FYCS -UNIT -2-- INTEGRATION

Q 1   dx
      (a) X+c
      (b) 1
      (c) 0
      (d) X^2 +c

    Ans (a)

2   dx
      (a)
      (b) /3 +c
      (c)
      (d) 1
    Ans (b)

3   dx
      (a)
      (b) 1
      (c) 0
      (d) X+c
    Ans: (a)

4   Which of following is not true?
      (a) Integration is nothing but reverse process of differentiation
      (b) Integration is nothing but antiderivative of the function.
      (c) Integration is known as primitive function.
      (d) Integration is nothing but derivative of function.
    Ans (d)

5   1

    dx =
      (a) F(x)
      (b) F'(x)
      (c) dx
      (d)

    Ans: (a)

6   + x ^{2}) dx   1
      (a) $x^4/4 + x^2/2$ +c
      (b) $x^5/4 + x^2/2$ +c
      (c) $x^6/6 + x^3/3$ +c
      (d) $5x^4 + 3x^2$ +c

    Ans: ©

7   Integration of X^3 + 3^x is   1
      (a) $3x^2 + 3^x log3$
      (b) $x^2/3 + 3^x / log3$
      (c) $x^4/4 + 3^x / log3$
      (d) $x^2/3 + 3^{x log}3$

    Ans: ©

8   =

     (a) cos x +c
     (b) -cos x + c
     (c) Sin x +c
     (d) 1

Ans: (b)

9   ) dx   2
     (a) $(x-1)^4/4 + (x-1)^3/3 -x +c$
     (b) $-(x-1)^4/4 - (x-1)^3/3 -x +c$
     (c) $(x-1)^3/3 + (x-1)^2/2 -x +c$
     (d) $(x-1)^3/3 + (x-1)^2/2 + x +c$

Ans: (a)

10     $+e^x -\cos x)$ dx   1
     (a) $X^4/4 + e^x - \sin x +c$
     (b) $4X^4 + e^x - \sin x +c$
     (c) $X^4/4 + e^x + \sin x +c$
     (d) $X^4/4 + e^x - \cos x +c$
Ans: (a)

11   dx =   3
     (a) $X^3/3 + 2\cos x +1$
     (b) $X^2/2 +x^4/4 -\cos x +x +c$
     (c) $X^2/2 +x^3/3 + 2\cos x +x +c$
     (d) $X^2/2 +x^3/3 + \cos x +1+c$
Ans (c)

12   dx   3
     (a) 2 sec x tan x + 3 tan x +c
     (b) 2 tan x + 3 sec x +c
     (c) $3\tan^2 x + 2 \sec x +c$
     (d) $2 \tan^2 x - 3 \sec x +c$
Ans (b)

13   Integration of w.r.t.x   2
     (a) $\sec^2 x+ \tan x +c$
     (b) tan x+ sec x+ c
     (c) Sec x – tan x +c
     (d) Sec x tan x +c
Ans: (b)

14   =   1
     (a) $\sin^2 x +c$
     (b) - +c
     (c) +c
     (d) +c
Ans: (c)

15   2
   =
     (a) $-(x^2 - 5)^{11}/11 +c$
     (b) $11(x^2 - 5)^{11} +c$

(c) $10(x^2 - 5)^{10} + c$

(d) $+C$

Ans: (d)

16 Integration of $\tan^2 x =$ 2

(a) $\sec^2 x + c$

(b) $\sec x + c$

(c) $x + \sec^2 x + c$

(d) $\sec^2 x - x + c$

Ans : (d)

17

$$\int 3x^2 \sin(x^3) \cdot dx$$

(a) $-\cos(x^3) + c$

(b) $3\sin^3 x + c$

(c) $-\sin(x^3) + c$

(d) $3\cos x + c$

Ans (a)

18

$=$

(a) $\log \sin x + c$

(b) $\log \cos x + c$

(c) $\cot x \csc x + c$

(d) $\csc^2 x + c$

Ans (a)

19   2

$$\frac{(\log x)^n}{x}$$

(a) $(\log x)^{n-1} / (n-1)$

(b) $(\log x)^n / n$

(c) $(\log x)^{n+1} / (n+1)$

(d) $x \log x$

Ans : ©

20 If $u(x)$ and $v(x)$ are function of x , $=$ 1

(a) $u(x) +$

(b) $u(x)$

(c) $u(x) +$

(d) $u(x)$

Ans : (b)

21 $=$

(a) $1/x + c$

(b) $\log x + c$

(c) $x \log x - x + c$

(d) $x \log x + x + c$

Ans ©

       3

22 $=$

(a) $(x-1) e^x$

(b) e^x

(c) x eˣ

(d) x

Ans : (a)

23   =

(a) x cosx – sinx+c

(b) -xcosx + sinx +c

(c) X cosx +c

(d) Sinx +c

Ans : (b)

24   =

(a) eˣ +c

(b)   +c

(c) x eˣ +c

(d) x e³ˣ +c

Ans : (b)

25   =   2

(a) (sin³x)/3+c

(b) Sinxcosx +c

(c) 2sinx +c

(d) Sinx/cosx +c

Ans : (a)

Q

Q26   =

(a) Log(x+cos x)

(b) Tanx

(c) 1+ sinx

(d) Log (1-sinx)

Ans (a)

27   =

(a) Cos5x +c

(b) -cos5x+c

(c) –(cos5x)/5 +c

(d) 5cos5x +c

Ans : ©

28   =

(a) 1/2

(b) X³ᐟ²

(c) (2/3)X³ᐟ²

(d) X⁻¹ᐟ²

Ans : ©

29   =

(a) Secx +c

(b) Logsecx +c

(c) Sec²x +c

(d) Log cosx +c

Ans : (b)

30   =

(a) Logx +c

(b) 1/x² +c

(c) 1

(d) 0

Ans (a)

31   =
      (a)
      (b)
      (c)
      (d)
Ans (b)

32   =
      (a) 0
      (b) 1
      (c) F(x)
      (d) $(f(x))^2$
Ans : (b)

33   F(x) g(x) then
      (a)
      (b)
      (c)
      (d)
Ans : (a)

34
      (a) 5/2
      (b) 3/2
      (c) 2
      (d) 3
Ans : (a)

35   =
      (a) 5/2
      (b) 3/2
      (c) 2
      (d) 1
Ans: (a)

36   =
        (a) -1
        (b) 0
        (c) 1
        (d) Does not exists
Ans : ©

37   1

, then which is following is true
      (a)
      (b) +
      (c) -
      (d) +
Ans : (b)

38   which of the following is true   1
      (a) 2, if f is even

(b) 0 if f is even
(c) 2 , if f is odd.
(d) 0 if f is even

Ans (a)

39   =
(a) 1
(b) 2
(c) 0
(d) -1

Ans ©

40   =
(a) 0
(b) 8+sin2
(c) 16 -sin2
(d) 32- sin 2

Ans (a)

41   =
(a) 2/5
(b) 0
(c) 1
(d) -1/5

Ans : (a)

42   =7 and = 9 then =
(a) -2
(b) 2
(c) 16
(d) Data is insufficient

Ans (a)

43   =   2
(a) 0
(b) 1
(c) -1/5
(d) 1/5

Ans ©

44   =   3
(a) 7/12
(b) 25/12
(c) -25/12
(d) -7/12

Ans : ©

45   =
(a)
(b) 1
(c) -1
(d) 0

Ans (a)

46   =   3
(a) 1
(b) -1
(c) 0
(d) ∞

Ans (d)

47   =   2
    (a) 1
    (b) 2
    (c) 0
    (d) -1
    Ans (b)

48   =
    (a) 0
    (b) 1
    (c) Log(log2)
    (d) $(\log 2)^2/2$
    Ans (d)

49   =
    (a) 0
    (b) 1
    (c) Log(1/
    (d) (1/
    Ans : ©

50   Evaluate (x)dx. =
    (a) Sin(5)-sin(4)
    (b) -sin(5)-sin(4)
    (c) Sin(5) + sin(4)
    (d) -sin(5) +sin(4)
    Ans (a)

51   In , b stands for   1
    (a) Lower limit
    (b) Upper limit
    (c) Integral
    (d) Limit of integral
    Ans: (a)

52   , f(x) stands for
    (a) Lower limit
    (b) Upper limit
    (c) Integrand
    (d) Limit of integral
    Ans : ©

53   If f(x) is odd function then Itegration f(x) w.r.t. x from x=-a to x=a is
    (a) 1
    (b) 0
    (c) F(-x)
    (d) -f(x)
    Ans : (b)

54   =
    (a) -e
    (b) $e^2 - e$
    (c) $e - e^{1/2}$
    (d) e

55   =
    (a) 5/6
    (b) -1/6

(c) 7/6

(d) 1

Ans (a)

56 Definite integration is useful for finding   1

(a) Area under the curve

(b) Area above the curve

(c) Area left to curve

(d) Area right to curve

Ans : (a)

57   =

(a) ¾

(b) -3/4

(c) 0

(d) 1

Ans ©

58 $1+2+3+....+n =$ 1

(a) $n(n+1)/2$

(b) $n(n+1)/6$

(c) $n(n-1)/2$

(d) $n(n-1)/6$

Ans : (a)

59 $1^2 +2^2 + 3^2+.....+ n^2 =$ 1

(a) $n((n+1)/2$

(b) $n(n+1)(2n+1)/6$

(c) $n(n+1)(n+2)/6$

(d) $n(n-1)(n-2)/6$

Ans (b)

60 $1+2+3+4+......+20 =$

(a) 110

(b) 210

(c) 190

(d) 105

Ans : (b)

61 $1^3 + 2^3+3^3+.....+10^3 =$ 2

(a) 3025

(b) 110

(c) 25

(d) 2525

Ans (a)

62 Area bounded by the curve y =f(x), x axis and x=a to x=b is given by   1

(a)

(b)

(c)

(d) Data insufficient

Ans : (a)

63 Area bounded by $y = x^2$, the y axis , x axis and x =3 is   3

(a) 27

(b) 9

(c) 3

(d) 81

Ans (b)

64   Area bounded by y =x, x=2 and x =4 is   2
            (a) 6
            (b) 8
            (c) 2
            (d) 10
        Ans (b)

65   What is area under the under the curve y =2x from x=0 to x=2
            (a) 8
            (b) 4
            (c) 4
            (d) 8
        Ans: (b)

66   The region bounded by the curve y = x^2 +1 and the line y =3-x. what is point of contacts
            (a) (-2,5), (1,2)
            (b) (2,5)
            (c) (1,2)
            (d) (2,5), (-1,2)
        Ans: (a)

67   What is the point of contacts of the region bounded by y = x and y = $x^2/4$?
            (a) (1,2)
            (b) (0,2)
            (c) (0,0), (4,4)
            (d) (0,0), (2,2)
        Ans (c)

68   Area between the curve y =f(x) and y =g(x), f(x) < g(x) from x=a and x =b is   1
            (a) dx
            (b) dx
            (c) dx
            (d) dx
        Ans: (b)

69   What is area between the curve y =x^2 and x =y^2 from x=0 to x=1   3
            a)   2/3
            b)   1/6
            c)   1/3
            d)   1
        Ans: (c)

70   Identity the definite integral(s) that represents the area of the region bounded by the graphs of y =   1
        4 x^2 and x =y.
            (a)
            (b)
            (c)
            (d) dx
        Ans : (d)

71   The area of the region bounded by y =x^2 , x =1 , x=2 and x axis
            (a) 26/3
            (b) 7/3
            (c) 3
            (d) 1

Ans (b)

72   The area of the region bounded by curve f(x) =sin x, and lines x =0 to /2
        (a) 1
        (b) -1
        (c)
        (d) 2
      Ans (a)

73   Find the area enclosed by y = x² and y =x is
        (a) 1/6
        (b) 1/3
        (c) ½
        (d) 1
      Ans (a)

74   Find the area of the region bounded by 1 x 5 and 2 y 5
        (a) 32
        (b) 12
        (c) 8
        (d) 25
      Ans : (b)

75   The area of the region bounded by y =1/x enclosed by y =e to y = e²
        (a) 2
        (b) 1
        (c) e
        (d) e²
      Ans (b)

76   The area of the region bounded by y = cos3x and x =0 to x=
        (a) ½
        (b) 1/3
        (c) 1
        (d) 3
      Ans : (b)

77   The arc length of the curve from x=a and x=b is
        (a) dx
        (b) dx
        (c) dx
        (d) dx
      Ans (a)

78   The arc length of f(x) = x at x=0 to x=1 is
        (a) 1
        (b)
        (c) 2
        (d) 3
      Ans: (b)

79   The arc length of y = 2x at x=1 to x=2
        (a) 17
        (b)
        (c)
        (d) 1
      Ans ©

80   The length of arc of the curve with parametric equation x =a sin , y = acos ; 0 is   4
        (a)

(c) 1

(d) 0

Ans : (b)

81 Which of the following differential equation is variable separable form ? 1

(a) d y/dx + sin x= x y

(b) dy/dx+xy =0

(c) dy/dx + cos(xy) = y

(d) dy/dx+x+y=2

Ans (b)

82 What is solution of differential equation xy+ x = dy/dx 3

(a) log (y+1) =x+c

(b) log (y+1) = x^2/2 +c

(c) y=x+c

(d) xy=c

Ans (b)

83 Write differential equation for 'the rate of decay of radioactive substances at any time(t) is k time its mass(m) of the substance'.

(a) dm/dt = km

(b) dt/dm = k

(c) dm +dt = kt

(d) dm + dt = km

Ans: (a)

84 Form differential equation of 'Slope of tangent to the curve y= x+2 at any point'.

(a) dy+ dx=x+2

(b) dy/dx = x+2

(c) dy-dx = x+2

(d) dx/dy = x+2

Ans : (b)

85 y^2 = k x general solution of differential equation

(a) dy/dx = x/2y

(b) dy/dx =y/2x

(c) dy/dx =2x/y

(d) dy/dx = 2y/x

Ans : (b)

86 Solution of dy = xdx is

(a) 2y =x+c

(b) 2y = x^2 +c

(c) Y^2 = x +c

(d) Y =2x +c

Ans : (b)

87 Which of the following differential equation represents family of lines passing through origin?

(a) Xdy+ dx =0

(b) Ydy +xdx=0

(c) Xydy/dx =0

(d) Xdy-ydx=0

Ans (d)

88 Solution of dy/dx = e^x is

(a) Y = e^x + c

(b) Y = x+c

(c) Y e^x + c=0

(d) y/e^x =0

Ans : (a)

89   Sec^{2}x tan y dx + sec^{2}y tan x dy = 0
    (a) sec x+ sec y =c
    (b) tan x +tan y =c
    (c) tan x tan y =c
    (d) secx secy =c
Abns (c)

90   Which of the following is not differential equation?   1
    (a) y' +xy=0
    (b) y''+xy'+x=0
    (c) y+x'=4
    (d) y+x=sinx
Ans (d)

91   Solution of dy/dx =k is
    (a) xy=k
    (b) x/y=k
    (c) y =kx
    (d) x+y=k
Ans : ©

92   Which of the following is not standard form of differential equation
    (a) variable separable
    (b) homogeneous
    (c) non homogeneous
    (d) orthogonal
Ans (d)

93

Classify the differential equation dy/dx = xy
    (a) linear differential but not separable
    (b) variable separable
    (c) variable separable and linear
    (d) neither linear nor separable
Ans (b)

94   Classify the differential equation dy/dx +y=x
    (a) linear differential but not separable
    (b) variable separable
    (c) variable separable and linear
    (d) neither linear nor separable
Ans (a)

95   Classify the differential equation ydy/dx +xy^2= xy
    (a) linear differential but not separable
    (b) variable separable
    (c) variable separable and linear
    (d) neither linear nor separable
Ans ©

96   Classify the differential equation dy/dx +e^x = xy   1
    (a) linear differential but not separable
    (b) variable separable
    (c) variable separable and linear
    (d) neither linear nor separable

Ans : (d)

97 A differential equation is considered to be ordinary if it has
 a) more than one dependent variable.
 b) one independent variable.
 c) more than one independent variable.
 d) One dependent and one independent.
 Ans (b)

98 Differential equation dy/dx +x =0 represents
 (a) parabola
 (b) ellipse
 (c) circle
 (d) line
 Ans : ©

99 The following is an I.F. of the Linear first order O.D.E. dy/ dx + P y = Q, where P, Q are functions of x only
 (a)
 (b)
 (c)
 (d)
 ans (a)

100 Solution of dy/ dx + P y = Q is
 (a) y= dx +c
 (b) y= dx +c
 (c) y= dx +c
 (d) y= dx +c
 Ans ©

101   1
 If d y/dx + y/x =sin x then integrating factor is
 (a) x
 (b) 1/x
 (c) -x
 (d) X^2
 Ans : (a)

102 If d y/dx + y = cos x then integrating factor is   1
 (a) X
 (b) 1
 (c) e^x
 (d) x^2
 Ans ©

103 If dy/dx + cot x y = tan x then integrating factor is
 (a) cot x
 (b) tan x
 (c) sin x
 (d) cos x
 Ans : (c)

104 If x^3 dy/dx + x^2 y =x , then integrating factor is   1
 (a) x
 (b) x^2
 (c) e^x
 (d) x^3
 Ans (a)

105 If dy/dx +y/x = x then solution of differential equation is   3
      (a) $x y = x^3 + c$
      (b) $xy = x+c$
      (c) $x+y=c$
      (d) $x/y=c$
      Ans (a)

106 If dy/dx -y/x = x
      (a) $y/x =x+c$
      (b) $xy =x+c$
      (c) $-xy =x+c$
      (d) $-y/x =c$
      Ans (a)

107 If dy/dx + tanx.y = secx then solution of differential equation is
      (a) Ysecx=x+c
      (b) Y =secx +x+c
      (c) Ysecx +x c
      (d) y/secx = xc
      Ans : (a)

108 Solution of xdy/dx + 2y = $1/x^2$ is
      (a) $xy =x+c$
      (b) $x^2y = x +c$
      (c) $x^2/y = x+c$
      (d) $x^2y =y+c$
      Ans (b)

109

      Solution of dy/dx + (tan x) y =cos^2x is
      (a) y sec x = sin x +c
      (b) y sec x +sin x =c
      (c) y cos x + tan x =c
      (d) y sin x=x+c
      Ans (a)

110 Solution of dy/dx+y=e^x is   3
      (a) $e^x y=e^{2x} +c$
      (b) $2e^x y=e^{2x} +c$
      (c) $Y= c$
      (d) $e^{-x} y=e^{2x} +c$
      Ans : (b)

111 Solution differential equation dy/dx +2xy =x is   3
      (a) $x y = x^3/3$
      (b) $3x^2y = x^3+c$
      (c) $3xy = x+c$
      (d) $Y =x+c$
      Ans (b)

112 What is integrating factors of dy/dx + = x is   3
      (a)
      (b) X
      (c) Exp()
      (d)
      Ans (A)

113 To solve the ordinary differential equation 5dy/dx+ y sin x=x, y (0) =5 ,by Euler's method, you need

to rewrite the equation as

    (a) Dy/dx = x-y sin x, y (0) =5

    (b) dy/dx = (x- y sin x), y (0) =5

    (c) dy/dx = (x + y sin x), y (0) =5

    (d) dy/dx = (y sin x-y), y (0)= 5

Ans : (b)

114   By using Euler's method find the value of x_1, y_1 of f(x,y) =x+2y with initial condition x_0 =0, y_0=1 and h=0.25

    (a) x_1=0.25, y_1 = 1

    (b) x_1 =0.25 , y_1 = 0.5

    (c) x_1 = 0, y_1 = 5

    (d) x_1 = 0, y_1 = 2

Ans : (b)

115   By using Euler's method what is value of x_1 and y_1 for y' = 1+y, y(0) =1 and h = 0.1 is

    (a) x1 =0.1, y1 =0.2

    (b) x1 =0 ,y1 =1

    (c) x1=0.1 , y1 =0.1

    (d) x1 =0.1 y1 = 2

Ans (a)

116   1

Which of the following indicate Simpson's Rule?

    (a) = h/3 (y_0 +yn+ 4(y1 + y3+y5+...)+2(y2 +y4 +y6+...))

    (b) = h/2 (y_0 +yn+ 4(y1 + y3+y5+...)+2(y2 +y4 +y6+...))

    (c) = h/3 (y_0 +yn+ 2(y1 + y3+y5+...)+4(y2 +y4 +y6+...))

    (d) = h/3 (y_0 +yn+ 4(y1 + y3+y5+...)-2(y2 +y4 +y6+...))

Ans (a)

117   Using Simpson rule with n =4 , what is value of   3

    (a) 21.33

    (b) 20.33

    (c) 16

    (d) 20.55

(a)

118   Evaluate , for x =6 by Simpson's Rule

    (a) 1

    (b) 0.2

    (c) 0.5

    (d) 0.86602

Ans (d)

119   What is integrating factor of 4dy/dx +8xy =xe^x

    (a) 2

    (b) 2x

    (c) Exp(x)

    (d) Exp(x^2)

Ans: (d)

120   What is integration of xe^x

    (a) e^x(x-1)

(b) $e^x(x+1)$
(c) $e^x(x)$
(d) 1
(a)

121   The general solution to has the form
(a)
(b)
(c)
(d)

Ans d