T = A^{-1}$ (b) $(\bar{A})^T = A^{-1}$ (c) $\bar{A} = A^{-1}$ (d) $-A^T = A^{-1}$

7. If A is any square matrix , then A +A ^{T} is [ ]
   (a) symmetric (b) skew symmetric (c) orthogonal (d) unitary

8. If first approximation for the root of x ^{3} –5x+3=0 is .64 by Newton Raphson method then the second approximation is [ ]
   (a) .6724 (b) .6565 (c) .721 (d) .825

9. If y= $x^2 - x + 2$ then , Δ^3 y= [ ]
   (a) 1 (b) 2 (c) 0 (d) 3

10. If $y = ae^{bx}$ then the first normal equation is [ ]
    (a) $\sum \log y_i = n \log a + b \sum x_i$ (b) $\sum y_i = na + + b \sum x_i$
    (c) $\sum \log y_i = n \log a + b \sum x_i^2$ (d) $\sum y_i = n \log a + b \sum x_i$

Cont.....2

II Fill in the Blanks

11. If A is asymmetric singular matrix and two of the eigen values are positive then the nature of $X^T AX$ is……..

12. The index and signature of the quadratic form $5x^2 + 2y^2 + 2z^2 + 6yz$ is……

13. If A = $\begin{bmatrix} 1 & 1 & -2 \\ 1 & 1 & 0 \\ -2 & 0 & 0 \end{bmatrix}$, then the quadratic form is……..

14. Given that y(0) = 0, y(5) =3, y(10) = 6, y(15) = 8, y(20)= 7, then $\int_0^{20} ydx$ b y simpson's $\frac{1}{3}rd$ rule is ……..

15. y= a x and $\sum x_i^{\,2}$ =55, $\sum x_i y_i = 88$, $\sum x_i = 15$, then a = …….

16. If A and B are Hermitian of same order, then AB – BA is……

17. If y $y = x^2 + x$, and h = 1, then $\Delta^2 y$ =…….

18. If $y(x_0) = y_0, y(x_1) = y_1, y(x_2) = y_2$, then Lagranges formula to find y(x) is…….

19.

x	1	2	3	4
y	1	3	4	2

$\int_1^4 ydx$ by trapezoidal rule =…….

20. If h = 1 by simpson's $\frac{3}{8}$ th rule $\int_1^7 \frac{dx}{x}$ = ……..

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Code No: A109100203 **Set No. 2**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid-Term Examinations, February – 2012

MATHEMATICAL METHODS

Objective Exam

Name: _____ Hall Ticket No. | | | | | | A | | | | |

Answer All Questions. All Questions Carry Equal Marks.Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. If f(0)=10, f(1) = 20 and f(2) = 44, then $\Delta^2 f_0$ is [ ]
   (a) 14 (b) 10 (c) 24 (d) 12

2. The singular values of A = $\begin{bmatrix} 4 & 0 \\ 3 & -5 \end{bmatrix}$ ar [ ]
   (a) 6, 4 (b) $\sqrt{10}$, $\sqrt{50}$ (c) $\sqrt{10}$, $2\sqrt{10}$ (d) $\sqrt{10}$, $\sqrt{40}$

3. A square matrix A is unitary if [ ]
   (a) $A^T = A^{-1}$ (b) $(\bar{A})^T = A^{-1}$ (c) $\bar{A} = A^{-1}$ (d) $-A^T = A^{-1}$

4. If A is any square matrix , then A +A ^{T} is [ ]
   (a) symmetric (b) skew symmetric (c) orthogonal (d) unitary

5. If first approximation for the root of x ^{3} –5x+3=0 is .64 by Newton Raphson method then the second approximation is [ ]
   (a) .6724 (b) .6565 (c) .721 (d) .825

6. If y= $x^2 - x + 2$ then , Δ^3 y= [ ]
   (a) 1 (b) 2 (c) 0 (d) 3

7. If $y = ae^{bx}$ then the first normal equation is [ ]
   (a) $\sum \log y_i = n \log a + b \sum x_i$ (b) $\sum y_i = na + + b \sum x_i$
   (c) $\sum \log y_i = n \log a + b \sum x_i^2$ (d) $\sum y_i = n \log a + b \sum x_i$

8. The diagonal elements of a skew symmetric matrix are [ ]
   (a) real (b) imaginary (c) 1 (d) 0

9. The symmetric matrix associated with the quadratic form $x^2 + y^2 + z^2 - 2xy + 4xz + 6yz$ is [ ]
   (a) $\begin{bmatrix} 1 & 1 & 2 \\ 1 & 1 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -1 & 2 \\ -1 & 1 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & -1 & 2 \\ -1 & 2 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & 1 & -2 \\ 1 & 1 & -3 \\ -2 & -3 & 1 \end{bmatrix}$

10. If x_0 and x_1 are the first two approximations for the roots of $x^3 - 2x - 5 = 0$ are 2.08125 and 3 by Regula falsi method then x_3 is [ ]
    (a) 2.5 (b) 2.0896 (c) 2.412 (d) 2.214

Cont.....2

II Fill in the Blanks

11. Given that y(0) = 0, y(5) =3, y(10) = 6, y(15) = 8, y(20)= 7, then $\int_0^{20} ydx$ b y simpson's $\frac{1}{3}rd$ rule is ……..

12. y= a x and $\sum x_i^{\,2}$ =55, $\sum x_i y_i = 88$, $\sum x_i = 15$, then a = …….

13. If A and B are Hermitian of same order, then AB – BA is……

14. If y $y = x^2 + x$, and h = 1, then $\Delta^2 y$ =…….

15. If $y(x_0) = y_0, y(x_1) = y_1, y(x_2) = y_2$, then Lagranges formula to find y(x) is…

16.

x	1	2	3	4
y	1	3	4	2

$\int_1^4 ydx$ by trapezoidal rule =…….

17. If h = 1 by simpson's $\frac{3}{8}$ th rule $\int_1^7 \frac{dx}{x}$ = ……..

18. If A is asymmetric singular matrix and two of the eigen values are positive then the nature of $X^T AX$ is……..

19. The index and signature of the quadratic form $5x^2 + 2y^2 + 2z^2 + 6yz$ is……

20. If A = $\begin{bmatrix} 1 & 1 & -2 \\ 1 & 1 & 0 \\ -2 & 0 & 0 \end{bmatrix}$, then the quadratic form is……..

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Code No: A109100203 **Set No. 3**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid-Term Examinations, February – 2012

MATHEMATICAL METHODS

Objective Exam

Name: _____ Hall Ticket No. | | | | | | A | | | | |

Answer All Questions. All Questions Carry Equal Marks.Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. A square matrix A is unitary if [ ]
   (a) $A^T = A^{-1}$ (b) $(\bar{A})^T = A^{-1}$ (c) $\bar{A} = A^{-1}$ (d) $-A^T = A^{-1}$

2. If A is any square matrix , then A +A ^{T} is [ ]
   (a) symmetric (b) skew symmetric (c) orthogonal (d) unitary

3. If first approximation for the root of x ^{3} –5x+3=0 is .64 by Newton Raphson method then the second approximation is [ ]
   (a) .6724 (b) .6565 (c) .721 (d) .825

4. If y= $x^2 - x + 2$ then , Δ^3 y= [ ]
   (a) 1 (b) 2 (c) 0 (d) 3

5. If $y = ae^{bx}$ then the first normal equation is [ ]
   (a) $\sum \log y_i = n \log a + b \sum x_i$ (b) $\sum y_i = na + + b \sum x_i$
   (c) $\sum \log y_i = n \log a + b \sum x_i^2$ (d) $\sum y_i = n \log a + b \sum x_i$

6. The diagonal elements of a skew symmetric matrix are [ ]
   (a) real (b) imaginary (c) 1 (d) 0

7. The symmetric matrix associated with the quadratic form $x^2 + y^2 + z^2 - 2xy + 4xz + 6yz$ is [ ]
   (a) $\begin{bmatrix} 1 & 1 & 2 \\ 1 & 1 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -1 & 2 \\ -1 & 1 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & -1 & 2 \\ -1 & 2 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & 1 & -2 \\ 1 & 1 & -3 \\ -2 & -3 & 1 \end{bmatrix}$

8. If x_0 and x_1 are the first two approximations for the roots of $x^3 - 2x - 5 = 0$ are 2.08125 and 3 by Regula falsi method then x_3 is [ ]
   (a) 2.5 (b) 2.0896 (c) 2.412 (d) 2.214

9. If f(0)=10, f(1) = 20 and f(2) = 44, then $\Delta^2 f_0$ is [ ]
   (a) 14 (b) 10 (c) 24 (d) 12

10. The singular values of A = $\begin{bmatrix} 4 & 0 \\ 3 & -5 \end{bmatrix}$ ar [ ]
    (a) 6, 4 (b) $\sqrt{10}$, $\sqrt{50}$ (c) $\sqrt{10}$, $2\sqrt{10}$ (d) $\sqrt{10}$, $\sqrt{40}$

Cont.....2

II Fill in the Blanks

11. If A and B are Hermitian of same order, then AB – BA is……

12. If y $y = x^2 + x$, and h = 1, then $\Delta^2 y$ =…….

13. If $y(x_0) = y_0, y(x_1) = y_1, y(x_2) = y_2$, then Lagranges formula to find y(x) is…

14.

x	1	2	3	4
y	1	3	4	2

$\int_1^4 ydx$ by trapezoidal rule =…….

15. If h = 1 by simpson's $\frac{3}{8}$ th rule $\int_1^7 \frac{dx}{x}$ = …….

16. If A is asymmetric singular matrix and two of the eigen values are positive then the nature of $X^T AX$ is……..

17. The index and signature of the quadratic form $5x^2 + 2y^2 + 2z^2 + 6yz$ is……

18. If A = $\begin{bmatrix} 1 & 1 & -2 \\ 1 & 1 & 0 \\ -2 & 0 & 0 \end{bmatrix}$, then the quadratic form is……..

19. Given that y(0) = 0, y(5) =3, y(10) = 6, y(15) = 8, y(20)= 7, then $\int_0^{20} ydx$ b y simpson's $\frac{1}{3}rd$ rule is ……..

20. y= a x and $\sum x_i^{\,2}$ =55, $\sum x_i y_i = 88$, $\sum x_i = 15$, then a = …….

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Code No: A109100203 **Set No. 4**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid-Term Examinations, February – 2012

MATHEMATICAL METHODS

Objective Exam

Name: _____ Hall Ticket No. | | | | | | A | | | | |

Answer All Questions. All Questions Carry Equal Marks.Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. If first approximation for the root of $x^3 - 5x + 3 = 0$ is .64 by Newton Raphson method then the second approximation is [ ]
   (a) .6724 (b) .6565 (c) .721 (d) .825

2. If $y = x^2 - x + 2$ then , $\Delta^3 y =$ [ ]
   (a) 1 (b) 2 (c) 0 (d) 3

3. If $y = ae^{bx}$ then the first normal equation is [ ]
   (a) $\sum \log y_i = n \log a + b \sum x_i$ (b) $\sum y_i = na + + b \sum x_i$
   (c) $\sum \log y_i = n \log a + b \sum x_i^2$ (d) $\sum y_i = n \log a + b \sum x_i$

4. The diagonal elements of a skew symmetric matrix are [ ]
   (a) real (b) imaginary (c) 1 (d) 0

5 The symmetric matrix associated with the quadratic form $x^2 + y^2 + z^2 - 2xy + 4xz + 6yz$ is [ ]

(a) $\begin{bmatrix} 1 & 1 & 2 \\ 1 & 1 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -1 & 2 \\ -1 & 1 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & -1 & 2 \\ -1 & 2 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & 1 & -2 \\ 1 & 1 & -3 \\ -2 & -3 & 1 \end{bmatrix}$

6. If x_0 and x_1 are the first two approximations for the roots of $x^3 - 2x - 5 = 0$ are 2.08125 and 3 by Regula falsi method then x_3 is [ ]
   (a) 2.5 (b) 2.0896 (c) 2.412 (d) 2.214

7. If f(0)=10, f(1) = 20 and f(2) = 44, then $\Delta^2 f_0$ is [ ]
   (a) 14 (b) 10 (c) 24 (d) 12

8. The singular values of A = $\begin{bmatrix} 4 & 0 \\ 3 & -5 \end{bmatrix}$ ar [ ]
   (a) 6, 4 (b) $\sqrt{10}$, $\sqrt{50}$ (c) $\sqrt{10}$, $2\sqrt{10}$ (d) $\sqrt{10}$, $\sqrt{40}$

9. A square matrix A is unitary if [ ]
   (a) $A^T = A^{-1}$ (b) $(\bar{A})^T = A^{-1}$ (c) $\bar{A} = A^{-1}$ (d) $-A^T = A^{-1}$

10. If A is any square matrix , then A +A ^{T} is [ ]
    (a) symmetric (b) skew symmetric (c) orthogonal (d) unitary

Cont.....2

II Fill in the Blanks

11. If $y(x_0) = y_0, y(x_1) = y_1, y(x_2) = y_2$, then Lagranges formula to find y(x) is…

12. | x | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| y | 1 | 3 | 4 | 2 |

$\int_1^4 ydx$ by trapezoidal rule =…….

13. If h = 1 by simpson's $\frac{3}{8}$ th rule $\int_1^7 \frac{dx}{x}$ = …….

14. If A is asymmetric singular matrix and two of the eigen values are positive then the nature of $X^T AX$ is……..

15. The index and signature of the quadratic form $5x^2 + 2y^2 + 2z^2 + 6yz$ is……

16. If A = $\begin{bmatrix} 1 & 1 & -2 \\ 1 & 1 & 0 \\ -2 & 0 & 0 \end{bmatrix}$, then the quadratic form is……..

17. Given that y(0) = 0, y(5) =3, y(10) = 6, y(15) = 8, y(20)= 7, then $\int_0^{20} ydx$ b y simpson's $\frac{1}{3}rd$ rule is ……..

18. y= a x and $\sum x_i^{\,2}$ =55, $\sum x_i y_i = 88$, $\sum x_i = 15$, then a = …….

19. If A and B are Hermitian of same order, then AB – BA is……

20. If y $y = x^2 + x$, and h = 1, then $\Delta^2 y$ =…….

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