



SCIENCE & HUMANITIES DEPARTMENT

Vision: To excel in the field of technology by creating technocrats with value based professionalism.

Mission: To provide technical expertise to fulfill the need of the industry.
To impact ethical values & professional responsibilities.
To achieve excellence in academics

ASSIGNMENT-I

Subject: Applied Mathematics (312301)

Date : 14/01/2026

Topic Name: Indefinite Integration

Course Outcome : Solve the broad-based engineering problems of integration using suitable methods.

1) $\int \sqrt{1 + \cos x} \, dx$

2) $\int \frac{e^{x(x+1)}}{\cos(x, e^x)} \, dx$

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

4) $\int \frac{dx}{5 - 4 \cos x}$

5) $\int \frac{e^x}{(e^x - 1)(e^x + 1)} \, dx$

6) $\int \frac{dx}{3 - 2 \sin^2 x}$

7) $\int \tan^{-1} x \, dx$

8) $\int \frac{dx}{2x + x \log x}$

9) $\int \frac{1}{2x^2 + 3x + 1} \, dx$

10) $\int \frac{\sec^2 x}{(1 + \tan x)(2 + \tan x)} \, dx$

11) $\int x \cdot \tan^{-1} x \, dx$

12) $\int \frac{dx}{4 \cos^2 x + 9 \sin^2 x}$

13) $\int \tan^2 x \, dx$

14) $\int \left(\frac{1}{1+x^2} + 5^x \right) dx$

15) $\int a^x + x^a + a^a \, dx$



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ASSIGNMENT-II

Subject: Applied Mathematics (312301)
Topic Name: Probability Distribution

Date : 21/01/2026

Course Outcome : Use probability distributions to solve elementary engineering problems.

- 1) An unbiased coin tossed 5 times. Find the probability of getting three heads.
- 2) If 20% of the bolts produced by a machine are defective. Find the probability that out of 4 bolts drawn
 - i) One is defective
 - ii) At most two are defective
- 3) If a random variable has a poisson distribution such that $P(2) = P(3)$ Find $P(5)$.
- 4) A factory manufactured 2000 electric bulbs with average life 2040 hours and S.D. of 60 hours. Assuming normal distribution find number of bulbs having life.
 - i) more than 2150 hours.
 - ii) less than 1960 hours. Given $A(1.83) = 0.4667$ $A(1.33) = 0.4082$
- 5) If ten fair coins are tossed. What is the probability that there are exactly 3 heads?
- 6) The probability that a pen manufactured by a company will be defective is $\frac{1}{10}$ If 12 such pens are manufactured. Find the probability that.
 - i) Exactly two will be defective
 - ii) At least two will be defective
- 7) If 5% of the electric bulbs manufactured by a company are defective. Use Poisson's distribution to find the probability that in a sample of 100 bulbs.
 - i) None is defective.
 - ii) Five bulbs are defective. (Given $e^{-5} = 0.007$)
- 8) In a certain examination 500 students appeared. Mean score is 68 and S.D. is 8 Assuming data are normally distributed find the number of student scoring. i) less than 50 ii) more than 60
[Given : $A(2.25) = 0.4878$ $A(1) = 0.3413$]



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Subject: Applied Mathematics (312301)

Date : 10/02/2026

Topic Name: Definite Integration Unit-II

Course Outcome : Use definite integration to solve given engineering related problems.

ASSIGNMENT –III

1. Evaluate $\int_0^{\frac{\pi}{2}} \frac{1}{5+4\cos x} dx$

2. Evaluate $\int_0^{\frac{\pi}{4}} \log(1 + \tan x) dx$

3. Evaluate. $\int_1^3 \frac{\sqrt[3]{x+5}}{\sqrt[3]{x+5} + \sqrt[3]{9-x}} dx$

4. Evaluate. $\int_4^5 \frac{\sqrt{5-x}}{\sqrt{x-4} + \sqrt{5-x}} dx$

5 Evaluate. $\int_0^9 \frac{\sqrt{9-x}}{\sqrt{8-4} + \sqrt{x+4}} dx$

6. Evaluate $\int_0^{\frac{\pi}{2}} \frac{\sqrt{\sin x}}{\sqrt{\sin x} + \sqrt{\cos x}} dx$

7. Evaluate $\int_0^{\frac{\pi}{2}} \frac{\sin x}{(1+\cos^2 x)} dx$

8 Evaluate $\int_0^1 \frac{1}{x^2-x+1} dx$

9. Evaluate $\int_0^{\frac{\pi}{2}} \sin^3 x \cos x dx$

10 $\int_1^2 \frac{1}{3x-2} dx$

11 $\int_0^1 \frac{1}{4-x^2} dx$

12 $\int_5^{10} \frac{1}{(x-1)(x-2)} dx$



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ASSIGNMENT-IV

Subject: Applied Mathematics (312301)

Date : 21/02/2026

Topic Name: Differential Equation

Course Outcome : - Apply the concept of differential equation to find the solutions of given engineering problems

1. Find the order and degree of the differential equation $\sqrt[3]{\frac{dy}{dx}} + y = \sqrt[4]{\frac{d^2y}{dx^2}}$
2. Find the order and degree of differential equation $\sqrt[3]{\frac{d^2y}{dx^2}} = \sqrt{\frac{dy}{dx}}$
3. Form a differential equation if $y = Ae^{2x} + Be^{-2x}$.
4. Solve $(1+x^2)dy - (1+y^2)dx=0$
5. Solve $(x^2 + 6xy - y^2)dx + (3x^2 + 2xy + y^2)dy=0$
6. Solve $\frac{dy}{dx} + y\tan x = \cos^2 x$
7. From the differential equation whose solution is , $y=A\cos 3t + B\sin 3t$
8. Verify that $y = \log x$ is a solution of differential equation $x \frac{d^2y}{dx^2} + \frac{dy}{dx} = 0$
9. Solve the differential equation $\frac{dy}{dx} = e^{3x-2y} + x^2 e^{-2y}$
10. Solve $\frac{dy}{dx} + y \cot x = \operatorname{cosec} x$.
11. Solve the differential equation $(x+1) \frac{dy}{dx} - y = e^x (1+x)^2$



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ASSIGNMENT-V

Subject: Applied Mathematics (312301)

Date : 28/02/2026

Topic Name: Numerical Methods

Course Outcome : CO4 - Employ numerical methods to solve programme specific problems.

1. Find the approximate root of $x^3 - x - 1 = 0$ by using Bisection method. (One Iteration only)
2. Show that the root of $x^3 - 4x - 9 = 0$ lies in the interval (2, 3)
3. Using Newton Raphson Method. Find approximate root of the equation $x^3 - 4x + 1 = 0$ (Three iterations only)
4. Find the root of the equation $x^3 - 6x + 3 = 0$ using Bisection Method (Three iterations only)
5. Solve the following equation by Jacobi's iteration Method $10x + y + 2z = 13$, $3x + 10y + z = 14$, $2x + 3y + 10z = 15$
6. Solve the following system of equation by Gauss-seidal Method $20x - y + 2z = 17$, $3x + 20y - z = -18$, $2x - 3y + 20z = 25$.
7. Find the root of the equation $x^3 - 2x^2 - 8 = 0$ using Regula falsi Method (Three iterations only)

