



# UNIT-3 PYQ QUESTIONS (RGPV

## Mathematics-III)

### ★★★★★ Euler Method

#### Repeated Questions

1. Solve the differential equation using **Euler Method**.
2. Find  $y(0.2)y(0.2)y(0.2)$  using Euler's Method.
3. Explain Euler's Method with algorithm.
4. Compare Euler and Modified Euler Methods.

**PYQ Frequency:** Very High

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### ★★★★★ Modified Euler Method

#### Asked Questions

1. Solve ODE using **Modified Euler Method**.
2. Explain Predictor-Corrector approach in Modified Euler Method.
3. Compare Euler and Modified Euler.

**PYQ Frequency:** High

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### ★★★★★ Runge-Kutta Fourth Order

## Method (RK-4)

**Most Repeated Numerical**

1. Solve differential equation using **Runge-Kutta Fourth Order Method**.
2. Find  $y(0.2)y(0.2)y(0.2)$  using RK-4.
3. Explain RK-4 algorithm.
4. Derive RK-4 formula.

**PYQ Frequency:** Very High

 Highest Probability Topic

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## **Taylor Series Method**

### **Asked Questions**

1. Solve differential equation using Taylor Series Method.
2. Explain Taylor Series Method.
3. Derive Taylor Expansion Formula.

**PYQ Frequency:** Medium to High

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## **Milne Predictor-Corrector**

### **Method**

### **Asked Questions**

1. Explain Milne Predictor-Corrector Method.
2. Solve ODE using Milne Method.
3. Write Predictor and Corrector formulas.

**PYQ Frequency:** High

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# ★★★★★ Adams Predictor-Corrector

## Method

### Asked Questions

1. Explain Adams Predictor-Corrector Method.
2. Solve ODE using Adams Method.
3. Compare Milne and Adams Methods.

**PYQ Frequency:** High

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# ★★★★★ Laplace Equation

### Most Repeated PDE Question

1. Solve **Two-Dimensional Laplace Equation** using Finite Difference Method.
2. Derive finite difference approximation for Laplace Equation.
3. Find unknown mesh values.

**PYQ Frequency:** Very High

🔥 Guaranteed PDE Topic

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# ★★★★★ Poisson Equation

### Asked Questions

1. Solve Poisson Equation using Finite Difference Method.
2. Difference between Laplace and Poisson Equation.
3. Derive finite difference formula for Poisson Equation.

**PYQ Frequency:** High

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 **Bender-Schmidt Method**

**Frequently Asked**

1. Solve Heat Equation using **Bender-Schmidt Method**.
2. Explain Explicit Method.
3. Write algorithm of Bender-Schmidt Method.

**PYQ Frequency:** Very High

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 **Crank-Nicolson Method**

**Frequently Asked**

1. Solve Heat Equation using **Crank-Nicolson Method**.
2. Explain Implicit Method.
3. Difference between Bender-Schmidt and Crank-Nicolson.

**PYQ Frequency:** Very High

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 **Wave Equation**

**Occasionally Asked**

1. Solve Wave Equation using Finite Difference Explicit Method.
2. Explain Explicit Method for Wave Equation.
3. Derive finite difference formula for Wave Equation.

**PYQ Frequency:** Medium



## Unit-3 Topic Ranking (According to PYQ

### Trend)

Rank	Topic	Probability
1	RK-4 Method	★★★★★
2	Laplace Equation	★★★★★
3	Crank-Nicolson Method	★★★★★
4	Bender-Schmidt Method	★★★★★
5	Euler Method	★★★★★
6	Milne Method	★★★★
7	Adams Method	★★★★
8	Poisson Equation	★★★★
9	Modified Euler Method	★★★★
10	Wave Equation	★★★



### If Exam Is Tomorrow

Study in this exact order:

1. RK-4 Method
2. Euler Method
3. Modified Euler Method
4. Laplace Equation
5. Crank-Nicolson Method
6. Bender-Schmidt Method
7. Milne Method
8. Adams Method
9. Poisson Equation
10. Wave Equation