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प्रश्नपुस्तिका क्रमांक
Question Booklet No.

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प्रश्नपुस्तिका सीरीज
Question Booklet Series
**B**

# B.C.A. (Fifth Semester) Examination, February/March-2022

## BCA-504(N)

## Numerical Methods

**Time : 1:30 Hours** **Maximum Marks-100**

जब तक कहा न जाय, इस प्रश्नपुस्तिका को न खोलें

**निर्देश : –**

1. परीक्षार्थी अपने अनुक्रमांक, विषय एवं प्रश्नपुस्तिका की सीरीज का विवरण यथास्थान सही– सही भरें, अन्यथा मूल्यांकन में किसी भी प्रकार की विसंगति की दशा में उसकी जिम्मेदारी स्वयं परीक्षार्थी की होगी।
2. **इस प्रश्नपुस्तिका में 100 प्रश्न हैं, जिनमे से केवल 75 प्रश्नों के उत्तर परीक्षार्थियों द्वारा दिये जाने है। प्रत्येक प्रश्न के चार वैकल्पिक उत्तर प्रश्न के नीचे दिये गये हैं। इन चारों में से केवल एक ही उत्तर सही है। जिस उत्तर को आप सही या सबसे उचित समझते हैं, अपने उत्तर पत्रक (O.M.R. ANSWER SHEET)में उसके अक्षर वाले वृत्त को काले या नीले बाल प्वांइट पेन से पूरा भर दें। यदि किसी परीक्षार्थी द्वारा निर्धारित प्रश्नों से अधिक प्रश्नों के उत्तर दिये जाते हैं तो उसके द्वारा हल किये गये प्रथमतः यथा निर्दिष्ट प्रश्नोत्तरों का ही मूल्यांकन किया जायेगा।**
3. प्रत्येक प्रश्न के अंक समान हैं। आप के जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
4. सभी उत्तर केवल ओ०एम०आर० उत्तर पत्रक **(O.M.R. ANSWER SHEET)** पर ही दिये जाने हैं। उत्तर पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
5. ओ०एम०आर० उत्तर पत्रक **(O.M.R. ANSWER SHEET)** पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाय।
6. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी प्रश्नपुस्तिका बुकलेट एवं ओ०एम०आर० शीट पृथक–पृथक उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें।
7. निगेटिव मार्किंग नहीं है।

**महत्वपूर्ण : –** **प्रश्नपुस्तिका खोलने पर प्रथमतः जॉच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभॉति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्ष निरीक्षक को दिखाकर उसी सीरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।**

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**Rough Work / रफ कार्य**

1. Bessel's formula is derived by mean of :

(A) Gauss Forward and Gauss Backward

(B) Gauss Backward and Gauss third

(C) Gauss Forward and Gauss third

(D) Sterling and Gauss Forward

2. Which of the following method is quadratically convergent ?

(A) Bisection method

(B) Regula-Falsi method

(C) Newton-Raphson method

(D) Secant method

3. Picard's method is used for finding the numerical solutions of :

(A) Linear differential equations

(B) Non linear differential equations

(C) Both (A) and (B)

(D) None of above

4. Trapezoidal rule gives exact value of integration of integrand is :

(A) Linear polynomial

(B) Quadratic polynomial

(C) Cubic polynomial

(D) Biquadratic polynomial

5. Bisection method is based on :

(A) Bolzano's theorem

(B) Taylor's theorem

(C) Maclaurin's theorem

(D) None of above

6. For given data-

| x: | 1 | 2 | 3 |
|---|---|---|---|
| f(x): | 1 | 4 | 9 |

Find $f^1(x)$ at $x = 1$

(A) 2

(B) 3

(C) 1

(D) 0

7. In Runge-Kutta method of fourth order, $\Delta y$ is :

(A) $\frac{1}{5}(K_1 + 2K_2 + 2K_3 + K_4)$

(B) $\frac{1}{6}(K_1 + 2K_2 + 2K_3 + K_4)$

(C) $\frac{1}{6}(K_1 + K_2 + K_3 + K_4)$

(D) $\frac{1}{6}(K_1 + 2K_2 + K_3 + K_4)$

8. For given ODE $\frac{dy}{dx} = x + y,\ y(0) = 1$, using Euler's method, (h = 0.2) value of y(0.2) is :

(A) 1

(B) 2

(C) 1.2

(D) 1.23

9. Simpson's $\frac{1}{3}$ rule gives exact value of $\int_a^b f(x)\,dx$ if f(x) is :

(A) Linear polynomial

(B) Quadratic polynomial

(C) Cubic polynomial

(D) Biquadratic polynomial

10. Using Newton-Raphson method, I[st] approximation of $x^3 + 4x + 1 = 0$, with $x_0 = 1$, is :

(A) 1.67

(B) 1.87

(C) 1.86

(D) None of above

11. Numerical differentiation is a method of finding :

(A) Approximation value of differential

(B) Exact value of differential

(C) Both (A) and (B)

(D) None of these

12. The value of $\Delta^n(a^x)$ is :

(A) $(a^h + 1)^n a^x$

(B) $(a^h - 1)^n a^x$

(C) $(a^{nh} - 1)\ a^x$

(D) $(a^{nh} + 1)\ a^x$

13. The order of convergence of Regula-Falsi method is :

(A) 2

(B) 1.172

(C) 1.618

(D) 1.17

14. Value of $\frac{\Delta^2}{E}(x^3)$ is :

(A) 6x

(B) 2x

(C) 3x

(D) None of these

15. The convergence of which of the following method is sensitive to initial approximation :

(A) Regula-Falsi method

(B) Gauss-Seidal method

(C) Newton-Raphson method

(D) All of above

16. Which of the following is equivalent to $\Delta \log(f(x))$ ?

(A) $\log\left[\frac{\Delta f(x)}{f(x)}\right]$

(B) $\log\left[\frac{Ef(x)}{f(x)}\right]$

(C) $\log\left[1 - \frac{\Delta f(x)}{f(x)}\right]$

(D) $\log\left[1 + \frac{\Delta f(x)}{f(x)}\right]$

17. For given data-

| x: | 0 | $\frac{1}{6}$ | $\frac{2}{6}$ | $\frac{3}{6}$ | $\frac{4}{6}$ | $\frac{5}{6}$ | 1 |
|---|---|---|---|---|---|---|---|
| y: | 1 | 0.97 | 0.90 | 0.80 | 0.62 | 0.59 | 0.50 |

h is :

(A) 1

(B) $\frac{1}{6}$

(C) $\frac{2}{6}$

(D) $\frac{3}{6}$

18. In Simpson's $\frac{1}{3}$ rule, curve $y = f(x)$is assumed to be a :

(A) Circle

(B) Parabola

(C) Hyperbola

(D) None of these

19. If $\int_0^1 \frac{1}{1+x^2} dx = 0.7854$ by Simpson's $\frac{1}{3}$ rule and $\int_0^1 \frac{1}{1+x^2} dx = 0.7853$ by exact method, then error is :

(A) 0.0001

(B) 0.00001

(C) 0.001

(D) 0.1

20. In general quadrature formula to evaluate $\int_a^b f(x)dx$, $f(x)$ is approximated by :

(A) Least square approximation

(B) Newton's Gregory Forward Interpolation

(C) Hermite Interpolation

(D) None of these

21. Newton's divided difference polynomial which interpolate the data $f(0) = 1$, $f(1) = 3$, $f(3) = 55$ is :

(A) $8x^2 + 6x + 1$

(B) $8x^2 - 6x + 1$

(C) $8x^2 - 6x - 1$

(D) $8x^2 + 6x - 1$

22. Gauss-Seidel method can be used for solving a set of :

(A) Linear algebraic equations only

(B) Linear differential equations only

(C) Both linear and non-linear equations only

(D) None of these

23. In which of the following methods both sides of equation are multiplied by non zero constant ?

(A) Gauss Elimination method

(B) Gaussian Quadrature method

(C) Gaussian consistent procedure

(D) None of these

24. The condition that gives guarantee for convergence of Gauss-Seidel method is known as :

(A) Diagonally dominant

(B) Off diagonal dominant

(C) Diagonal pivoting

(D) Partial pivoting

25. Which of the following system is diagonally dominant ?

(A) $3x + y = 1$

$x + 5y = 4$

(B) $2x + 7y = 1$

$x + y = -3$

(C) Both (A) and (B)

(D) None of above

26. Using Gauss-Seidel method, I approximation of system $x - 2y = 1$ and $x + 4y = 4$ is :

(A) $x = 1, y = 0.75$

(B) $x = 0.25, y = 1$

(C) $x = 0, y = 0$

(D) $x = 1, y = 0.65$

27. If $f(0) = 1$ and $f(1) = 2.72$, then approximate value of $\int_0^1 f(x)\,dx$ by Trapezoidal rule is :

(A) 3.72

(B) 1.024

(C) 0.024

(D) 1.86

28. Simpson's $\frac{3}{8}$ rule gives best approximation if :

(A) $f(x) = ax + b$

(B) $f(x) = ax^2 + bx + c$

(C) $f(x) = ax^3 + bx^2 + cx + d$

(D) None of above

29. Which of the following formula is not used in interpolation ?

(A) Lagrange's formula

(B) Newton's-Gregory Forward formula

(C) Central difference formula

(D) Taylor's formula

30. Solution of system :

$2x - 3y + 10z = 3$

$-x + 4y + 2z = 20$

$5x + 2y + z = -12$

by Gauss Elimination method is :

(A) 4, 3, 2

(B) 4, -3, 2

(C) -4, -3, 2

(D) -4, 3, 2

31. If (n+1) data points are given then $\Delta^n f(x)$ is :

(A) 0

(B) 1

(C) 2

(D) $n_0^1$

32. Given problem $\frac{dy}{dx} = f(x, y),\ y(x_0) = y_0$ is known as :

(A) Boundary value problem

(B) Initial value problem

(C) Both (A) and (B)

(D) None of above

33. For $\frac{dy}{dx} = f(x, y),\ y(x_0) = y_0$, Picard's method successive approximation formula is:

(A) $y_{n+1} = y_n + \int_{x_0}^{x} f(x, y_n)dx$

(B) $y_{n+1} = y_n + \int_{x_0}^{x} f(x_n, y_n)dx$

(C) $y_{n+1} = y_0 + \int_{x_0}^{x} f(x, y_n)dx$

(D) None of above

34. Given $\frac{dy}{dx} = y - x^2 + 1, (h = 0.5)\ y(0) = 0.5,$ using Runge-Kutta method of IV order, value of $K_1$ is :

(A) 0.7

(B) 0.65

(C) 0.75

(D) 0.85

35. Applying Gauss-Seidel iteration method to solve :

$20x + y - 2z = 10$

$3x + 20y - z = -18$

$2x - 3y + 20z = 25$

(A) $x = 1, y = 1, z = 1$

(B) $x = 1, y = -1, z = 1$

(C) $x = 2, y = 1, z = 0$

(D) $x = 1, y = 1, z = -1$

36. $(1 + \Delta)(1 - \nabla)$ is :

(A) -1

(B) $\Delta$

(C) 1

(D) E

37. Given data :

| x: | $x_0$ | $x_1$ | $x_2$ | $x_3$ |
|---|---|---|---|---|
| f(x): | $f(x_0)$ | $f(x_1)$ | $f(x_2)$ | $f(x_3)$ |

then Simpson's $\frac{3}{8}$ rule is :

(A) $\frac{3h}{8}[f(x_0) + f(x_3) + 2\{f(x_1) + f(x_2) + f(x_3)\}]$

(B) $\frac{3h}{8}[f(x_0) + 2f(x_1) + 2f(x_2) + 2f(x_3)]$

(C) $\frac{3h}{8}[f(x_0) + f(x_3) + 2f(x_1) + 2f(x_2)]$

(D) None of above

38. Runge-Kutta method is also called :

(A) Step by step method

(B) Series method

(C) Direct method

(D) None

39. Consider $\frac{dy}{dx} = x - y$

$y(0) = 1;$

using Picard's method, first approximation $y_1$ is :

(A) $y_1 = 1 + x + \frac{x^2}{2}$

(B) $y_1 = 1 + x - \frac{x^2}{2}$

(C) $y_1 = 1 - x + \frac{x^2}{2}$

(D) $y_1 = 1 - x + \frac{x^2}{2}$

40. Given $\frac{dy}{dx} = x^2 - y,\ y(0) = 1$ if table of iterations is :

| x: | 0 | 0.1 | 0.2 |
|---|---|---|---|
| y: | 1 | 0.91 | 0.82 |

then step size h is :

(A) 0

(B) 1

(C) 0.01

(D) 0.1

41. Bisection method is :

(A) Always convergent

(B) Never convergent

(C) Quadratically convergent

(D) None of above

42. While finding (+ve) root of $(17)^{1/3}$ correct to six decimal places by Newton-Raphson method, f(x) is :

(A) $f(x) = x^3 + 17$

(B) $f(x) = x^3 - 17$

(C) $f(x) = x - (17)^{1/3}$

(D) None of above

43. Which of the following is strictly diagonally dominant matrix ?

(A) $\begin{bmatrix} 2 & 1 \\ 3 & 7 \end{bmatrix}$

(B) $\begin{bmatrix} 3 & 2 \\ 2 & 4 \end{bmatrix}$

(C) (A) and (B) both

(D) None

44. If $x_0 = 0.75825$

$x = 0.759$

$h = 0.00005$

then u is :

(A) 1.5

(B) 15

(C) 2.5

(D) 25

45. Simpson's formula is applicable to :

(A) Odd number of intervals

(B) Even number of intervals

(C) Odd or even number intervals

(D) None of above

46. In Gauss-Elimination original equations are transformed by using :

(A) Column operations

(B) Row operations

(C) Mathematical operations

(D) Subset

47. First order divided difference $f[x_0, x_1]$ is :

(A) $\frac{f(x_1)-f(x_0)}{x_1+x_0}$

(B) $\frac{f(x_1)+f(x_0)}{x_1+x_0}$

(C) $\frac{f(x_1)-f(x_0)}{x_1-x_0}$

(D) None of above

48. Numerical techniques more communally involve :

(A) Direct method

(B) Reduction method

(C) Elimination method

(D) Iterative method

49. Which of the following is not an iterative method ?

(A) Gauss Elimination method

(B) Gauss-Seidal method

(C) Newton-Raphson method

(D) Picard's method of integration

50. Value of $x, y, z$ in system of :

$2x + y - 3z = -10$

$-2y + z = -2$

$z = 6$

is :

(A) 2, 4, 5

(B) 3, 4, 5

(C) 2, 4, 6

(D) 3, 4, 2

51. Process of finding the value of y corresponding to any value of $x = x_i$ between $x_0$ and $x_n$ is :

(A) Extrapolation

(B) Interpolation

(C) Polation

(D) None of above

52. Forward difference $\Delta f(x)$ is :

(A) $f(x + h) - f(x)$

(B) $f(x + h) + f(x)$

(C) $f(x + 2h) - f(x)$

(D) $f(x) - f(x - h)$

53. Which of the following is correct ?

(A) $E \equiv 1 - \Delta$

(B) $S \equiv E^{1/2} + E^{-1/2}$

(C) $E \equiv e^{hD}$

(D) None of these

54. If $f(x) = C$ (Constant) then $\Delta f(x)$ is :

(A) 0

(B) C

(C) 1

(D) None of above

55. Missing value of following data :

| x: | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| f(x): | 7 | - | 13 | 21 | 37 |

is :

(A) 8.5

(B) 7.5

(C) 9.5

(D) None of above

56. Lagrange's Interpolation formula can be used for :

(A) Only equispaced data

(B) Only unequispaced data

(C) Equispaced as well as unequispaced

(D) None of above

57. For given data

| x: | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| f(x): | 1 | 2 | 1 | 10 |

then $\Delta^3 f(0)$ is :

(A) 11

(B) 12

(C) -12

(D) None of above

58. For (n+1) data points, degree of interpolating polynomial is :

(A) At most n

(B) At least n

(C) Exactly n

(D) None of above

59. Newton Gregory Forward interpolation formula is used for the data given :

(A) Equal interval

(B) Unequal interval

(C) Both (A) and (B)

(D) None of above

60. Given data

| x: | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| f(x): | 1 | 2 | 1 | 10 |

Using Newton-Gregory Forward difference interpolation, if $x = x_0 + uh$ then u is :

(A) $\frac{x}{2}$

(B) 1

(C) 1.5

(D) x

61. In case of Newton-Gregory Backward interpolation formula if $x_0$ is initial argument, then end argument $x_n$ is :

(A) $x_0 + (n - 1)h$

(B) $x_0 - nh$

(C) $x_0 + nh$

(D) $x_0 + (n + 1)h$

62. If E is shifting operator and D is differential operator then :

(A) $E = e^{hD}$

(B) $D = \frac{1}{h} \log E$

(C) Both (A) and (B)

(D) None of above

63. Newton Divided differences are :

(A) Symmetrical in their arguments

(B) Not symmetrical in their arguments

(C) Always constant

(D) None of above

64. Third Divided difference with argument 2, 4, 9, 10 of $f(x) = x^3 - 2x$ is :

(A) 2

(B) 1

(C) -1

(D) -2

65. In finite difference $E^{-1}$ is :

(A) $1 + \nabla$

(B) $1 - \nabla$

(C) $\nabla - 1$

(D) $\nabla + 1$

66. Which of the following is not a central difference formula :

(A) Newton divided difference formula

(B) Sterling for formula

(C) Bessel's formula

(D) Gauss difference interpolation formula

67. Consider the data :

| x: | 0 | 1 | 2 |
|---|---|---|---|
| f(x): | 4 | 3 | 12 |

Value of $\int_0^2 f(x)\,dx$ by trapezoidal rule is :

(A) 11

(B) 12

(C) 15

(D) 9

68. Which formula is obtained by putting $n = 1$ in general quadrature formula ?

(A) Simpson's $\frac{1}{3}$ rule

(B) Simpson's $\frac{3}{8}$ rule

(C) Trapezoidal rule

(D) Weddle's rule

69. In Simpson's $\frac{3}{8}$ rule n (no of subintervals)is :

(A) Multiple of 1

(B) Multiple of 2

(C) Multiple of 3

(D) Multiple of 4

70. In evaluation of $\int_a^b f(n)\,dx$, n is no of subinterval then h is :

(A) $\frac{b-a}{n}$

(B) $\frac{b+a}{n}$

(C) $\frac{a-b}{n}$

(D) $\frac{b-a}{2n}$

71. Formula-

$\int_{x_0}^{x_n} y\,dx = \frac{h}{3}[(y_0 + y_n) + 4(y_1 + y_3 + y_5 + - - -) + 2(y_2 + y_4 + y_6 + - - -)]$ is :

(A) Simpson's $\frac{3}{8}$ rule

(B) Trapezoidal rule

(C) Simpson's $\frac{1}{3}$ rule

(D) Weddle's rule

72. Considering 4 subintervals $\int_0^1 \frac{1}{1+x}$dxby trapezoidal rule is :

(A) 0.6950

(B) 0.8725

(C) 0.6270

(D) 0.3597

73. Gauss-Seidel method is :

(A) Direct method

(B) Iterative method

(C) Both (A) and (B)

(D) None of above

74. Gauss-Elimination method is :

(A) Indirect method

(B) Direct method

(C) Both (A) and (B)

(D) None of above

75. By solving Gauss Elimination method solution of system :

$$x - y + 3z = 13$$

$$4x - 2y + z = 15$$

$$-3x - y + 4z = 18$$

(A) 2, 2, 3

(B) 2, 1, 3

(C) -2, 2, 3

(D) 2, -2, 3

76. In Gauss-Elimination method, coefficient matrix reduces to :

(A) Lower triangular

(B) Diagonal

(C) Upper triangular

(D) Identity matrix

77. Gauss-Elimination is also known as :

(A) Backward elimination

(B) Forward elimination

(C) Iterative method

(D) None of above

78. Possible root of $f(x) = 0$ lies in the interval (a, b) iff$(x)$ is continuous in [a, b] and:

(A) $f(a)f(b) < 0$

(B) $f(a)f(b) = 0$

(C) $f(a)f(b) > 0$

(D) None of above

79. The order of convergence of Newton-Raphson method is :

(A) 2

(B) 3

(C) 0

(D) 1

80. The approximation to a root of the equation $x^2 + x - 1 = 0$ in the interval (0, 1) by applying method of false position one time, will be :

(A) 0.75

(B) 0.5

(C) 0.25

(D) 0.65

81. Using bisection method, negative root of $x^3 - 4x + 9 = 0$, correct to 3 decimal places is :

(A) -2.506

(B) -2.706

(C) -2.406

(D) None of above

82. Newton-Raphson method is applicable to the solution of :

(A) Both algebraic and transcendental equation

(B) Algebraic only

(C) Transcendental only

(D) None of above

83. In which of the following methods proper choice of initial value is very important for :

(A) Bisection method

(B) Newton Raphson method

(C) False-Position method

(D) Least square method

84. Find f(10) by Lagrange formula :

| x: | 5 | 6 | 9 | 11 |
|---|---|---|---|---|
| f(x): | 12 | 13 | 14 | 16 |

(A) 12.67

(B) 13.67

(C) 14.67

(D) 15.67

85. The value of $E^{-1}(f(x))$ is :

(A) $f(x + h)$

(B) $f(x - 2h)$

(C) $f(x - h)$

(D) None of above

86. How many steps does the fourth order Runge - Kutta method use :

(A) Two steps

(B) Five steps

(C) Four steps

(D) Three steps

87. Using Newton's Iterative method find first approximation $x_1$ of $x \sin x + \cos x = 0$, where $x_0 = \pi$:

(A) $x_1 = 1.2345$

(B) $x_1 = 3.5782$

(C) $x_1 = 2.8233$

(D) None of above

88. Bisection method is also known as :

(A) Interval halving method

(B) Secant method

(C) Newton's method

(D) None of above

89. Newton-Raphson Iterative formula to find inverse of a is :

(A) $x_{n+1} = x_n(2 + ax_n)$

(B) $x_{n+1} = x_n(2 - ax_n)$

(C) $x_{n+1} = x_n(3 - ax_n)$

(D) None of above

90. Interval of unit length which contains the root of equation $x^4 - 3x^2 + x - 10 = 0$ is :

(A) (0, 1)

(B) (1, 2)

(C) (2, 3)

(D) None of above

91. Regula-Falsi method is also known as :

(A) Method of linear interpolation

(B) Tangent approximation method

(C) Interval halving method

(D) None of above

92. Find the root of $x^3 - 9x + 1 = 0$ for the root lying between 2 and 4 by Regula-Falsi method upto second approximation :

(A) 2.861

(B) 2.740

(C) 2.911

(D) 2.474

93. In Regula-Falsi method, the first approximation is given by :

(A) $x_1 = \frac{af(b) - bf(a)}{f(b) - f(a)}$

(B) $x_1 = \frac{bf(a) - af(b)}{f(a) - f(b)}$

(C) $x_1 = \frac{bf(a) + af(b)}{f(a) + f(b)}$

(D) $x_1 = \frac{af(a) - bf(b)}{f(a) - f(b)}$

94. Newton Raphson method fails when :

(A) $f'(x)$ is negative

(B) $f'(x)$ is too large

(C) $f'(x)$ is zero

(D) Never fails

95. Find f(1) where-

| x: | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| f(x): | 8 | 3 | 0 | -1 | 0 |

(A) 16
(B) 17
(C) 15
(D) 14

96. The following table is given :

| x: | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| f(x): | 3 | 6 | 11 | 18 | 27 |

What is form of f(x) ?

(A) $x^2 + 2x + 3$
(B) $x^2 + x + 1$
(C) $x^2 + 3x + 2$
(D) $2x^2 + 2x + 1$

97. The value of $\Delta\nabla$ is equal to :

(A) $\Delta\nabla$
(B) $\delta^2$
(C) Both (A) and (B)
(D) None of above

98. Value of $E^{1/2}$ is equal to :

(A) $\mu + \frac{1}{2}\delta$
(B) $\mu - \frac{1}{2}\delta$
(C) $\delta + \frac{1}{2}\mu$
(D) $\delta - \frac{1}{2}\mu$

99. Newton Raphson method is also called :

(A) Tangent method
(B) Regula-Falsi method
(C) Least square method
(D) None of above

100. Stirling formula is derived by taking mean of following formula :

(A) Gauss Forward and Gauss backward formula
(B) Gauss forward and Gauss third formula
(C) Gauss forward and Bessel's
(D) Gauss backward and Gauss third

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