



BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – Dip.CSE-2021
Course Name – Mathematics II
Course Code - DCSE204
(Semester II)

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Barasat, Kolkata -700125

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

(i) Identify that the differential equation whose general solution is $y = Ae^x + Be^{-x}$ is

a) $\frac{d^2y}{dx^2} = -y$

b) $\frac{dy}{dx} = Ae^x - Be^{-x}$

c) $\frac{d^2y}{dx^2} = y$

d) none of these .

(ii) Identify The general solution of $xdx+ydy=0$ is

a) $x^2 - y^2 = c^2$

b) $x^2 + y^2 = 2c$

c) $x^2y^2 = c^2$

d) none of these

(iii) Write the correct number of digits which are not significant in the number 0.031

a) 0

b) 2

c) 5

d) none

(iv) Identify the value of $\int \frac{dx}{x \log x} =$

a) $\log x + c$

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

c) $e^x + c$

d) None of these.

(v) Identify the value of $\int e^x dx$

a) $e^x + c$

b) $e^x + c$

c) $e^x + \frac{x^2}{2} + c$

d) None of these.

(vi) $\Delta^3(y_0)$ may be expressed as which of the following terms? Examine the correct option.

a) $y_3 - 3y_2 + 3y_1 - y_0$

b) $3y_2 - 2y_1 + y_0$

c) $y_3 + 3y_2 + 3y_1 + y_0$

d) none of these

(vii) Identify the value of $\int \frac{\cos \sqrt{x} dx}{\sqrt{x}} =$

a) $2 \cos \sqrt{x}$

b) $2 \cos x$

c) $2 \sin \frac{1}{\sqrt{x}}$

d) $2 \sin \sqrt{x}$

(viii) If $\int \frac{\sin^2 x}{\cos^4 x} dx = A \tan^3 x$ then identify the value of A is

a) 3

b) $\frac{1}{3}$

c) -3

d) 4

(ix) Identify the value of $\int x \sin x dx =$

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

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

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

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

(x) Examine while taking $h = \pi, \Delta(x + \cos x)$ is

a) $\pi + 2 \cos x$

b) $x - \sin x$

c) $\pi - 2 \cos x$

d) $1 - \sin x$

(xi) Newton's backward interpolation formula is used to interpolate which of the following option. Examine the correct answer.

a) near end

b) near central position

c) near beginning

d) none of these

(xii) In Trapezoidal rule for evaluating the approximate value of $\int_a^b f(x) dx$; the area given by this integral is approximated by the sum of area of which of the following option. Choose the correct answer

a) rectangle

b) sectorial figure

c) trapezium

d) none of these

(xiii) An urn contains 4 white and 6 black balls. Two balls are drawn one after another without replacement. Then identify the probability of one ball white and one black is

a) $\frac{1}{24}$

b) $\frac{4}{15}$

c) $\frac{8}{15}$

d) none of these

(xiv) Identify the median of the scores of 9 students 9,8,4,6,7,4,11,13,10 is

a) 9

b) 8

c) 8.5

d) none of these

(xv) Identify the A.M of the datas 13,15,20,1,3,32 is

a) 19

b) 14

c) 20.5

d) none of these

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Group-B

(Short Answer Type Questions)

3 x 5=15

2. Identify the value of $\int \frac{1}{1-\cos x} dx$.

(3)

3. Three fair coins thrown. Identify the probability of getting no tail?

(3)

4. Five men in a company of twenty are graduates. If two men are selected out of 20 at random, Identify the probability that they are all graduate?

(3)

5. Calculate: $\frac{dy}{dx} = 7x$

(3)

6. Evaluate: the differential equation $y^2(xdy + ydx) + (xdy - ydx) = 0$

(3)

OR

(3)

Evaluate: $\frac{dy}{dx} = e^{6x}$

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Tell the value of $\int x \cos x dx$

(5)

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8. Tell the value of $\int \frac{dx}{x^2 - 4x - 5}$

(5)

9. Calculate: $\frac{d^2y}{dx^2} + \frac{dy}{dx} - 6y = 0$

(5)

10. Calculate: $\frac{d^2y}{dx^2} = 4x$.

(5)

11. Two dice are thrown simultaneously. Identify the probability of getting the sum as 8

(5)

12. Evaluate by Trapezoidal rule correct upto three decimal places from the given figures.

(5)

x	1.4	1.6	1.8	2	2.2
y	4.0552	4.953	6.0436	7.3891	9.025

OR

Evaluate the following system by Gauss-Elimination method:

(5)

$x + y + z = 2$

$x + 2y + 3z = 5$

$2x + 3y + 4z = 11$
