1. Every polynomial equation of the nth degree has ________ roots.
   A. n
   B. n+1
   C. n+2
   D. n-1
   ANSWER: A

2. If f(x) =0 has a root between a & b then f(a) & f(b) are of __________ signs.
   A. opposite
   B. same
   C. negative
   D. positive
   ANSWER: A

3. If two of the roots are 1-i & 2, then the 3rd degree equation is __________.
   A. x^3 -21x^2 +6x -4=0.
   B. x^3-4 x^2+6x +4=0
   C. x^3-4 x^2+6x -4=0
   D. x^3+4x^2+6x -4=0
   ANSWER: C

4. Which method gives a unique set of values to the constants in the equation of the fitting curves?
   A. Horners method
   B. Method of least squares
   C. Interpolation
   D. Newton's Method
   ANSWER: B

5. A polynomial of the form y=ax^2+bx+c is called __________.
   A. linear equation
   B. Second degree equation
   C. reciprocal equation
   D. bi quadratic equation
   ANSWER: B

6. The line obtained by the method of least square is known as the line of __________.
   A. straight line
B. second degree equation
C. best fit
D. polynomial equation
ANSWER: C

7. The sum of deviation of the actual values of Y and the computed values of Y is_____.
   A. 0
   B. 1
   C. Maximum
   D. Minimum
   ANSWER: A

8. In the function y = f(x), the independent variable x is called ________.
   A. entry
   B. argument
   C. intermediate
   D. interpolation
   ANSWER: B

9. The relationship between E and delta is __________.
   A. E =1-delta
   B. E =1+delta
   C. E = delta-1
   D. E = delta
   ANSWER: B

10. The relationship between E and small delta is ________.
    A. small delta = 1-E
    B. small delta = E-1
    C. small delta = (E-1)-1
    D. small delta = E^(1/2)-E^(-1/2)
    ANSWER: D

11. Choose the correct one.
    A. E = ehD = 1-delta
    B. E = ehD = 1+delta
    C. E = e-hD = 1+delta
    D. E = 1/ ehD = 1/1+delta
    ANSWER: B

12. In the function y = f(x), the dependent variable y is called ________.
    A. entry
    B. argument
    C. intermediate
    D. interpolation
    ANSWER: A

13. Iteration method is a ______ method
    A. direct
    B. indirect
    C. self correcting
14. Gauss Elimination Method & Gauss Jordan Methods are ___________ methods.
   A. direct
   B. indirect
   C. self correcting
   D. step by step
   ANSWER: A

15. The rate of convergence of Gauss Seidel Method is ___________ that of Gauss Jacobi Method.
   A. once
   B. twice
   C. thrice
   D. reciprocal
   ANSWER: B

16. __________ method is very fast compared to other methods.
   A. Gauss Elimination
   B. Gauss Jordan
   C. Gauss Seidel
   D. Gauss Jacobi
   ANSWER: C

17. The order of convergence of Regula-Falsi method is __________.
   A. 2
   B. 1.172
   C. 1.618
   D. 1.17
   ANSWER: C

18. The Newton Raphson Method is also called ___________.
   A. Bolzano's Bisection Method
   B. Iterative Method
   C. Method of Tangents
   D. Newton's Method
   ANSWER: C

19. The order of Newton Raphson Method is __________.
   A. 1
   B. 2
   C. 3
   D. 4
   ANSWER: B

20. The modification of Gauss Elimination Method is ____________.
   A. Gauss Jordan Method
   B. Gauss Jacobi Method
   C. Gauss Elimination Method
   D. Gauss Seidel Method
   ANSWER: A
21. If alpha, beta, gamma are the roots of the equation $x^3 - 14x + 8 = 0$, then product of the roots is _______.
   A. -8
   B. -18
   C. 28
   D. 38
   ANSWER: C

22. _______ method is used for finding the dominant Eigen-value of a matrix.
   A. Gauss Elimination Method
   B. Gauss Jordan Method
   C. Newton Raphson Method
   D. Power method
   ANSWER: D

23. Euler corrector is ____________.
   A. $Y_{n+1} = Y_n + hY_n$
   B. $Y_{n+1} = Y_n + h/2(Y_n + Y_{n+1})$
   C. $Y_{n+1} = Y_n + h/2(Y_n' + Y_{n+1}')$
   D. $Y_{n+1} = Y_n' - hY_n'$
   ANSWER: D

24. Let $f$ is _______ on $(a, b)$ and $f(a) < f(b)$. Then bisection method generates a sequence $\{P_n\}$ approximating a zero $p$ of $f$ with $|P_n - P| \leq (b-a)/2^n$, $n \geq 1$.
   A. continuous function
   B. discontinuous function
   C. constant function
   D. multivariate function
   ANSWER: A

25. In Euler's method: Given initial value problem $y' = dy/dx = f(x, y)$ with $y(x_0) = y_0$, then approximation is given by _______.
   A. $y_{n+1} = y_n + hf(x_n - 1, y_n - 1)$
   B. $y_{n+1} = y_n + hf(x_n, y_n)$
   C. $y_{n+1} = y_n + hf(x_{n-1}, y_n)$
   D. $y_{n+1} = y_n + hf(x_n, y_{n-1})$
   ANSWER: B

26. $y(x+h) = y(x) + hf(x, y)$ is referred as ____________ method.
   A. Euler
   B. Modified Euler
   C. Taylor's Series
   D. Runge-Kutta
   ANSWER: A

27. When more than one value is involved then the problem is known as ____________.
   A. initial Value Problem
   B. boundary Value Problem
   C. interpolation
   D. extrapolation
   ANSWER: B
28. The error in the trapezoidal rule is of the order_______.
   A. h
   B. h^ 2
   C. h^ 3
   D. h^ 4
   ANSWER: B

29. The error in the Simpson's rule is of the order__________________.
   A. h
   B. h^ 2
   C. h^ 3
   D. h^ 4
   ANSWER: D

30. Romberg's method is also known as__________.
    A. Trapezoidal rule
    B. Simpson’s (1/3)rd Rule
    C. Simpson’s (3/8)th Rule
    D. Rombergs Integration
    ANSWER: D

31. Simpson's 1/3rd rule of integration is exact for all polynomials of degree not exceeding ____________.
    A. 1
    B. 2
    C. 3
    D. 4
    ANSWER: B

32. Simpson's 3/8th rule is applicable only when__________.
    A. n is a multiple of 3
    B. n is a multiple of 6
    C. n is a multiple of 8
    D. n is a multiple of 24
    ANSWER: A

33. In Simpson's 1/3rd rule the number of intervals must be __________.
    A. a multiple of 3
    B. a multiple of 6
    C. odd
    D. even
    ANSWER: D

34. The order of Euler method is ________.
    A. h
    B. h^ 2
    C. h^ 3
    D. h^ 4
    ANSWER: B

35. __________ method is used for finding the approximate solution either rational or irrational of
numerical equation.
   A. Euler
   B. Taylor
   C. Horner's
   D. Modified Euler
   ANSWER: C

36. The two segment trapezoidal rule of integration is exact for integrating at most ________ order polynomials.
   A. first
   B. second
   C. third
   D. fourth
   ANSWER: A

37. The process of finding the equation of the curve of best fit, which may be most suitable for predicting the unknown values, is known as_______.
   A. curve fitting
   B. theory of equations
   C. interpolation
   D. extrapolation
   ANSWER: B

38. Newton-Raphson method is applicable to find the solution of ______.
   A. both algebraic and transcendental equations
   B. both algebraic and transcendental and also used when the roots are complex
   C. algebraic equations only
   D. transcendental equations only
   ANSWER: A

39. _____ is used to denote the process of finding the values inside the interval(X0, Xn).
   A. Interpolation
   B. Extrapolation
   C. Iterative
   D. Polynomial equation
   ANSWER: A

40. The forward difference operator is denoted by the symbol __________.
   A. delta
   B. omega
   C. nabla
   D. infinity
   ANSWER: A

41. The backward difference operation is denoted by the symbol_______.
   A. nable
   B. delta
   C. omega
   D. infinity
   ANSWER: A
42. In Newton's forward interpolation formula the first two terms will give the ________ interpolation.
   A. linear
   B. parabolic
   C. hyperbolic
   D. polynomial equation
   ANSWER: A

43. Lagrange's interpolation formula is used to compute the values for _______ intervals.
   A. equal
   B. unequal
   C. open
   D. closed
   ANSWER: B

44. Newton forward interpolation formula is used for ____________ intervals.
   A. equal
   B. unequal
   C. open
   D. closed
   ANSWER: A

45. Fourth degree equations are also called _______ equations.
   A. quadratic
   B. cubic
   C. linear
   D. bi-quadratic
   ANSWER: D

46. Let the arithmetic mean of two numbers be 9 and the geometric mean be 4, then these numbers are the roots of the quadratic equation_______.
   A. x^2 +18x +16=0
   B. x^2 -18x-16 =0
   C. x^2 +18x -16=0
   D. x^2-18x+16=0
   ANSWER: D

47. If (1-p) is a root of quadratic equation x^2+ px + (1-p) = 0 , then its roots are___.
   A. (0, 1)
   B. (-1, 2)
   C. ( 0, -1)
   D. ( -1, 1)
   ANSWER: C

48. If one root of the equation x^2 + px + 12 = 0 is 4 and the equation x^2 + px + q = 0 have equal roots, then the value of q is_______.
   A. 49/4
   B. 4
   C. 3
   D. 12
   ANSWER: A
49. If the graph of the function \( y = f(x) \) is symmetrical about the line \( x = 2 \), then___.
   A. \( f(x+2)=f(x-2) \)
   B. \( f(2+x)=f(2-x) \)
   C. \( f(x) = f(-x) \)
   D. \( f(x) = - f(-x) \)
   ANSWER: B

50. If the system of linear equations \( x + 2ay + az = 0 \); \( x + 3by + bz = 0 \); \( x + 4cy + cz = 0 \) have a non-zero solution, then \( a, b, c \)_____.
   A. are in Arithmetic Progression
   B. are in Geometric Progression
   C. are in Harmonic Progression
   D. satisfy \( a+2b+3c=0 \)
   ANSWER: C

51. If the sum of the roots of the quadratic equation \( ax^2 + bx + c = 0 \) is =the sum of the squares of their reciprocals, then \( a/c, b/a \), and \( c/b \) are in_________.
   A. are in Arithmetic Progression
   B. are in Geometric Progression
   C. are in Harmonic Progression
   D. are in Arithmetic and Geometric Progression
   ANSWER: C

52. In the function \( y = f(x) \) the dependent variable is _______.
   A. \( y \)
   B. \( x \)
   C. \( f(x) \)
   D. a constant
   ANSWER: A

53. The first two terms of a GP add up to 12. The sum of the third and the fourth terms is 48. If the terms of the GP are alternately positive and negative, then the first term is______________.
   A. -2
   B. -4
   C. -12
   D. 8
   ANSWER: C

54. In the function \( y=f(x) \) the independent variable is _______.
   A. \( y \)
   B. \( x \)
   C. \( f(x) \)
   D. a constant
   ANSWER: B

55. The translation operator is denoted by ________.
   A. \( E \)
   B. nabla
   C. omega
   D. \( T \)
   ANSWER: A
56. If the roots of the equation \( x^2 - bx + c = 0 \) are two consecutive integers, then \( b^2 - 4ac = \) _________.
   A. 1
   B. 2
   C. 3
   D. -2
   ANSWER: A

57. A smooth curve that can be drawn to pass through near the plotted points is called _________.
   A. curve fit
   B. approximating curve
   C. empirical curve
   D. linear curve
   ANSWER: B

58. The equation of approximate curve taken as an approximate relation between \( x \) and \( y \) is called _________.
   A. curve fit
   B. approximating curve
   C. empirical relation
   D. linear form
   ANSWER: C

59. The general problem of finding equations of approximating curves which fit a given data is called _________.
   A. curve fitting
   B. approximating curve
   C. empirical relation
   D. linear form
   ANSWER: A

60. The best representative curve to the given set of points for which the sum of the squares of the residuals is a minimum is known as___________.
   A. curve fitting
   B. approximating curve
   C. empirical relation
   D. principles of least squares
   ANSWER: D

61. The ________ matrix in the normal equations is symmetric.
   A. square
   B. scalar
   C. co-efficient
   D. upper triangular
   ANSWER: C

62. If \( \alpha, \beta, \gamma \) are the roots of \( x^3 + px^2 + qx + r = 0 \), then the values of sum of \( \alpha \) = ___ and sum of \( \alpha \beta \) = ______.
   A. -p and -q
   B. -p and q
   C. p and -q
63. If \( \alpha, \beta, \gamma \) are the roots of the equation \( x^4 + px^3 + qx^2 + rx + s = 0 \), then the values of sum of \( \alpha \beta \) = _____ and sum of \( \alpha \beta \gamma \) = _____.
   A. -p and -q
   B. q and -r
   C. q and r
   D. p and q
   ANSWER: B

64. If \( \alpha, \beta, \gamma \) are the roots of \( x^3 + px + q = 0 \), then the value of sum of \( \frac{1}{\alpha} \) = _____.
   A. \( \frac{p}{q} \)
   B. \( \frac{q}{p} \)
   C. \( -\frac{p}{q} \)
   D. \( \frac{p^2}{-q} \)
   ANSWER: C

65. If \( \alpha, \beta, \gamma \) are the roots of \( x^3 - 3x + 1 = 0 \), then the value \( (\alpha)^2 + (\beta)^2 + 2 = \) _______.
   A. 0
   B. 2
   C. 3
   D. 6
   ANSWER: D

66. If \( \alpha, \beta, \gamma \) are the roots of \( x^3 + 2x + 1 = 0 \), then the value \( (\alpha)^2 + (\beta)^2 + 2 = \) _______.
   A. 0
   B. 2
   C. 3
   D. 6
   ANSWER: C

67. In an equation with rational coefficients, ______ roots must occur in conjugate pairs.
   A. irrational
   B. imaginary
   C. real
   D. complex
   ANSWER: A

68. In an equation with real coefficients, ______ roots must occur in conjugate pairs.
   A. irrational.
   B. imaginary
   C. real
   D. complex
   ANSWER: D

69. A reciprocal equation of first class and odd degree has a root _______.
   A. 1
   B. 2
   C. -1
   D. -2
70. A reciprocal equation of second class and even degree has the roots _________.
   A. 1 and -1
   B. -1 and 2.
   C. 2 and -2
   D. -1 and 0
   ANSWER: A

71. Standard reciprocal equation is of the form ___________.
   A. second class and odd degree
   B. second class and even degree
   C. first class and odd degree
   D. first class and even degree
   ANSWER: D

72. Shifting operator is also called ________ operator.
   A. translation
   B. averaging
   C. differential
   D. unit
   ANSWER: A

73. __________ errors are due to computational procedure.
   A. Inherent
   B. Round off
   C. Truncation
   D. Numerical
   ANSWER: B

74. __________ errors are caused by using approximate formula in computation.
   A. Inherent
   B. Round off
   C. Truncation
   D. Numerical
   ANSWER: C

75. The number of ________ roots of f(x) =0 does not exceed the number of changes of sign in f(x).
   A. negative
   B. positive
   C. imaginary
   D. complex
   ANSWER: B

76. As soon as a new value for a variable is found by iteration, it is used immediately in the following equation. This method is called_______.
   A. Gauss Seidel
   B. Gauss Elimination
   C. Gauss Jacobi
   D. Gauss Jordan
   ANSWER: A
77. The first difference of a constant is __________.
   A. 0
   B. 1
   C. -1
   D. -2
   ANSWER: A

78. The nth difference of a polynomial of nth degree is ______.
   A. zero
   B. polynomial of (n-1)th degree
   C. constant
   D. polynomial in first degree
   ANSWER: C

79. A second order differential equation can be solved by reducing it to a lower _______ equation.
   A. ordinary differential
   B. partial differential
   C. polynomial
   D. interpolation
   ANSWER: A

80. The methods of second category are called _____ methods.
   A. direct
   B. indirect
   C. point wise
   D. step by step
   ANSWER: C

81. In an ordinary differential equation the first category method is__________.
   A. Taylor method
   B. Euler method
   C. Modified Euler Method
   D. Runge Kutta Mehtod
   ANSWER: A

82. In which of the following methods proper choice of initial value is very important?
   A. Newton Raphson Method
   B. Bisection Method
   C. Iterative Method
   D. Regula Falsi Method
   ANSWER: A

83. An equation which expresses a relation between the independent and dependent variable is called ______ equation.
   A. difference equation
   B. ordinary differential equation
   C. partial differential equation
   D. quadratic equation
   ANSWER: A
84. A function which satisfies the differential equations is called _____ of a differential equation.
   A. solution
   B. general solution
   C. particular solution
   D. complete solution
   ANSWER: A

85. ______ of differential equation is a solution got form the general solution by giving particular values to
   the arbitrary constant.
   A. A solution
   B. A general solution
   C. A particular solution
   D. A complete solution
   ANSWER: C

86. For unequal intervals, we can use ____________ to get the derivative value.
   A. Newton Forward Interpolation Formula
   B. Newton Backward Interpolation Formula
   C. Lagrange's Interpolation Formula
   D. Newton Difference Formula
   ANSWER: D

87. To find the derivative for the start value(lies between) of the table ______ formula is used.
   A. Newton Forward Interpolation Formula
   B. Newton Backward Interpolation Formula
   C. Newton Forward Difference Formula
   D. Newton Backward Difference Formula
   ANSWER: A

88. To find the derivative for the end value(lies between) of the table ______ formula is used.
   A. Newton Forward Interpolation Formula
   B. Newton Backward Interpolation Formula
   C. Newton Forward Difference Formula
   D. Newton Backward Difference Formula
   ANSWER: B

89. To find the derivative for the end value(lies on) of the table ______ formula is used.
   A. Newton Forward Interpolation Formula
   B. Newton Backward Interpolation Formula
   C. Newton Forward Difference Formula
   D. Newton Backward Difference Formula
   ANSWER: D

90. To find the derivative for the start value(lies on) of the table ______ formula is used.
   A. Newton Forward Interpolation Formula
   B. Interpolation Formula Newton Backward Interpolation Formula
   C. Newton Forward Difference Formula
   D. Newton Backward Difference Formula
   ANSWER: C

91. If the value of derivative is required near the middle of the table we use ________ formula.
A. Newton Forward Interpolation Formula
B. Newton Forward Difference Formula
C. Central Difference Formula
D. Lagrange's Interpolation Formula
ANSWER: C

92. ______ is derived from Newton's Cotes Formula.
   A. Trapezoidal Rule
   B. Simpson's (1/3)rd Rule
   C. Simpson's (3/8)th Rule
   D. Weddles Rule
ANSWER: A

93. Modification of _______ is called Romberg's method.
   A. Trapezoidal Rule
   B. Simpson's (1/3)rd Rule
   C. Simpson's (3/8)th Rule
   D. Weddles Rule
ANSWER: A

94. The degree of \( y(x) \) in Trapezoidal Rule is _________.
   A. 1
   B. 2
   C. 3
   D. 6
ANSWER: A

95. The degree of \( y(x) \) in Simpson's (1/3) rd rule is ____________.
   A. 1
   B. 2
   C. 3
   D. 6
ANSWER: B

96. The degree of \( y(x) \) in Simpson's (3/8)th is ____________.
   A. 1
   B. 2
   C. 3
   D. 6
ANSWER: C

97. In Simpson's (1/3) rd rule the number of intervals is ____________.
   A. odd
   B. even
   C. multiple of 3
   D. multiple of 6
ANSWER: B

98. Interpolating polynomial is also known as ____________.
   A. smoothing function
   B. interpolating function
C. collocation polynomial  
D. interpolating formula  
ANSWER: C

99. The method used to find the dominant Eigen value is _________.  
A. Gauss Method  
B. Newton's Method  
C. Euler's Method  
D. Power Method  
ANSWER: D

100. The nth differences of a polynomial of ________ degree are constants.  
A. n  
B. n+1  
C. n+2  
D. n+3  
ANSWER: A

101. The (n+1)th polynomial of a degree n is ___________.  
A. n  
B. n+1  
C. a constant  
D. zero  
ANSWER: D

102. Delta power two is called the ________ order difference operator.  
A. first  
B. second  
C. third  
D. fourth  
ANSWER: B

103. Nabla power 3 is called the _______ order difference operator.  
A. first  
B. second  
C. third  
D. fourth  
ANSWER: C

104. f(x-h) = __________.  
A. Ef(x)  
B. [ E-1]f(x)  
C. [1/E]f(x)  
D. deltaf(x)  
ANSWER: B

105. The power method for approximating Eigen value is ________ method.  
A. iterative  
B. point-wise  
C. direct  
D. indirect
106. In Lagrange's interpolation formula, the value of \( L_1(x_1) = \) \___________.
   A. 0  
   B. 1  
   C. 2  
   D. 3
   ANSWER: A

107. Newton-Raphson method has a \___________ convergence.
   A. linear  
   B. quadratic  
   C. cubic  
   D. bi quadratic
   ANSWER: B

108. If \( f(x) \) is continuous in \((a, b)\) and if \( f(a) \) and \( f(b) \) are of opposite signs, then the equation \( f(x)=0 \) will have at least \___________ between \( a \) and \( b \).
   A. two real roots  
   B. one real root  
   C. three real roots  
   D. four roots
   ANSWER: B

109. In the case of iteration method the convergence is \___________.
   A. linear  
   B. quadratic  
   C. cubic  
   D. bi quadratic
   ANSWER: A

110. In the case of Newton-Raphson method the error at any stage is proportional to______.
   A. the error in the previous stage  
   B. the square of the error in the previous stage  
   C. the cubic of the error in the previous stage  
   D. square root of the error in the previous stage
   ANSWER: B

111. The root of the equation \( e^x = 4x \) lies between______.
   A. (0, 1)  
   B. (1, 2)  
   C. (2, 3)  
   D. (3, 4)
   ANSWER: C

112. A root of the equation \( x^x = 100 \) lies between ________.
   A. (0, 1)  
   B. (-1,-2)  
   C. (-2, 3)  
   D. (3, 4)
   ANSWER: D
113. Backward substitution method is applied in _______________.
   A. Gauss Elimination Method
   B. Gauss Seidal Method
   C. Gauss Jacobi Method
   D. Newton's Raphson Method
   ANSWER: A

114. As soon as a new value for a variable is obtained by iteration, it is used immediately in the following equation. This method is called _______________.
   A. Gauss Elimination Method
   B. Gauss Seidal Method
   C. Gauss Jacobi Method
   D. Gauss Jacobi Method
   ANSWER: B

115. The algebraic sum of the errors in any difference column is ____________.
   A. zero
   B. one
   C. constant
   D. same value
   ANSWER: A

116. Numerical differentiation can be used only when the difference of some order are ____________.
   A. equally spaced
   B. unequally spaced
   C. constant
   D. independent
   ANSWER: C

117. Newton's divided difference formula is used only for ____________ intervals.
   A. equal
   B. unequal
   C. open
   D. closed
   ANSWER: B

118. If a set of numerical values of a single valued integral function f(x), is applied to integral f(x), then the process is known as___________.
   A. a numerical integration
   B. quadrature
   C. interpolation
   D. a numerical differentiation
   ANSWER: A

119. In deriving the trapezoidal formula for the curve y=f(x), each sub-interval is replaced by its___________.
   A. straight line
   B. ellipse
   C. chord
   D. tangent line
120. Simpson's rule will give exact result if the entire curve \( y=f(x) \) is itself a _____
   A. straight line
   B. ellipse
   C. parabola
   D. tangent line
   ANSWER: C

121. Taylor's series method will be very useful to give some initial starting values for powerful methods such as _________.
   A. Euler Method
   B. Modified Euler Method
   C. Newton Raphson Method
   D. Runge Kutta Method
   ANSWER: D

122. The modified Euler method is based on the average of _____________.
   A. straight line
   B. ellipse
   C. chord
   D. points
   ANSWER: D

   Codes: ABCD
   A. 2341
   B. 3214
   C. 1423
   D. 1243
   ANSWER: A

124. In numerical integration, to get better result, we select \( n \) as_______.
   A. even
   B. odd
   C. 1,2,3,4,5,6,......
   D. large as possible
   ANSWER: D

125. In divided difference formula, the value of any difference is ______ of the order of their arguments.
   A. independent
   B. dependent
   C. inverse
   D. transpose
   ANSWER: A

126. The word Eigen value is derived from a German word Eigen meaning _____.
   A. characteristic
   B. substitute
   C. dominant
127. For a transition matrix the dominant eigen value is always _______.
   A. 0
   B. 1
   C. 2
   D. 3
   ANSWER: B

128. The divided difference formula is ________ in all their arguments.
   A. asymmetrical
   B. symmetrical
   C. inverse
   D. transpose
   ANSWER: B

129. Which of the following states If f(x) is three times differentiable and f', f''are not zero for a solution of f(x) = 0, then x0 sufficiently close to s?
   A. Newton's method of first order
   B. Newton's method of second order
   C. Newton's method of third order
   D. Newton's divided difference method
   ANSWER: B

130. In Newton-cotes formula, if f(x) is interpolated at equally spaced nodes by a polynomial of degree two then it represents_____.
   A. Trapezoidal rule
   B. Simpson's one-third rule
   C. Simpson's three-eigth rule
   D. Euler's rule
   ANSWER: B

131. In Newton-cotes formula, if f(x) is interpolated at equally spaced nodes by a polynomial of degree three then its represents_____.
   A. Trapezoidal rule.
   B. Simpson's one-third rule
   C. Simpson's three-eigth rule
   D. Euler's rule
   ANSWER: C

132. Which of the following is true?
   A. Delta=E-1
   B. Nabla=Delta
   C. Delta=Nable+1
   D. Delta=Nabla-1
   ANSWER: A

133. Let h be the finite difference, then forward difference operator is defined by _____.
   A. f(x)=f(x+h)-f(x)
   B. f(x)=f(x-h)-f(x)
134. There is at most one polynomial of degree less than or equal to n ______.
   A. which interpolates f(x) at (n+1) distinct points x₀, x₁,..., xₙ
   B. which interpolates f(x) at (n-1) distinct points x₀, x₁,..., xₙ₋₁
   C. which interpolates f(x) at n distinct points x₀, x₁,..., xₙ₋₂
   D. which interpolates f(x) at (n-1) distinct points x₀, x₁,..., xₙ₋₃
   ANSWER: A

135. A differential equation is said to be linear if ______.
   A. the dependent variable and its differential co-efficient occur in the second degree
   B. the dependent variable occurs in the first degree
   C. the dependent variable and its differential co-efficient occur only in the first degree
   D. the independent variable occurs in the first degree
   ANSWER: C

136. The solution of a differential equation which contains number of arbitrary constants equal to the order of the differential equation is called the ______.
   A. elementary solution
   B. complementary function
   C. particular solution
   D. general solution
   ANSWER: D

137. In the general solution of a differential equation, the arbitrary constants are ______.
   A. dependent
   B. independent
   C. both dependent and independent
   D. neither dependent nor independent
   ANSWER: B

138. The simplest method in finding the approximate solutions to the first order equations is ________.
   A. Euler's method
   B. Modified Euler's Method
   C. Runge-Kutta method
   D. Taylor's Method
   ANSWER: A

139. If a polynomial of degree n has more than n zeros, then the polynomial is ______.
   A. oscillatory
   B. zero everywhere
   C. quadratic
   D. not defined
   ANSWER: B

140. To find the negative root of f(x) = 0, we should find the corresponding positive root of ________ and change the sign.
   A. f(x) = 0
   B. f(x) = y
C. \( f(-x)=y \)
D. \( f(-x)=0 \)
ANSWER: C

141. To find the real root of a polynomial equation we use ________ method.
   A. Bisection
   B. Newton's
   C. Euler's
   D. Horner's
   ANSWER: D

142. ________ method is faster than bi-section method.
   A. Gauss-elimination
   B. Newton's
   C. Horner's
   D. Regula-falsi
   ANSWER: D

143. _______ method is slower than Newton's Raphson Method.
   A. Gauss-elimination
   B. Newton's
   C. Horner's
   D. Regula-falsi
   ANSWER: D

144. The most popular Runge-Kutta method is ________.
   A. First order Runge-Kutta method
   B. Second order Runge-Kutta method
   C. Third order Runge-Kutta method
   D. Fourth order Runge-Kutta method
   ANSWER: D

145. The convergence rate of the ______ method is poor, when two largest eigen values are nearly equal in magnitude.
   A. Power
   B. Newton's
   C. Euler's
   D. Bolzano's
   ANSWER: A

146. ______ are best suited for finding a set of interpolation polynomials for increasing values of \( r \).
   A. Newton forward and backward interpolation formula
   B. Newton and Backward difference formula
   C. Lagrange's interpolation formula
   D. Taylor's formula
   ANSWER: A

147. The process of numerical integration of a function of a single variable is called_____.
   A. Trapezoidal Rule
   B. Simpson's Rule
   C. Cubature
D. Quadrature
ANSWER: D

148. The process of numerical integration of a function of a two variable is called _____.
   A. Trapezoidal Rule
   B. Simpson's Rule
   C. Cubature
   D. Quadrature
   ANSWER: C

149. Simpson's rule for evaluation of integral gives better result if f(x) = 0 represents_____.
   A. a circle
   B. a parabola
   C. an ellipse
   D. a hyperbola
   ANSWER: B

150. The product and sum of the roots of the equation $x^5 = 2$ are _____ and ______.
   A. (1,2)
   B. (5,2)
   C. (2,5)
   D. (2,0)
   ANSWER: D

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