Following short questions are selected from previous 5 years papers of different boards. Solve these at your own to perform well in annual exams.

1. Using differential, find $\frac{dy}{dx}$, if $xy - lnx = c$.
2. Using differential, find $\frac{dy}{dx}$, when $\frac{y}{x} - lnx = lnc$.
3. Use differential to approximate the value of $\sqrt[4]{17}$.
4. Use differential to approximate the value of $(31)^{\frac{1}{5}}$.
5. Use differential to find $\frac{dy}{dx}$ for $x^2 + 2y^2 = 16$.
6. Find δy if $y = x^2 + 2x$ when x changes from 2 to 2.18.
7. Find δy and dy if $y = \sqrt{x}$, when x changes from 4 to 4.41.
8. If $y = x^2 - 1$, find δy and dy when x changes from 3 to 3.02.
9. Evaluate $\int(\sqrt{x} - \frac{1}{x})dx$, $x > 0$.
10. Evaluate $\int sin(a+b)xdx$.
11. Evaluate $\int lnxdx$.
12. Evaluate $\int \frac{e^{2x}+e^{2x}}{e^x}dx$.
13. Evaluate $\int_{-2}^{0} \frac{1}{(2x-1)^2}dx$.
14. Evaluate $\int_0^2 (e^{\frac{x}{2}} - e^{\frac{-x}{2}})dx$.
15. Evaluate $\int cos3xsin2xdx$.
16. Evaluate $\int \sqrt{\frac{1+x}{1-x}}dx$.
17. Evaluate $\int \frac{x+2}{\sqrt{x+3}}$.
18. Evaluate $\int x^3 tan^{-1}xdx$.
19. Evaluate $\int sec^4xdx$.
20. Evaluate $\int_{-1}^{5} |x-3|dx$.
21. Evaluate $\int \frac{(a-b)x}{(x-a)(x-b)}dx$.

22. Evaluate $\int_0^1 \frac{3x}{4-3x}dx$.
23. Evaluate $\int (x-1)(x-3)dx$.
24. Evaluate $\int (lnx)\frac{1}{x}dx$, $x > 0$.
25. Evaluate $\int secxdx$.
26. Evaluate $\int (lnx)^2 dx$.
27. Evaluate $\int_1^2 \frac{x}{x^2+2}dx$.
28. Evaluate $\int \frac{x+2}{\sqrt{x+3}}dx$.
29. Evaluate $\int \frac{2a}{x^2-a^2}$, $x > 0$.
30. Evaluate $\int \sqrt{1+sinx}dx$.
31. Evaluate $\int xe^x dx$.
32. Evaluate $\int_1^2 lnxdx$.
33. Evaluate $\int \frac{dx}{\sqrt{x+1}-\sqrt{x}}$.
34. Evaluate $\int \sqrt{1-cos2x}dx$, $(1-cos2x < 0)$.
35. Evaluate $\int \frac{dx}{a^2-x^2}dx$, $(x > 0)$.
36. Evaluate $\int [x+|x|]dx$.
37. Evaluate $\int_0^3 \frac{dx}{x^2+9}$.
38. Evaluate $\int (a-2x)^{\frac{3}{2}}dx$.
39. Evaluate $\int x\sqrt{x^2-1}dx$.
40. Evaluate $\int \frac{(\sqrt{x}-1)^2}{\sqrt{x}}dx$.
41. Evaluate $\int tan^2 xdx$.
42. Evaluate $\int \frac{adt}{2\sqrt{at+b}}$.
43. Evaluate $\int xlnxdx$.
44. Evaluate $\int_0^{\frac{\pi}{4}} secx(secx+tanx)dx$.
45. Evaluate $\int_{-6}^2 \sqrt{3-x}dx$.
46. Evaluate $\int_0^{\frac{\pi}{4}} \frac{1}{1-sinx}dx$.
47. Evaluate $\int \frac{2x}{x^2-a^2}dx$.
48. Evaluate $\int \frac{1-x^2}{1+x^2}dx$.

49. Evaluate $\int \frac{sec^2x}{\sqrt{tanx}}dx$.

50. Evaluate $\int \frac{x}{\sqrt{x+x^2}}dx$.

51. Evaluate $\int x^2 lnxdx$.

52. Evaluate $\int xcosxdx$.

53. Evaluate $\int \frac{1}{xlnx}dx$.

54. Evaluate $\int Tan^{-1}xdx$.

55. Evaluate $\int (x^{3+3x^2})dx$.

56. Evaluate $\int_0^4 \frac{sinx-1}{cos^2x}dx$.

57. Evaluate $\frac{3-cos2x}{1+cos2x}dx$.

58. Evaluate $\int \frac{cot\sqrt{x}}{\sqrt{x}}dx$.

59. Evaluate $\int x^2 ae^{ax}dx$.

60. Evaluate $\int (lnx)^2 dx$.

61. Evaluate $\int \frac{e^x(x^2+1)}{(x+1)^2}dx$.

62. Evaluate $\int \frac{ax+b}{ax^2+2bx+c}dx$.

63. Evaluate $\int \frac{e^x}{e^{x+3}}dx$.

64. Evaluate $\int xsinxdx$.

65. Evaluate $\int e^x(cosx+sinx)dx$.

66. Evaluate $\int \frac{7x-1}{(x-1)(x+1)}dx$.

67. Evaluate $\int_1^{\sqrt{5}} \sqrt{(2t-t)^3}dt$.

68. Prove that $\int_a^b f(x)dx = \int_a^c f(x)dx + \int_c^b f(x)dx$ where $a < c < b$.

69. If $\int_{-2}^1 f(x)dx = 5$, $\int_{-2}^1 g(x)dx = 4$, then evaluate $\int_{-2}^1 (2f(x) + 3g(x))dx$.

70. Find the area bounded by $y = cosx$ from $x = -\frac{\pi}{2}$ to $x = \frac{\pi}{2}$.

71. Find the area between $x - axis$ and the curve from $x = 1$ to $x = 2$.

72. Find the area between the $x - axis$ and the curve, $y = 4x - x^3$.

73. Find the area between $x - axis$ and the curve $y = sin2x$ from $x = 0$ to $x = \frac{\pi}{3}$.

74. Find the area bounded by the curve $y = 4 - x^2$ and $x - axis$.

75. Find the area bounded by $y = cos$ from $x = -\frac{\pi}{2}$ to $x = \frac{\pi}{2}$.

76. Find the area between $x - axis$ and the curve $y = 4x - x^2$.

77. Solve the differential equation $(x - 1)dx + ydy = 0$.

78. Solve the differential equation $x^2(2y + 1)\frac{dy}{dx} - 1 = 0$.

79. Solve the differential equation $\frac{dy}{dx} = \frac{1-x}{y}$.

80. Solve the differential equation $(siny + ycosy)dy = [x(2lnx + 1)]dx$

81. Solve the differential equation $\frac{dy}{dx} + \frac{2xy}{2y+1} = x$.

82. Solve the differential equation $\frac{dy}{dx} = \frac{y^2+1}{e^{-x}}$.

Best of Luck