



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22
Programme – Diploma in Mechanical Engineering
Course Name – Mathematics II
Course Code - DME204
(Semester II)

Time allotted : 1 Hrs.15 Min.

Full Marks : 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following :

(1) $\int \frac{dx}{x \log x} =$

- a) $\log x + c$
 c) $e^x + c$

- b) $\log(\log x) + c$
 d) None of these

(2) $\int \frac{3^x}{3^x + 1} dx =$

- a) $\log |3^x + 1| + c$
 c) $\log_3^{3^x+1} + c$

- b) $3^x + 1 + c$
 d) $\log_{10}^{3^x+1} + c$

(3) $\int \frac{\cos 2x dx}{(\sin x + \cos x)^2} =$

- a) $\log |\sin x + \cos x|$
 c) $-\log |\sin x + \cos x|$

- b) $\log |\sin x - \cos x|$
 d) None of these

(4) $\int \frac{dx}{\cos^2 x - \sin^2 x} =$

- a) $\log |\sec 2x + \tan 2x| + c$
 c) $\frac{1}{2} \log |\sec 2x + \tan 2x| + c$

- b) $\log |\sec 2x - \tan 2x| + c$
 d) $\frac{1}{2} \log |\sec 2x - \tan 2x| + c$

(5) $\int \frac{\sin^2 x}{\cos^4 x} dx = A \tan^3 x$ then A is

- a) 3

- b)

$$\frac{1}{3}$$

c) -3

(6) $\int 2^{3x} dx =$

a) $\frac{2^{3x}}{3 \log 2} + c$

b) $\frac{2^{3x+1}}{3x+1} + c$

c) $32^{3x} \log 2 + c$

d) None of these

(7) $\int \cot^2 x dx =$

a) $-(\cot x + x) + c$

b) $-(\cot x - x) + c$

c) $-\cot x + x + c$

d) None of these

(8) $\int 0 dx =$

a) 0

b) x

c) dx

d) constant

(9) $\int \frac{1}{x} \left(x + \frac{1}{x} \right) dx$

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

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

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

d) $\left(x + \frac{1}{x} \right) + c$

(10) $\int e^{3 \log x} dx =$

a) $x^3 + c$

b) $\log x + c$

c) $\frac{x^4}{4} + c$

d) $x^4 + c$

(11) The formula $\int a^x dx = \frac{a^x}{\log a} + c$ is invalid for a =

a) 1

b) 2

c) 3

d) None of these

(12) If $\int \frac{dx}{x^2 + 25} = k \tan^{-1} \frac{x}{5}$ then k is

a) 1

b) 5

c) $\frac{1}{5}$

d) -5

(13) If $\int \frac{x \cos x + \sin x}{x \sin x} dx = f(x) + \log \sin x + c$ then f(x) is

a) x

b) e^x

c) $\log x$

d) None of these

(14) $\int e^{1 - \log x} dx =$

a) $ex + c$

b) $e \log x + c$

c) $x \log e + c$

d) None of these

(15) $\int \sec 3x \tan 3x dx =$

a) $3 \sec 3x + c$

b) $\sec 3x + c$

c) $\frac{1}{3} \sec x + c$

d) $\frac{1}{3} \sec 3x + c$

(16) $\int x \sin x dx =$

a) $x \cos x - \sin x + c$

b) $-x \cos x + \sin x + c$

c) $x \sin x + \sec x + c$

d) none of these

(17) $\int_0^{\frac{\pi}{2}} \cos 2x dx =$

a) 0

b) 1

c) 2

d) none of these

(18) $\int_1^e \frac{\log x}{x} dx =$

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

b) 2

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

d) e

(19) $\int_0^{\frac{\pi}{4}} (\sec x + \tan x) \sec x dx =$

a) $\sqrt{3}$

b) 2

c) 1

d) $\sqrt{2}$

(20) $\int_0^{\frac{\pi}{4}} \tan^2 x dx =$

a) $1 - \frac{\pi}{4}$

b) $1 + \frac{\pi}{4}$

c) $-\frac{\pi}{4}$

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

(21) $\int_0^1 \frac{dx}{1+x^2} =$

a) $\frac{\pi}{4}$

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

c) $\frac{2\pi}{3}$

d) none of these

(22) $\int_0^{\frac{\pi}{2}} \sin^2 x dx =$

a) 0

b) 1

c) 2

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

(23)

