Subject : Applied Mathematics(AM) CE2I

Code : 22201 **Programme : Diploma in Civil Engineering.**

Q.1 If f(x) = x^2+ 6x + 10, find f(2) + f(–2).

a) 20
b) 26
c) 28
d) 52

Q.2 Find $\frac{dy}{dx}$ if $y = x^{10} + 10^x + e^x$

a) $\boldsymbol{10x^9 + 10^x log10 + e^x}$
b) $10x + 10^x log10 + x$
c) $10x^{10} + 10^x logx + e^x$
d) $10x^{11} + 10^x log10 + x$

Q.3 $If\ y = x^x\ then\ find\ \frac{dy}{dx}$.

a) $x^x(x-1)$
b) $\boldsymbol{x^x(1 + logx)}$
c) $x^x(x+1)$
d) $x.x^{x-1}$

Q.4 Find the slope of tangent to the curve

$4x^2 + 9y^2 = 40\ at\ (1,2)$

a) $\frac{2}{9}$
b) $\frac{\boldsymbol{-2}}{\boldsymbol{9}}$
c) $\frac{8}{18}$
d) $\frac{-4}{9}$

Q.5 If x = a($1 + cos\theta$) , $y = a(1 - cos\theta), find\ \frac{dy}{dx}$

a) $\boldsymbol{-1}$
b) 1
c) 0
d) 2

Q.6 Evaluate : $\int \frac{\sin(logx)}{x} dx$

a) $\cos(logx) + c$
b) $\boldsymbol{-\cos(logx) + c}$
c) $\log(logx) + c$
d) $\sin(logx) + c$

Q.7 $\int \frac{1}{a^2-x^2} dx$ is

a) $\boldsymbol{\frac{1}{2a} log \left(\frac{a+x}{a-x}\right) + c}$

b) $\frac{1}{2a} log \left(\frac{x-a}{x+a}\right) + c$

c) $\frac{1}{2a} log \left(\frac{a-x}{a+x}\right) + c$

d) $\frac{1}{2a} log \left(\frac{x+a}{x-a}\right) + c$

Q.8 Evaluate : $\int (4x+1)^2 . dx$

a) $\frac{(4x+1)^3}{4} + c$

b) $\frac{(4x+1)^3}{3} + c$

c) $\boldsymbol{\frac{(4x+1)^3}{12} + c}$

d) $\frac{(4x+1)^4}{3} + c$

Q.9 Evaluate : $\int \frac{x}{x+1} dx$

a) $\log(x+1) + c$

b) $x + \log(x+1) + c$

c) $\boldsymbol{x - \log(x+1) + c}$

d) $x - logx + c$

Q.10 Evaluate : $\int_0^2 \frac{2x}{x^2+4}\ dx$

a) $\boldsymbol{\log_e(2)}$

b) $\log_e(-2)$

c) $\frac{2}{4}$

d) $\log_e 4$

Q.11 Evaluate : $\int_0^2 (x+2)\ dx$

a) 4

b) 7

c) 6

d) -6

Q.12 Evaluate: $\int \frac{dx}{x^2+4x+5}$

a) $\frac{1}{2}\tan^{-1}(x+2) + c$

b) $\boldsymbol{\tan^{-1}(x+2) + c}$

c) $\frac{1}{2}\log\left(\frac{x+3}{x+1}\right)+c$

d) $log(x^2+4x+5)+c$

Q.13 Evaluate : $\int_0^{\pi/4}\log(1+\tan x)\,dx$

a) $\frac{\log 2}{8}$

b) $\frac{\pi}{8}\log 2$

c) $\frac{\pi}{4}\log 2$

d) $\frac{\log 2}{2}$

Q.14 Find the area between the parabola $y=x^2\ and\ the\ line\ y=x$.

a) $\frac{5}{6}$

b) $\frac{1}{2}$

c) $\frac{1}{6}$

d) $\frac{4}{5}$

Q.15 Find the area enclosed by curve y=2x and the line x=1, x=3 & x-axis.

a) 4

b) $\frac{9}{2}$

c) 8

d) 9

Q.16 Which of the following is equation of circle

a) $x^2+y^2=a^2$

b) $y^2=x^2(1-x)$

c) $y^2=4ax$

d) $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$

Q.17 Find integrating factor of differential equation

$\frac{dy}{dx}+\frac{y}{x}=x^3$

a) $logx$

b) x

c) e^x

d) $\frac{1}{x}$

Q.18 If $p(probability\ of\ sucess) = \frac{1}{52}$, $n = 104(Trials)$ then by Poisson distribution mean is

a) 3
b) 2
c) 1
d) 4

Q.19 By using trapezoidal rule, and taking n = 2 , $\int_{-1}^{1}(1 + x + x^2 + x^3)dx$ is equal to

a) **3** b) 2.9 c) 2 d) 3.2

Q.20 By using Simpson's 3/8th rule, Evaluate $\int_0^6 \frac{1}{1+x}dx =$

a) 1.9360 b) 1.9461 **c) 1.9662** d) 1.9563

Happy Learning!