Class – XII
Lesson Plan 5

Topic: Indefinite Integration

Brief Description of the lesson:

      In this chapter, students will study about an anti-derivative of a function and various methods to calculate anti-derivatives.

Objectives:

I - Specific Objectives:

To enable the students to:
S1 Interpret integration, learn the basic integration rules, such as the power rule, the sum and difference rule, the constant multiple rule, and the product rule. **(Understand/Classifying)**
S2 understand the concept of the constant of integration and its implications. **(Understand/Classifying)**
S3 be able to apply integration by parts, substitution, partial fractions to solve more complex integration problems. **(Apply/Implementation)**
S4 develop a deeper understanding of the entire topic by a lot of practice of derivations involved in the topic, to be able to develop new techniques on their own. **(Synthesis)**

II - Behavioural Objectives:

By understanding and solving variety of problems, students will attain following behavioural objectives:
1) B1 Critical Thinking
2) B2 Systematic approach
3) B3 To handle real life situation

Process / Activities:
1) ACT1 Students will be asked to recall derivatives of certain terms and reverse process. Students will be given time and then asked the different basic formulae involved in integration. **(Knowledge/Recalling)**

2) ACT 2 To derive different necessary formulae to bolster students understanding. **(Synthesis)**

Skills:
1) Analysis
2) Problem solving
3) Application

Assessment:
Assessment of activity will be done based on decided rubrics:

A1 (a) Evaluate $\int \frac{3ax}{b^2+c^2x^2} dx$. **(Understand/Classifying)**

A2 (b) Verify the following using the concept of integration as an antiderivative:
$\int \frac{x^3}{x+1} dx = x - \frac{x^2}{2} + \frac{x^3}{3} - \log|x+1| + c$ **(Knowledge/Recalling)**

A3 Evaluate $\int e^{\tan^{-1}x} \left(\frac{1+x+x^2}{1+x^2}\right) dx$ **(Analysis)**

A4 Evaluate $\int \log x \ dx, \int \sec x \ dx, \int \sqrt{a^2-x^2} \ dx$ **(Synthesis)**

Expected Learning Outcomes:

The students would be able to efficiently deal with:
1) the different methods of indefinite integration **(Understand/Classifying)**
2) indefinite integrals of a variety of functions, including polynomials, rational functions, trigonometric functions, exponential functions, and logarithmic functions.
(Understand/Classifying) (Analysis)

Placements of Objectives, Instructional Activities and Assessment:

Topic/Start Date/Assessment					
Knowledge	Understanding	Application	Analysis	Synthesis	Evaluation
ACT1	S1	S3	S4	S4	
A2	S2	A3		ACT2	
	A1			A4	
	A3				